

NPWS

Galway Bay Complex SAC  
(site code 268)

**Conservation objectives supporting document-  
Lagoons**

Version 1  
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## 1. Introduction

### 1.1 Coastal lagoons

“Coastal lagoons” (habitat code 1150) is a priority habitat in Annex I of the Habitats Directive. A coastal lagoon is a lake or pond that is fully or partially separated from the sea by a permeable barrier that can be entirely natural such as shingle, or can be artificial, such as an embankment. Salinity varies depending on such factors such as freshwater inputs and barrier permeability. Lagoons support unique assemblages of flora and fauna, particularly invertebrates.

The interpretation manual of EU habitats gives the following description: “*Lagoons are expanses of shallow coastal salt water, of varying salinity and water volume, wholly or partially separated from the sea by sand banks or shingle, or, less frequently, by rocks. Salinity may vary from brackish water to hypersalinity depending on rainfall, evaporation and through the addition of fresh seawater from storms, temporary flooding of the sea in winter or tidal exchange. With or without vegetation from *Ruppia maritima*, *Potamogeton*, *Zostera* or *Chara*...*” (CEC, 2007).

In Ireland, coastal lagoons are considered to be in bad conservation status due to issues such as drainage and water pollution (NPWS, 2008).

### 1.2 Galway Bay Complex SAC

This SAC, situated on the west coast of Ireland, comprises the inner, shallow part of a large bay that is partially sheltered from the Atlantic by the Aran Islands. The Burren karstic limestone fringes the southern and eastern sides and extends into the bay. West of Galway city, the bedrock geology is granite. There are numerous intertidal and shallow inlets, notably Muckinish, Aughinish and Kinvara Bays. A diverse range of marine, coastal and terrestrial habitats occur within the site and it is selected for 13 habitats listed on Annex I of the EU Habitats Directive. It is also listed for two species listed on Annex II of the Directive- harbour seal (*Phoca vitulina*) and otter (*Lutra lutra*). Inner Galway Bay SPA (4031) overlaps the SAC.

Galway Bay Complex SAC contains a range of lagoon types of different sizes and salinities. Karstic rock lagoons, which are rare in Ireland and Europe, are particularly well represented. 10 lagoon/lagoon complexes are listed for this SAC by Oliver (2007). The table below gives the overall conservation value and conservation status assessment of each lagoon/lagoon complex as outlined in that report. See map in Appendix 1 and Appendix 2 for accounts of each site (from Oliver, 2007). Note that there may be other lagoons within this site that have not yet been surveyed.

Code <sup>1</sup>	Name	County	Overall conservation value	Conservation status assessment
IL037	Lough Murree	Clare	High	Unfavourable-inadequate
IL038	Aughinish Lagoon	Clare	High	Unfavourable-inadequate
IL039	Rossalia	Clare	Moderate	Unfavourable-inadequate
IL046	Rincarna Pools	Galway	High	Unfavourable-inadequate
IL047	Bridge Lough, Knockakilleen	Galway	Moderate	Unfavourable-inadequate
IL048	Doorus Lakes (Lough Cool)	Galway	Low	Unfavourable-inadequate
	Doorus Lakes (Lough Namona)	Galway		
	Doorus Lakes (Lough Fadda)	Galway		
	Doorus Lakes (Loughaungreena)	Galway		
IL049	Mweeloon Pools	Galway	Moderate	Unfavourable-inadequate
IL050	Ardfry Oyster Pond	Galway	Moderate	Favourable
IL051	Turreen Lough (Rinvile)	Galway	Moderate	Unfavourable-inadequate
IL052	Lough Atalia	Galway	None	Unfavourable- bad
IL052A <sup>2</sup>	Renmore Lough	Galway	Moderate (Jim Ryan, pers. comm.)	Not assessed

<sup>1</sup> Codes are those used in Oliver, 2007

<sup>2</sup> Renmore Lough was not given a separate site code or evaluated in Oliver (2007); it was mapped separately based on data given in that report

### 1.3 Conservation objectives

A site-specific conservation objective aims to define the favourable conservation condition of a habitat or species at site level. The maintenance of habitats and species within sites at favourable condition will contribute to the maintenance of favourable conservation status of those habitats and species at a national level.

Conservation objectives are defined using attributes and targets that are based on parameters as set out in the Habitats Directive for defining favourable status, namely area, range, and structure and functions.

Provisional reference conditions for Irish lagoons are proposed by Roden and Oliver (2010). Reference conditions aim to define ecological status prior to human impacts (i.e. “natural” conditions). The targets for the water quality attributes given below are based on reference values given by Roden and Oliver (2010).

Attributes and targets may change/become more refined as further information becomes available.

## 2. Area

The target for habitat area is: stable or increasing, subject to natural processes. Favourable reference area for mapped lagoon habitat within the SAC is 76.7ha- see table below. NB there may be more, as yet unmapped, lagoons within this site.

Code <sup>1</sup>	Name	Area (Ha) <sup>2</sup>
IL037	Lough Murree	14.1
IL038	Aughinish Lagoon	7.0
IL039	Rossalia	3.1
IL046	Rincarna Pools	0.8
IL047	Bridge Lough, Knockakilleen	5.2
IL048	Doorus Lakes (Lough Cool)	0.3
	Doorus Lakes (Lough Namona)	0.7
	Doorus Lakes (Lough Fadda)	0.3
	Doorus Lakes (Loughaungreena)	0.1
IL049	Mweeloon Pools	0.7
IL050	Ardfry Oyster Pond	0.6
IL051	Turreen Lough (Rinvile)	2.7
IL052	Lough Atalia	40.2
IL052A	Renmore Lough	0.8
	<b>Total</b>	<b>76.7</b>

<sup>1</sup> Codes are those used in Oliver, 2007; <sup>2</sup> Areas are calculated from spatial data derived from Oliver (2007).

## 3. Range

The known distribution of lagoon habitat in Galway Bay Complex SAC is shown in Appendix 1. There may be other lagoons in the site that have not yet been mapped by NPWS.

The target for the habitat distribution attribute is: no decline, subject to natural processes.

## 4. Structure and functions

Structure and functions relates to the physical components of a habitat (“structure”) and the ecological processes that drive it (“functions”). For lagoons these include attributes such as salinity, hydrology and various water quality attributes.

### 4.1 Salinity regime

Lagoons can vary considerably in salinity both within and between sites depending on the volume and timing of inflowing and outflowing fresh and seawater. Salinity is probably the most important variable in the classification of lagoon types (Roden and Oliver, 2010).

The target for the salinity regime attribute is: median annual salinity and temporal variation within natural range.

From the information available, the lagoons in the SAC vary from low (below 17 practical salinity units psu)) to high salinity (above 17psu). Using data from Oliver (2007), the following table gives the

salinity class for each lagoon listed. See Roden and Oliver (2010) for further information on salinity classes and Appendix 2 for individual lagoon reports.

Code <sup>1</sup>	Name	Salinity class
IL037	Lough Murree	Mesohaline-polyhaline
IL038	Aughinish Lagoon	Euhaline
IL039	Rossalia	Polyhaline-euhaline
IL046	Rincarna Pools	Euhaline
IL047	Bridge Lough, Knockakilleen	Euhaline
IL048	Doorús Lakes (Lough Cool)	Oligohaline
	Doorús Lakes (Lough Namona)	Mesohaline
	Doorús Lakes (Lough Fadda)	Mesohaline
	Doorús Lakes (Loughaungreena)	Not sampled
IL049	Mweeloon Pools	Polyhaline
IL050	Ardfry Oyster Pond	Polyhaline
IL051	Turren Lough (Rinvile)	Mesohaline
IL052	Lough Atalia	Mesohaline-polyhaline
IL052A	Renmore Lough	Not sampled

## 4.2 Hydrological regime

Fluctuations in water depth are a natural feature of lagoon hydrology. However, if water levels fluctuate beyond their natural values due to issues such as drainage, the condition of the habitat can deteriorate.

The target for hydrological regime is: annual water level fluctuations and minima within natural ranges.

Most of the lagoons identified within Galway Bay Complex SAC can be classified as shallow (less than 2m), thus even small changes in water depth can cause significant losses in habitat area. Aughinish lagoon is somewhat deeper (one sampling station listed in Oliver (2007) recorded 3m depth) and while the majority of Lough Atalia is shallow, it can, at high water, reach depths of more than 5.5m at its south-western end.

Further information is required to investigate both current and historic water fluctuations to enable more specific targets to be set for each lagoon. See Appendix 2 for individual site reports.

### 4.3 Barrier: connectivity between lagoon and sea

The morphology of the barrier between a lagoon and sea determines how it functions ecologically. Changes to the barrier can be due to natural processes such as storms, but they can also be modified through human intervention. Active management is sometimes necessary, particularly if the lagoon is artificial.

The target for the attribute barriers: connectivity between lagoon and sea is: appropriate hydrological connections between lagoons and sea, including where necessary, appropriate management.

The lagoons listed in the SAC exhibit a variety of barrier types, which is summarised in the following table (after Oliver, 2007). See also site accounts in Appendix 2.

Code <sup>1</sup>	Name	Barrier Type
IL037	Lough Murree	Karst
IL038	Aughinish Lagoon	Cobble and karst
IL039	Rossalia	Artificial- embankment with sluice
IL046	Rincarna Pools	Cobble/shingle
IL047	Bridge Lough, Knockakilleen	Artificial- causeway
IL048	Doorus Lakes (Lough Cool)	Karst
	Doorus Lakes (Lough Namona)	Karst
	Doorus Lakes (Lough Fadda)	Karst
	Doorus Lakes (Loughaungreena)	Karst
IL049	Mweeloon Pools	Saltmarsh
IL050	Ardfry Oyster Pond	Artificial- inlet with sluice
IL051	Turreen Lough (Rinvile)	Artificial- inlet with sluice
IL052	Lough Atalia	Rock sill
IL052A	Renmore Lough	Artificial

### 4.4 Water quality- Chlorophyll $\alpha$

This attribute indicates the level of phytoplankton in the water column. Roden and Oliver (2010) make the assumption that, for shallow lagoons in “natural” condition, primary productivity is dominated by the benthos rather than the plankton. Phytoplankton tends to increase in density in response to increasing nutrient levels. Excessive shading from phytoplankton can reduce submergent macrophyte colonisation of the littoral zone of lagoons.

The target for the attribute water quality- Chlorophyll  $\alpha$  is: annual median chlorophyll  $\alpha$  within natural ranges and less than 5 $\mu$ g/L. Target based on Roden and Oliver (2010).

### 4.5 Water quality- Molybdate reactive phosphorus (MRP)

The target for the attribute water quality- Molybdate Reactive Phosphorus (MRP) is: annual median MRP within natural ranges and less than 0.1mg/L. The target is based on Roden and Oliver (2010).

This limit is required to ensure that excessive shading from phytoplankton does not reduce submergent colonisation of the littoral zone.

#### **4.6 Water quality- Dissolved inorganic nitrogen (DIN)**

The target for the attribute water quality- Dissolved Inorganic Nitrogen (DIN) is: annual median DIN within natural ranges and less than 0.15mg/L. The target is based on Roden and Oliver (2010).

A for phosphorus, the limit for set nitrogen is to ensure that excessive shading from phytoplankton does not reduce submergent colonisation.

#### **4.7 Depth of macrophyte colonisation**

Roden and Oliver (2010) give a reference value of 2m for depth of macrophyte sward. Thus, for the shallow lagoons within Galway Bay Complex SAC, it is expected that macrophytes would extend down to full lagoon depths.

The target for the attribute depth of macrophyte colonisation is: macrophyte colonisation to at least 2m depth.

#### **4.8 Typical plant species**

As lagoon specialist species do not easily recolonise, their presence is one of the indicators of long term continuity of quality.

The target for the attribute typical plant species is: maintain number and extent of listed lagoonal specialists, subject to natural variation.

The plant species recorded in each lagoon is summarised in Oliver (2007). Species considered to be lagoonal specialists include beaked tasselweed (*Ruppia maritima*) and the unattached form of the green alga *Chaetomorpha linum*, both of which have been recorded in most of the lagoons in Galway Bay Complex SAC. See Appendix 2 for individual site reports.

#### **4.9 Typical animal species**

Some invertebrate species are regarded as lagoonal specialists and their presence can indicate long term quality. As species found within each lagoon can vary considerably, depending on other attributes such as salinity, the target is based on site-specific species lists.

The target for the attribute typical animal species is: maintain listed lagoon specialists, subject to natural variation.

The species recorded per site are summarised in Oliver (2007). See Appendix 2 for site reports.

#### **4.10 Negative indicator species**

Negative indicator species include non-native alien species as well as those that are not typical of the habitat. For example, accelerated encroachment by reedbeds can be caused by low salinity, shallow water and elevated nutrient levels.

The target for the attribute negative indicator species is: negative indicator species absent or under control.



## **5. References**

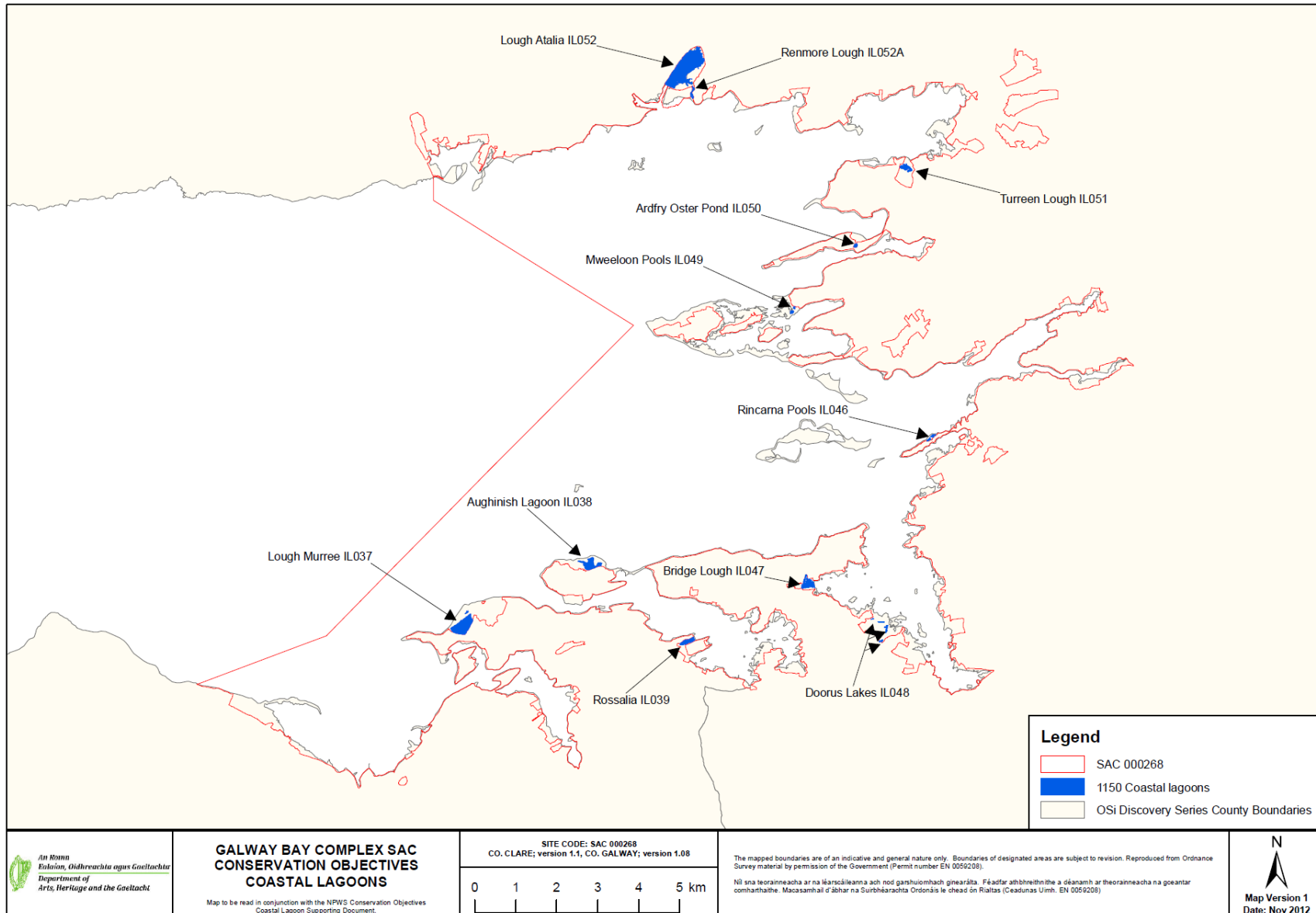
Commission of the European Communities (2007) Interpretation manual of European Union habitats. Eur 27. European Commission DG Environment.

NPWS (2008) The status of EU protected habitats and species in Ireland. Department of the Environment, Heritage and Local Government.

Oliver, G. (2007) Inventory of Irish coastal lagoons (version 2). Unpublished report to the National Parks and Wildlife Service.

Roden, C.M. and Oliver, G. (2010) Monitoring and assessment of Irish lagoons for the purpose of the EU Water framework Directive. Unpublished report to the Environmental Protection Agency.

# Appendix 1 Lagoon distribution map



## Appendix 2 Site reports

The following are site accounts from Oliver (2007)

Code <sup>1</sup>	Name
IL037	Lough Murree
IL038	Aughinish Lagoon
IL039	Rossalia
IL046	Rincarna Pools
IL047	Bridge Lough, Knockakilleen
IL048	Doorus Lakes
IL049	Mweeloon Pools
IL050	Ardfry Oyster Pond
IL051	Turreen Lough (Rinvile)
IL052	Lough Atalia

<sup>1</sup> Codes are those used in Oliver, 2007.

4.37

**Lough Murree, County Clare O.S. M 255 119**

Lough Murry / Loch Muiri

O.S. Discovery Sheet 51



**Conservation Designation:** Galway Bay complex SAC 000268, pNHA 000268

**General description:**

Lough Murree is situated on south side of Galway Bay, 12 km west of Kinvarra, County Clare. The lake has formed in limestone bedrock on which a cobble barrier has been deposited along the coastal side. A road now runs along this barrier between the lake and the sea. There is no direct communication with the sea. Seawater may enter the lake occasionally by overtopping of the barrier but the main routes are percolation and possibly through subterranean fissures in the bedrock. The lake has become highly eutrophic, with recurrent algal blooms but remains of interest due to its unusual geomorphology and rare charophyte flora. Galway University has a research station near the lake. Salinity levels varied across the site from 13-24 ‰ at time of survey.

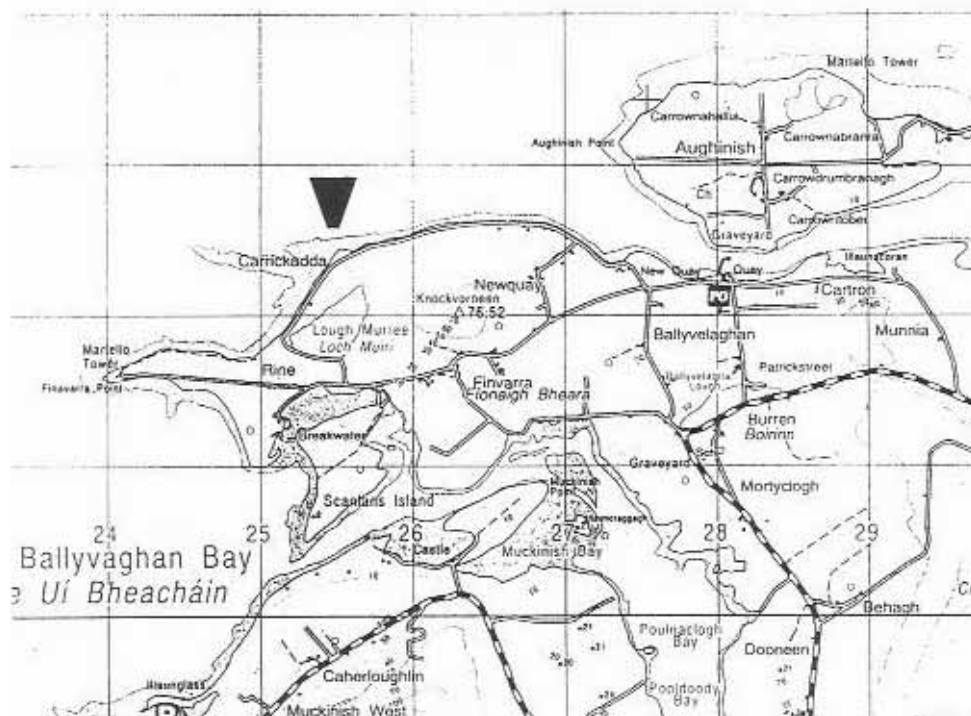


Figure 37.1 Location map of Lough Murree.

Lough Murree was surveyed in 1996 as part of the lagoon surveys, for vegetation (Hatch 1996, Hatch & Healy 1998), aquatic fauna (Healy & Oliver 1996, Oliver & Healy 1998) and ecotonal coleoptera (Good 1996, Good & Butler 1998). Results of these surveys are summarised by Healy *et al.* (1997a,b,c), Healy & Oliver (1998) and Healy (1999, 2003). The lagoon was sampled again in 2002-2003 as part of a PhD study (Oliver 2005)

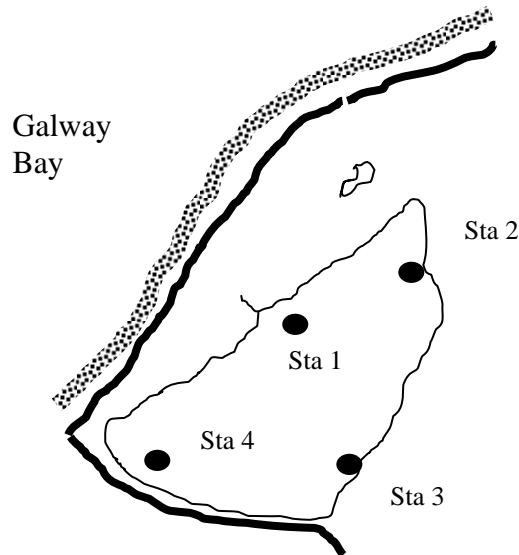


Figure 37.2 Sketch map of sampling stations used at Lough Murree.

### Flora

Twelve floral taxa were recorded in Lough Murree (Table 37.1), of which 9 were identified to species. This is a relatively low number of species but five of these are lagoonal specialists and two of these are rare in Europe. The vegetation of the Lough is notable for the abundance of these typically brackish water plants.

*Ruppia* and *Potamogeton pectinatus* occur within 20 metres of all but the north eastern shores. *P.pectinatus* is dominant in dense beds along the eastern and western shores with more or less sparse *Ruppia*. *Ruppia* is locally dominant over *P.pectinatus* in mixed beds along the southern shore. It is notable that both *Ruppia cirrhosa* and *R.maritima* occur at this site. Two rare charophytes were already known to occur here - *Lamprothamnium papulosum* and *Chara canescens*. Both were re-found during the course of this survey. Both are occasional along the western shore. *Lamprothamnium* is abundant along the southern half of the eastern shore and both species are frequent to locally abundant amongst *Ruppia* and *P.pectinatus* to at least 20 metres out from the southern shore. The presence of these rare charophytes is reason enough in itself to regard this site as valuable.

*Chara canescens* was recorded in **eight lagoons** during the lagoon surveys - North Slob, Lady's Island L., and Tacumshin L., Co. Wexford, L. Gill, Co. Kerry, L. Murree, Co. Clare, Tanrego, Co. Sligo and Durnesh L. and Inch L., Co. Donegal (Hatch & Healy, 1998; Roden, 1998; Roden 2004). It was also recorded at Shannon Lagoon in 1996 (Hatch and Healy 1998), but not re-found at that site in 2003 (Roden 2004). This species is listed in the Red Data Book for Britain and Ireland (Stewart and Church 1992). Although recorded from several European countries it is believed to be declining. It is believed to be extinct in Holland, and there are only a few records from the U.K. since 1960. These Irish locations are very important in European terms.

*Lamprothamnium papulosum* was known from only three sites in Ireland before 1996 (Hatch and Healy 1998). As a result of the surveys it was relocated at two of these

sites (Lady's Island L., Co. Wexford, L. Murree, Co. Clare), but not at Tacumshin L., Co. Wexford. It is now also known from a total of 14 lagoon sites, most of which are clustered in Connemara, but there are also new records from the North Slob, Co. Wexford, L. Bofin, Co. Galway and Maghera, Co. Donegal. This species is listed in the Red Data Book for Britain and Ireland (Stewart and Church 1992). Although recorded from the Baltic to the Mediterranean and Black Sea and also South Africa, it is believed to be declining in Europe. There are only five recent records from the south of England, but there are 12 important sites in the Outer Hebrides (Bamber et al. 2001b). These Irish locations are very important in European terms.

***Chaetomorpha linum***. There is some doubt about the taxonomic status of the unattached lagoonal form of this species, and it was recorded by Hatch and Healy (1998) as *C. mediterranea*. It is a common, characteristic alga of semi-isolated Irish lagoons, recorded at 49 of the 87 (56.3%) lagoons surveyed.

Table 37.1 Positions of and type of substratum at sampling stations in Lough Murree, June 2002-August 2003 with average salinity, temperature and depth of water, and variation in percentage cover of vegetation, bare ground and rotting vegetation through the year. Text in bold indicates "lagoonal specialist" species.

	Sampling stations			
	Station 1	Station 2	Station 3	Station 4
GPS position	O 20086 47849	O 20160 48209	O 19480 48350	O 22469 47091
Mean salinity(psu) at surface	10.2	9.3	9.22	9.3
Mean salinity(psu) at depth	14.3	9.36	9.04	8.9
Min/max salinity range	1.7-24.3	1.7-12.7	1.7-11.5	1.7-10.8
Mean Temperature (°C) at surface	13.8	14	15.44	15.3
Mean Temperature (°C) at depth	13.06	13.9	14.4	14.6
Min/max temperature range	0.4-21.0	5.4-17.9	6.9-19.5	5.6-20.1
Mean Depth (cm)	67	107	67	51
Min/max depth	50-100	50-150	50-100	30-80
Substratum	soft mud, occ. stones on shoreline	soft mud, occ. stones on shoreline	gravel & soft mud, occ. stones	gravel & soft, sandy mud, occ. stones
Percentage cover:				
<b>Bacteria</b>	<i>?Beggiatoa</i>	0-20	0-5	0-10
<b>ALGAE</b>				
	Chlorophyta <b><i>Chaetomorpha linum</i></b>	0-2		0-5
	<i>Cladophora ?pellucida</i>		10-20	
	<i>Cladophora sp.</i>	10-70	20-40	20-70
	<i>Enteromorpha intestinalis</i>	20-70	20-70	5-15
Single-cell algal bloom		0-80	0-80	0-80
<b>Charophyta</b>				
	<b><i>Chara canescens</i></b>	0-5		0-5
	<b><i>Lamprothamnion papulosum</i></b>	0-7		0-5
<b>ANGIOSPERMS</b>				
	<i>Phragmites australis</i>		+	
	<i>Potamogeton pectinatus</i>	10-20	5-20	20-60
	<b><i>Ruppia sp.</i></b>	2-10	0-2	0-10
	<b><i>Ruppia cirrhosa</i></b>	+	+	+
	<b><i>Ruppia maritima</i></b>	+	+	+
	<i>Scirpus maritimus</i>	2-5		0-5
BARE - mineral		5-70	5-20	0-50
BARE - rotting vegetation		0-20	0-25	0-20
				5-100

**Ruppia spp.** are the most characteristic aquatic plant taxa of Irish coastal lagoons. The species are hard to distinguish when not flowering, and remain uncertain at some sites, but *Ruppia* of one species or the other (*R. maritima*, *R. maritima* var *brevirostris*, *R. cirrhosa*) was found at 62 of the 87 lagoons (71.3%) surveyed, and is one of the most useful indicators of coastal lagoon status. *Ruppia maritima* appears to be the more common of the species and was found at 41 of the lagoons surveyed. *Ruppia cirrhosa* is believed to tolerate higher salinities than the former species and to be less common, but neither of these statements is clearly supported in Irish lagoons and the two species were often found growing together (as in Lough Murree). *Ruppia cirrhosa* was only identified at 22 lagoons, but species was not determined at 12 sites. *Ruppia maritima* var *brevirostris* was only positively identified at two sites (Ballyteige, Co. Wexford and Inch L., Co. Donegal).

### Fauna

Among 25 taxa recorded, 20 are identified to species, including three which are listed as a lagoonal specialists (Table 37.1). One of the species identified (*Jaera ischiosetosa*) appears to be rare in Ireland, but is very small and may be overlooked.

Table 37.2 Fauna Recorded at Lough Murree. June and August 1996.

( ) = records for June. + = present; o = occasional; c = common; a = abundant; F = fyke net; L.T. = light-trap. Species in bold text are lagoonal specialists or rare species.

		Sampling Stations							
		Sta 1	L.T.	Sta 2	L.T.	Sta 3	L.T.	Sta 4	L.T.
<b>Nemertea</b>	Nemertea				+				
<b>Annelida</b>	<i>Hediste diversicolor</i>	c							
	<i>Clitellio arenarius</i>								+
	Mysidacea <i>Neomysis integer</i>	1	1						
	Isopoda <b><i>Jaera ischiosetosa</i></b>	12				+			
	Amphipoda <i>Echinogammarus marinus</i>								
	<i>Gammarus duebeni</i>	+	+	c	+	+		+	
	<i>Hyale</i> sp.			a					
	<i>Melita palmata</i>	+				+			
	Decapoda <b><i>Palaemonetes varians</i></b>	+	21	o	1			o	4
<b>Insecta</b>									
	Ephemeroptera			1					
	Odonata <i>Ischnura elegans</i>			+				+	
	Trichoptera (cases)	+							
	Coleoptera <b><i>Enochrus bicolor</i></b>	+							
	<i>Agabus nebulosus</i>			+				+	
	Diptera Chironomidae	c		a		a			
	Culicidae	+							
	Syrphidae							1	
<b>Mollusca</b>									
	Prosobranchia Hydrobiidae	+		250	30	+			1
	<b><i>Hydrobia ventrosa</i></b>	+		+	+	+			
	<i>Potamopyrgus antipodarum</i>	+						+	+
	<i>Littorina saxatilis</i>	+							
	Bivalvia <b><i>Cerastoderma glaucum</i></b>	shells							
<b>Teleostei</b>									
	<i>Anguilla anguilla</i>	F, 1							
	<i>Gasterosteus aculeatus</i>	+	29	o	2	c	c	+	10
	<i>Pomatoschistus microps</i>				1				

*Palaemonetes varians* Decapod crustacean listed as a lagoonal specialist in the U.K. by Barnes (1989) and Bamber (1997), but apparently is no longer regarded as such. Although found in estuaries, this species appears to be far more characteristic of lagoons in Ireland, found in 64 of the 87 lagoons surveyed (73.6%) and may require a lagoonal environment for reproduction. Therefore, it remains on the proposed list of lagoonal specialists for Ireland.

*Enochrus bicolor* Water-beetle recorded at 12 lagoons of the 87 surveyed, from the southern half of the country from Co. Wicklow to Connemara including the Aran Islands. There are only two recent records from N. Ireland (Nelson *et al.* 1998).

*Hydrobia ventrosa*. Gastropod mollusc commonly found in brackish lagoons and ditches and generally not on the open coast. Recorded at 18 of the 87 (20.7%) lagoons surveyed up to 2006.

*Jaera ischiosetosa* Isopod crustacean recorded at 12 sites from West Cork to Donegal. The only previous record appears to be for L. Hyne. Co. Cork (Goss Custard *et al.* 1979).

The species assemblage typifies a medium salinity lagoon which has no direct contact with the sea. The medium salinity regime, good macrophyte growth and availability of both hard and soft substrates might be expected to provide conditions favouring a wide range of species, but the faunal richness was, in fact, low. In the absence of a sea inlet or frequent overwash, marine colonists presumably enter by way of rock fissures or some form of aerial transport. It is possible also that the eutrophic conditions which resulted in a severe algal bloom in July 1996 may have depleted the fauna. Blooms are not new to this lake, however, and were reported in the 1960s (Lansbury 1965). Previous studies indicate that conditions in the lake undergo wide fluctuations resulting in important variations in faunal composition. The salinity in 1974 (Pybus and Pybus 1981) was similar to that of 1996 but the fauna indicated a less saline regime with corixids (*Sigara stagnalis*), a beetle (*Enochrus halophilus*) (both lagoonal specialists) and a variety of insect larvae coexisting with *Neomysis*, *Palaemonetes*, *Jaera* and *Potamopyrgus*, while empty shells of barnacles and *Pomatocerus* indicated that a more marine environment had existed in the past

### Ecotonal coleoptera

Twenty six staphylinid and 15 carabid species were recorded in Lough Murree by Good & Butler (1998), including two indicator species (*Brundinia meridionalis*, *Stenus nigrutilus*), both of which are rare species. Based on ecotonal coleoptera, Lough Murree was described as of **significant conservation value**.

### Summary

The lagoon is fairly well documented. There are published accounts of algae, Hemiptera, fauna and hydrology. The presence of a University Field Station encourages further research projects. The lake obviously suffers from eutrophication and the invertebrate fauna recorded in this survey was poor. However, as a representative of an unusual morphological type of coastal lagoon with a rich aquatic flora its conservation value is high. Based on geomorphology, vegetation and an interesting ecotonal fauna Lough Murree is rated as of **high conservation value**.

**Overall Conservation Value = High**



<b>Conservation Status Assessment</b> (from Oliver 2007)	
Impacts	Accumulation of organic material causing natural eutrophication. Poached by cattle in some areas. Dumping.
Conservation Status	<b>Unfavourable-Inadequate</b>

### Further Information

The area was surveyed in 1840 and referred to as Lough Murry - salt lake. The fauna of the lake was sampled by Lansbury (1965) and an ecological survey was carried out by Pybus & Pybus (1980). Lough Murree was surveyed in 1996 for ecotonal coleoptera (Good 1996, Good & Butler 1998), aquatic vegetation (Hatch 1996, Hatch & Healy 1998) and aquatic fauna (Healy & Oliver 1996, Oliver & Healy 1998), results of which were summarised by Healy *et al.* (1997a,b,c), Healy & Oliver (1998), and Healy (1999, 2003). Sampled seasonally in 2002-3 and included in a biological classification of Irish coastal lagoons (Oliver 2005), and in the Conservation Status report (Oliver 2007).

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Aughinish lagoon was surveyed in 1996 for vegetation (Hatch 1996, Hatch & Healy 1998), aquatic fauna (Healy & Oliver 1996, Oliver & Healy 1998) and ecotonal coleoptera (Good 1996, Good & Butler 1998). Results of these surveys are summarised by Healy *et al.* (1997a,b,c), Healy & Oliver (1998) and Healy (1999, 2003).

Stations used for faunal sampling are not necessarily the same as those used for vegetation or ecotonal coleoptera.

### Flora

Aughinish Lagoon was surveyed by P. Hatch in 1996 (Hatch 1996, Hatch & Healy 1998). This is a high salinity site (31-33 ‰ at time of survey) with no major freshwater inflow and no aquatic higher plant species occur here. A total of 18 mostly common marine algal taxa were recorded.

*Cystoseira foeniculata* is frequent around most of the site and is typically the dominant species, with the exception of the southern shore. *Fucus serratus*, *Ulva lactuca* and *Codium tomentosum* are frequent and locally abundant along the southern shore. *Polysiphonia elongata* is occasional here. *Plocamium cartilagineum* is occasional up to 20m out from the northern barrier shore. *Osmundia hybrida* is rare here and near the northern shore of the eastern section of the site.

The dominant marginal community is saltmarsh dominated by *Puccinellia maritima*, *Suaeda maritima* and *Salicornia*. This forms a narrow strip along the southern shores and a more extensive cover on the lower-lying ground to the north of the site.

### Fauna

Five stations were selected for sampling in Aughinish lagoon (Figure 38.2, Table 38.1). A total of faunal 56 taxa were recorded (Healy & Oliver 1996, Oliver & Healy 1998), of which 54 were identified to species. Four species (*Balanus improvisus*, *Praunus flexuosus*, *Crangon crangon* and *Littorina saxatilis* are tolerant of lowered salinity but only one species (*Gammarus chevreuxi*) is a lagoonal specialist.

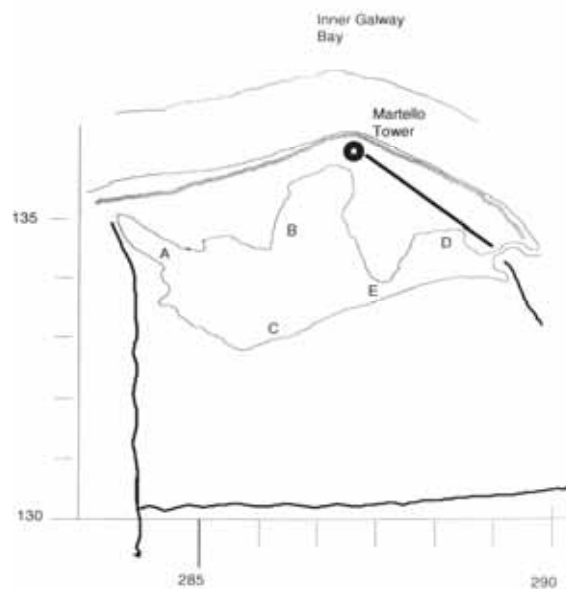


Figure 38.2 Sampling stations used at Aughinish lagoon.

As the salinity was equivalent to that of seawater, or hypersaline, throughout the lake, and there were no point sources of freshwater, only physical habitat differences are assumed to affect species composition and abundance at the different stations. The aquatic fauna is unusual

for a lagoon in that it is almost entirely marine. The single lagoonal species (*G. chevreuxi*) a rare amphipod, was only recorded as a single specimen.

Table 38.1 Positions of sampling stations in Aughinish lagoon, 5-6/8/96, with salinity, depth of water and type of substratum.

	Sta A	Sta B	Sta C	Sta D	Sta E
GPS position	M 2845 1345	M 2867 1348	M 2867 1329	M 2898 1346	M 2863 1334
Salinity(psu)	40	34	34	34	35
Depth(cm)	0-100	50-100	0-150	0-100	0-300
Substratum	Organic mud with large stones	Coarse sand, occasional rocks	Mud, sand, cobbles, large limestone rocks	Cobbles, coarse sand, gravel,	Cobbles, large rocks

*Gammarus chevreuxi* Amphipod crustacean confirmed only recently as an Irish species by the record of a small population in the Douglas Estuary (De Grave and Myers 1997). A single specimen was recorded at Aughinish lagoon, Co. Galway (Oliver & Healy 1998). The record from Durnesh L., Co Donegal is erroneous. Previously recorded from “N. Ireland, rarely” by Spooner in the Plymouth Marine Fauna (1957) and subsequently from Ireland by Pinkster (1978), but confirmation of these records was described as desirable by Costello *et al.* (1989). Recorded at Rostellan L. and Commoge Marsh, Co. Cork and recently (unconfirmed) from Ballyvodock and Raffeen (Cork) and Rincarna (Galway). Known only from six sites in England and Wales (Bamber *et al.* 2001b) where it is regarded as a rare lagoonal specialist. These records from Co. Cork and possibly Galway are of high conservation interest.

In conclusion, although there was only one lagoonal specialist recorded, based on aquatic fauna, Aughinish Lagoon is rated as of **high conservation value**.

Table 38.2 Aquatic Fauna Recorded in Aughinish Lagoon, Co. Clare. July and August 1996.

( ) = records for July. + = present; o = occasional; c = common; a = abundant; F = fyke net.  
L.T. = light-trap. Species in bold text are lagoonal specialists or rare species.

Taxa	Sampling Stations									
	A	L.T.A	B	L.T.B	C	L.T.C	D	L.T.D	E	
<b>Cnidaria</b>	<i>Anemonia viridis</i>	+				+				
	<i>Chrysaora hysoscella</i>							+		
<b>Annelida</b>	<i>Dynamena pumila</i>	+								
	<i>Arenicola marina</i>			+						
	<i>Capitella capitata</i>			+				+		
	<i>Hediste diversicolor</i>					+				
	<i>Lepidonotus squamatus</i>	+								
	<i>Pomatoceros triqueter</i>	+							+	
	<i>Polychaeta indet.</i>								+	
<b>Crustacea</b>	<i>Spirorbis rupestris</i>	+				+				
	Copepoda						+			
	Cirripedia <i>Balanus balanus</i>					+				
	<i>Semibalanus balanoides</i>	+				+				
	Mysidacea <i>Mysidopsis gibbosa</i>						10		22	22
	<i>Praunus flexuosus</i>	a	22	+	+	a	6	a	25	25
	Isopoda <i>Idotea baltica</i>	+								
	Amphipoda <i>Dexamine spinosa</i>					+			+	
	<b><i>Gammarus chevreuxi</i></b>		+							
	<i>G. duebeni</i>	+								
	<i>G. locusta</i>	+	+			+		+		
	<i>Melita palmata</i>								+	
	<i>Talitrus saltator</i>								+	
	Decapoda <i>Carcinus maenas</i>	+		+		+			+	
	<i>Crangon crangon</i>	c	6			a	2	+	2	2
	<i>Hippolyte varians</i>	1							o	
	<i>Macropodium rostrata</i>	+		+		+				
<i>Pagurus bernhardus</i>			+							
<i>P. elegans</i>					a	1	a			
<i>P. serratus</i>	+				o					
<i>Thorulus cranchii</i>								1		
<b>Mollusca</b>	Polyplacophora <i>Lepidochitona cinerea</i>	+				+		+		
	Prosobranchia <i>Bittium reticulatum</i>	+						+		
	<i>Gibbula umbilicalis</i>								c	
	<i>Littorina littorea</i>	+								
	<i>L. saxatilis</i>								o	
	<i>Patella aspera</i>								+	
	Opisthobranchia <i>Aeolidia papillosa</i>	(+)								
	<i>Elysia viridis</i>					+			+	
	Bivalvia <i>Cerastoderma edule</i>			?					+	
	<i>Modiolarca tumida</i>					1				
	<i>Mytilus edulis</i>	+				+			+	
	<i>Ostrea edulis</i>	+				+				
<i>Venerupis sp.</i>								2		
<b>Bryozoa</b>	<i>Alcyonidium gelatinosum</i>					+				
	<i>Bowerbankia gracilis</i>	+								
	<i>Cryptosula pallasiana</i>	+		+						
<b>Echinodermata</b>	<i>Amphipholis squamata</i>	+		+				+		
	<i>Asciella aspersa</i>	+		+				+		
<b>Tunicata</b>	<i>A. scabra</i>	+		+		+		+		
	<i>Botryllus schlosseri</i>	+				+				
	<i>Clavelina lepadiformis</i>	+								
	<i>Diplosoma lysterianum</i>	+				+		+		
	<i>Anguilla anguilla</i>	F, 4								
	<i>Ciliata mustela</i>	F, 1								
<b>Teleostei</b>	<i>Pollachius pollachius</i>	F, 6								
	<i>Pomatoschistus microps</i>	+				+				

### Ecotonal coleoptera

Only three carabid and one staphylinid species were recorded at Aughinish lagoon (Good & Butler 1998), none of which are indicator species. Based on ecotonal coleoptera, the site was rated as of **no conservation value**.



**Summary**

Aughinish lagoon is a good example of a coastal lagoon of an unusual type with a rich collection of marine fauna. Salinity is always high but the fact that it becomes hypersaline indicates at least temporary isolation from the sea and restricted tidal exchange. The shallow water and virtual absence of tides, together with the close proximity to Galway, make it a potentially useful site for teaching purposes. Despite the paucity of lagoonal specialists, the fauna is rich. Overall conservation value is rated as high.

**Overall Conservation Value = High****Conservation Status Assessment (from Oliver 2007)**

Impacts	Natural damage to barrier may destroy lagoon. Accumulation of organic material. Naturally eutrophic. Erosion. Silting up.
Conservation Status	<b>Unfavourable-Inadequate</b>

**Further Information**

Aughinish lagoon was surveyed in 1996 for vegetation (Hatch 1996, Hatch & Healy 1998), aquatic fauna (Healy & Oliver 1996, Oliver & Healy 1998) and ecotonal coleoptera (Good 1996, Good & Butler 1998). Results of these surveys are summarised by Healy *et al.* (1997a,b,c), Healy & Oliver (1998), and Healy (1999, 2003). Included in a biological classification of Irish coastal lagoons (Oliver 2005) and in the Conservation Status Assessment (Oliver 2007).

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4.39

Rossalia, County Clare O.S. M 310 116

O.S. Discovery Sheet 51



**Conservation Designation:** Galway Bay complex SAC 000268, pNHA 000268

**General description:**

Situated 8.5km west of Kinvarra, Co. Galway. A small (3ha), shallow (<2m) **artificial lagoon** formed behind a coastal embankment, ranging in salinity at the time of sampling (19/10/06) from 29 to 31psu.

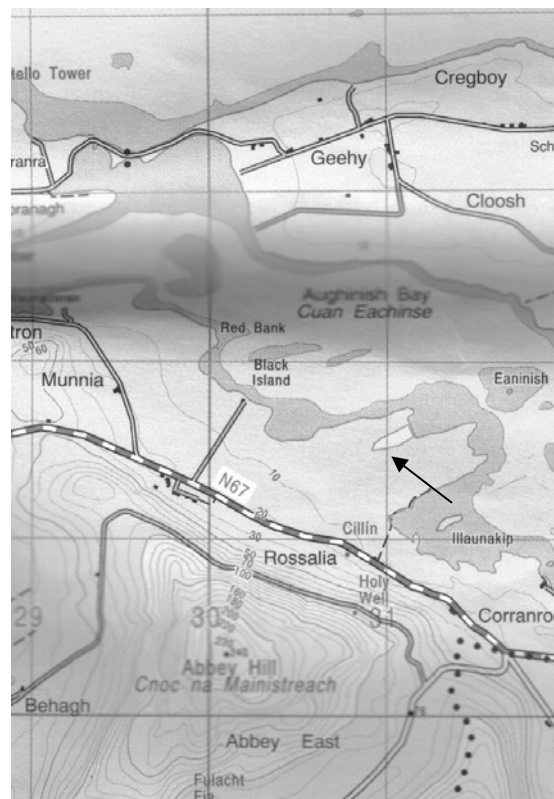


Figure 39.1 Location map of Rossalia lagoon.



**Ruppia spp.** are the most characteristic aquatic plant taxa of Irish coastal lagoons. The species are hard to distinguish when not flowering, and remain uncertain at some sites, but *Ruppia* of one species or the other (*R. maritima*, *R. maritima* var *brevirostris*, *R. cirrhosa*) was found at 62 of the 87 lagoons (71.3%) surveyed, and is one of the most useful indicators of coastal lagoon status. ***Ruppia maritima*** appears to be the more common of the species and was found at 41 of the 87 lagoons surveyed. None of the other plants recorded are of any special interest.

Based on aquatic vegetation, Rossalia lagoon is regarded as of **low conservation value** as a coastal lagoon.

### Fauna

A total of 31 faunal taxa were recorded at Rossalia in 2006 (Table 39.2). Only two species are lagoonal specialists, but one of these (unconfirmed) is a rare species.

Table 39.2 Aquatic fauna recorded at sampling stations in Rossalia lagoon, Co. Clare 19/10/06. c = common; o = occasional; r = rare. Species in bold text are lagoonal specialists.

Taxa		Sampling Stations			
		Sta 1	Sta 2	Sta 3	
<b>Porifera</b>	<i>Halichondria panicea</i>			drift ?	
<b>Cnidaria</b>	<b><i>Gonothyrea loveni</i></b>	<b>o</b>	<b>o</b>		
	<i>Hydractinia echinata</i>		<b>r</b>	<b>o</b>	
<b>Nematoda</b>	indet.		<b>o</b>		
<b>Annelida</b>	Polychaeta	<i>Arenicola</i> agg.		<b>c</b>	
		<i>Janua pagenstecheri</i>	<b>o</b>	<b>c</b>	
		<i>Nereis diversicolor</i>	<b>o</b>	<b>r</b>	<b>o</b>
		<i>Playnereis dumerili</i>		<b>r</b>	<b>o</b>
	Oligochaeta	Tubificidae indet.	<b>o</b>	<b>o</b>	
	<b>Crustacea</b>				
Tanaidacea	<i>Tanais dulongi</i>	<b>r</b>			
Mysidacea	<i>Neomysis integer</i>	<b>c</b>	<b>c</b>		
	<i>Praunus flexuosus</i>		<b>o</b>	<b>c</b>	
Isopoda	<b><i>Idotea chelipes</i></b>	<b>o</b>	<b>o</b>		
Amphipoda	<i>Gammarus duebeni</i>	<b>o</b>	<b>c</b>	<b>c</b>	
	<i>Microdeutopus gryllotalpa</i>	<b>c</b>	<b>c</b>	<b>c</b>	
	<i>Stenothoe monoculoides</i>	<b>o</b>	<b>o</b>		
Decapoda	<i>Carcinus maenas</i>	<b>o</b>	<b>o</b>	<b>o</b>	
	<i>Pagurus bernhardus</i>		<b>r</b>	<b>c</b>	
	<i>Palaemon elegans</i>		<b>c</b>	<b>c</b>	
<b>Mollusca</b>					
Gastropoda	<i>Hydrobia ulvae</i>		<b>o</b>	<b>o</b>	
	<i>Littorina littorea</i>			<b>o</b>	
	<i>Littorina obtusata</i>			<b>o</b>	
Opisthobranchia	indet.			<b>r</b>	
Bivalvia	<i>Tapes decussata</i>	<b>o</b>			
<b>Bryozoa</b>	<i>Alcyonidium gelatinosum</i>			<b>o</b>	
	<i>Bowerbankia gracilis</i>		<b>o</b>	<b>c</b>	
	<i>Cryptosula pallasiana</i>			<b>o</b>	
<b>Tunicata</b>	<i>Asciidiella aspersa</i>	<b>o</b>	<b>o</b>	<b>c</b>	
	<i>Ciona intestinalis</i>			<b>c</b>	
<b>Pisces</b>	<i>Pomatoschistus microps</i>			<b>c</b>	

***Gonothyrea loveni***. Hydroid listed as a lagoonal specialist in Britain by Downie (1996) and JNCC (1996). Recorded only at L. an Aibhnín and an unconfirmed

record from Rossalia, Co. Clare. There is a record of its occurrence in the Belmullet Canal, Co. Mayo from material collected by P. Hayward in 1971 (B. Picton *pers comm.*) but there appear to be no other records of its occurrence in Ireland other than a record (as *G. hyalina*) in Co. Louth by Duerden (1894).

*Idotea chelipes* is a common, lagoonal, isopod crustacean, often found in association with the lagoonal form of *Chaetomorpha linum*. Found at 23 of the 87 (26.4%) lagoons surveyed, mostly at relatively high salinity.

The aquatic fauna of Rossalia is interesting with a relatively high number of species recorded for such a small site. Only two lagoonal specialists were recorded, but one (unconfirmed) of these (*G. loveni*) is a rare species. Otherwise the fauna is unusual with colonies of the tunicate *Ciona intestinalis* and the hydroid *Hydractinia echinata* on hermit crab shells. Based on this fauna, the site is regarded as of **moderate conservation value** as a coastal lagoon.

### Summary

Rossalia is a small **artificial "estuarine", lagoon**, but a small amount of *Ruppia* was recorded and the fauna is interesting with only two lagoonal specialists, but one (unconfirmed) of these (*G. loveni*) is a rare species. Otherwise the fauna is unusual with colonies of the tunicate *Ciona intestinalis* and the hydroid *Hydractinia echinata* on hermit crab shells.

**Overall Conservation Value = Moderate**

### Conservation Status Assessment (from Oliver 2007)

Impacts	Moderate eutrophication in shallow lagoon but significant tidal flushing. Poaching by cattle. Silting up.
Conservation Status	<b>Unfavourable-Inadequate</b>

### Further Information

Listed as a lagoon by Healy *et al.* 1997, Healy 2003 and Oliver 2005 and included in the Conservation Status Assessment (Oliver 2007).

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**Conservation Designation:** Galway Bay complex SAC 000268,  
SPA 004031, pNHA 000268

**General description:**

Rincarna Pools comprise two small (0.5ha) natural **karst lagoons** with a sedimentary **cobble/shingle barrier**, situated 2.5km northwest of Ballinderreen, Co. Galway on a peninsula on the southeast shore of Galway Bay. Both pools were highly saline, measuring 34.6 (pool 1) and 39.7psu (pool 2) at the time of sampling (22/7/06) and appear to suffer from eutrophication, possibly due to natural accumulations of marine algae.

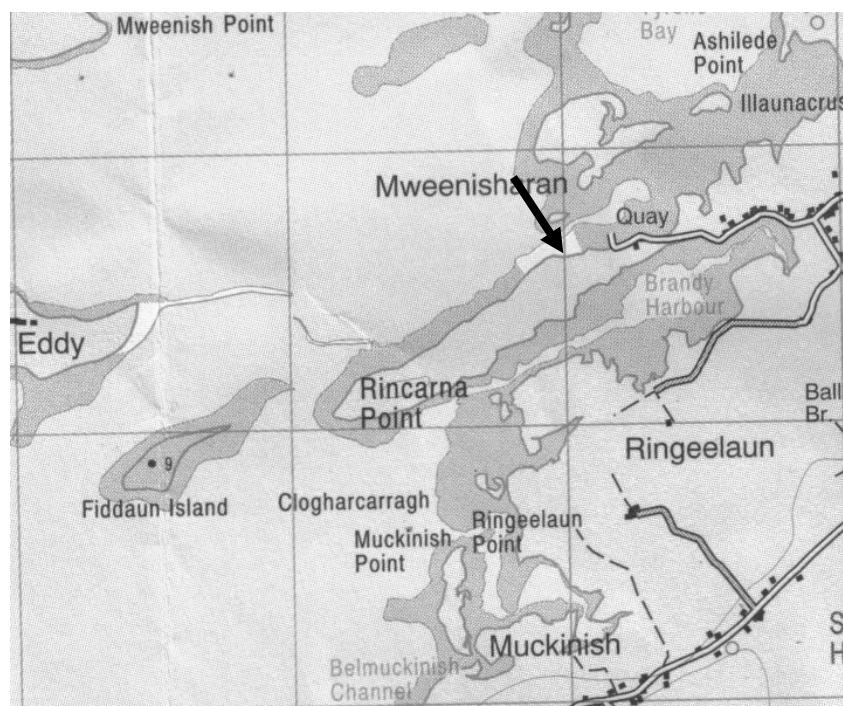


Figure 46.1 Location map of Rincarna Pools.

Rincarna Pools were surveyed on 22/7/06 for aquatic fauna and flora. The pools are small and each one was treated as a single sampling station (Figure 46.2. Table 46.1)

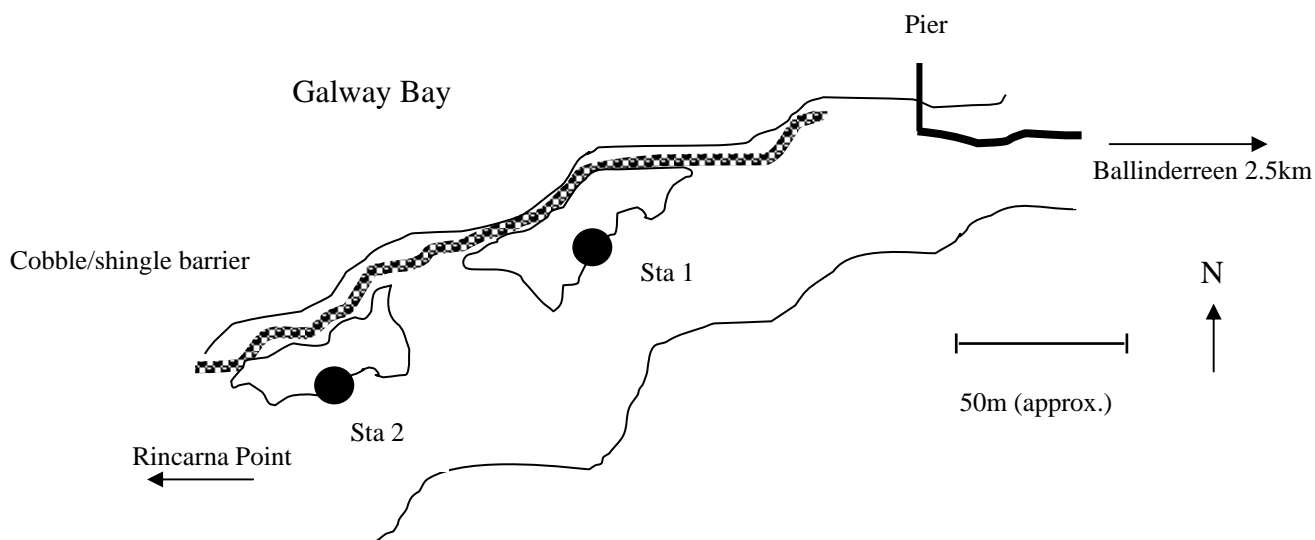


Figure 46.2 Sampling stations at Rincarna Pools, 22/7/06

### Flora

Only five floral taxa were recorded in Rincarna Pools at the time of sampling (Table 46.1). The eastern pool (Sta 1) appeared to be highly eutrophic and largely anoxic, with a 30% cover of a pink bacterial mat (*Beggiatoa*) and 60% cover of filamentous algae, one of which (*Chaetomorpha linum*) is a lagoonal specialist.

Table 46.1 Positions of sampling stations in Rincarna Pools, Co. Galway 22/07/2006, with hydrological variables (salinity, temperature and depth of water), type of substratum and percent cover of vegetation and bare ground. Species in bold text are lagoonal specialists.

	Sta 1	Sta 2
GPS position	M 36970 16540	M 36879 16466
Salinity (psu)	34.6	39.7
Temperature at surface	20.2	19.6
Depth (cm)	0-120	0-100
Substratum	cobbles, soft mud	cobbles, soft mud
<b>Percentage cover</b>		
<b>Bacterial mat</b> ( <i>Beggiatoa</i> )	30	5
<b>Algae</b>		
Chlorophyceae		
<i>Chaetomorpha linum</i>	20	80
<i>Cladophora ?rupestris</i>	10	1
<i>Enteromorpha</i> sp.	30	5
Phaeophyceae		
<i>Cystseira</i> sp.	drift	
<i>Fucus vesiculosus</i>	drift	drift
Bare ground	10	10
Cobbles	20	

There is some doubt about the taxonomic status of the unattached lagoonal form of *C. linum*, and it was recorded by Hatch and Healy (1998) as *C. mediterranea*. It is a common, characteristic alga of semi-isolated Irish lagoons, recorded at 49 of the 87 (56.3%) lagoons surveyed.

The western pool (Sta 2) was almost completely dominated by this alga. It appeared that other species may have been “choked” and out-competed by these filamentous algae, which may occur periodically, and the vegetation of these pools may be more interesting at another time.

Although highly eutrophic and dominated largely by just one species (*C. linum*), this is a characteristic lagoonal specialist and based on aquatic vegetation, as a coastal lagoon the site is regarded as of **moderate conservation value**.

## Fauna

For such small pools, the fauna is quite rich with a total of 30 faunal taxa recorded (Table 46.2), of which five are regarded as lagoonal specialists. However, two of these remain to be confirmed (*G. chevreuxi*, *H. ventrosa*). There is some doubt about the species of *Idotea*, but is likely to be another lagoonal specialist, *I. chelipes*. Most of the other taxa recorded are common marine animals.

*Idotea chelipes* is a common, lagoonal, isopod crustacean, often found in association with the lagoonal form of *Chaetomorpha linum*. Found at 23 of the 87 (26.4%) lagoons surveyed, mostly at relatively high salinity.

*Lekanesphaera hookeri* is a common lagoonal isopod crustacean, found at 37 of the 87 lagoons surveyed (42.5%).

*Gammarus chevreuxi* Amphipod crustacean confirmed only recently as an Irish species by the record of a small population in the Douglas Estuary (De Grave and Myers 1997). A single specimen was recorded at Aughinish lagoon, Co. Galway (Oliver & Healy 1998). The record from Durnesh L., Co Donegal is erroneous. Previously recorded from “N. Ireland, rarely” by Spooner in the Plymouth Marine Fauna (1957) and subsequently from Ireland by Pinkster (1978), but confirmation of these records was described as desirable by Costello *et al.* (1989). Recorded at Rostellan L. and Commoge Marsh, Co. Cork and recently (unconfirmed) from Ballyvodock and Raffeen (Cork) and Rincarna (Galway). Known only from six sites in England and Wales (Bamber *et al.* 2001b) where it is regarded as a rare lagoonal specialist. These records from Co. Cork and possibly Galway are of high conservation interest.

*Palaemonetes varians* Decapod crustacean listed as a lagoonal specialist in the U.K. by Barnes (1989) and Bamber (1997), but apparently is no longer regarded as such. Although found in estuaries, this species appears to be far more characteristic of lagoons in Ireland, found in 64 of the 87 lagoons surveyed (73.6%) and may require a lagoonal environment for reproduction. Therefore, it remains on the proposed list of lagoonal specialists for Ireland.

*Hydrobia ventrosa*. Gastropod mollusc commonly found in brackish lagoons and ditches and generally not on the open coast. Recorded at 18 of the 87 (20.7%) lagoons surveyed up to 2006.

*Conopeum seurati* Bryozoan recorded at 49 of the 87 lagoons surveyed (56.3%), but is not listed in a recent review of Irish marine Bryozoa (Wyse Jackson 1991). Either the species is under-recorded or is truly a lagoonal specialist.

The pools are small and at the time of sampling appeared highly eutrophic, however the aquatic fauna is relatively rich with a complement of lagoonal specialists, two of which may be rare species. Based on this fauna the site is regarded as of **high conservation value**.

Table 46.2 Aquatic fauna recorded at sampling stations in Rincarna pools, Co. Galway 22/7/06. (a = abundant; c = common; o = occasional; r = rare) Species in bold text are lagoonal specialists or rare species.

Taxa		Sampling Stations		
		Sta 1	Sta 2	
<b>Cnidaria</b>	<i>Actinia equina</i>	<b>o</b>	<b>o</b>	
	<i>Dynamena pumila</i>		<b>o</b>	
<b>Nemertea</b>	<i>Lineus viridis</i>		<b>o</b>	
<b>Nematoda</b>	indet.	<b>r</b>		
<b>Annelida</b>	Polychaeta	<i>Capitella capitata</i>	<b>o</b>	
		Spirorbidae indet.	<b>a</b>	
		? <i>Neodexiospira</i> sp.	<b>a</b>	
<b>Crustacea</b>	Ostracoda	indet.	<b>o</b>	
	Mysidacea	<i>Praunus flexuosus</i>	<b>r</b>	
	Isopoda	<i>Idotea</i> sp.	<b>c</b>	<b>o</b>
		<b><i>Lekanesphaera hookeri</i></b>	<b>r</b>	
	Amphipoda	<b><i>Gammarus ?chevreuxi</i></b>	<b>a</b>	<b>o</b>
		<i>Melita palmata</i>	<b>o</b>	
		<i>Microdeutopus gryllotalpa</i>	<b>c</b>	
		? <i>Microprotopus</i>	<b>c</b>	
	Decapoda	<i>Carcinus maenas</i>	<b>o</b>	
		<b><i>Palaemonetes varians</i></b>	<b>r</b>	<b>o</b>
	<b>Acarina</b>	indet.	<b>r</b>	<b>r</b>
	<b>Insecta</b>	Diptera	<i>Ephydra riparia</i>	<b>o</b>
Chironomidae indet.			<b>o</b>	
<b>Mollusca</b>	Gastropoda	<i>Bittium reticulatum</i>	<b>r</b>	
		<i>Hydrobia ulvae</i>	<b>o</b>	
		<b><i>Hydrobia ?ventrosa</i></b>	<b>o</b>	
		<i>Littorina littorea</i>	<b>o</b>	
		<i>Rissoa membranacea</i>	<b>o</b>	
		<i>Modiolus barbatus</i>	<b>o</b>	
<b>Bryozoa</b>	Bivalvia	<b><i>Conopeum seurati</i></b>	<b>o</b>	
		<i>Cryptosula pallasiana</i>	<b>a</b>	
<b>Teleostei</b>		<i>Atherina presbyter</i>	<b>r</b>	
		<i>Gasterosteus aculeatus</i>	<b>r</b>	

### Summary

The two lagoons referred to as Rincarna Pools are natural **karst lagoons** with **sedimentary cobble barriers** and as such are examples of a relatively rare lagoon type in Europe. They are small and appear to be heavily impacted by accumulations of organic material (possibly natural) and the barrier appears weak and could easily be damaged by storms. One pool in particular was largely anoxic at the time of sampling. However, the other pool is more typically lagoonal and is dominated by the lagoonal specialist alga, *Chaetomorpha linum*. The fauna is interesting with a relatively high number of lagoonal specialists, one of which (*G. chevreuxi* unconfirmed) may be rare. A repeat visit which may reveal less eutrophic conditions is recommended. As an unusual lagoon type with a relatively rich lagoonal community, overall, the site is rated as of high conservation value.

**Overall Conservation Value = High**

Conservation Status Assessment (from Oliver 2007)	
Impacts	Natural damage to cobble barrier may destroy lagoon habitat. One pool highly eutrophic.
Conservation Status	Unfavourable-Inadequate

### Further Information

Listed as a lagoon by Healy *et al.* 1997, Healy 2003 and Oliver 2005 and included in the Conservation Status Assessment (Oliver 2007).

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**Conservation Designation:** Galway Bay complex

SAC 000268, SPA 004031, pNHA 000268

**General description:**

Bridge Lough is a small (3ha), shallow (<1m), partly artificial **karst lagoon** situated on the south side of Galway Bay, 10 km west of Kinvarra, County Clare. The lake is impounded by a causeway which allows a limited tidal exchange through a small outlet. Restriction of tidal flushing through construction of the causeway with such a small outlet appears to have resulted in colmatisation and a concentration of nutrients. The lagoon is privately owned and it was not possible to carry out the more intensive survey of aquatic fauna due to objections from a landowner.



Figure 47.1 Location map of Bridge Lough.



Bridge Lough was surveyed in 1996 for vegetation (Hatch 1996, Hatch & Healy 1998), aquatic fauna (Healy & Oliver 1996, Oliver & Healy 1998) and ecotonal coleoptera (Good 1996, Good & Butler 1998). Results of these surveys are summarised by Healy *et al.* (1997a,b,c), Healy & Oliver (1998) and Healy (1999, 2003).

Stations used for faunal sampling are not necessarily the same as those used for vegetation or ecotonal coleoptera.

## Flora

The vegetation of Bridge Lough was surveyed by P. Hatch in 1996 (Hatch 1996, Hatch & Healy 1998). The lagoon is dominated by an almost complete cover over the entire site of the filamentous green alga, *Chaetomorpha linum*. The only higher plant species recorded was *Ruppia maritima* which was restricted to a small area on the south western shore. Both of these species are lagoonal specialists:

***Chaetomorpha linum***. There is some doubt about the taxonomic status of the unattached lagoonal form of this species, and it was recorded by Hatch and Healy (1998) as *C. mediterranea*. It is a common, characteristic alga of semi-isolated Irish lagoons, recorded at 49 of the 87 (56.3%) lagoons surveyed.

***Ruppia spp.*** are the most characteristic aquatic plant taxa of Irish coastal lagoons. The species are hard to distinguish when not flowering, and remain uncertain at some sites, but *Ruppia* of one species or the other (*R. maritima*, *R. maritima* var *brevirostris*, *R. cirrhosa*) was found at 62 of the 87 lagoons (71.3%) surveyed, and is one of the most useful indicators of coastal lagoon status. *Ruppia maritima* appears to be the more common of the species and was found at 41 of the lagoons surveyed (47%).

Marginal vegetation shows no notable variation. *Puccinellia maritima* dominated saltmarsh forms a more or less narrow strip around most of the site with *Schoenoplectus lacustris* ssp *tabernaemontani* locally dominant in a small bay in the south west corner of the site.

## Fauna

The fauna of Bridge Lough was surveyed briefly in 1996 (Healy & Oliver 1996, Oliver & Healy 1998), but was restricted by objections from the landowner. The following assessment is based on a single collection made at two stations (Table 45.1, Figure 45.2).

Table 47.1 Positions of faunal sampling stations in Bridge Lough, 23/6/96, with salinity, depth of water and type of substratum.

	Sta A	Sta B
GPS position	M 3405 1306	M 3407 1285
Salinity(psu)	37	37
Depth(cm)	0-50	0-100
Substratum	Soft organic mud, large stones	Soft organic mud, limestone rocks

Among 20 taxa recorded (Table 45.2), 18 are identified to species, of which six are listed as a lagoonal specialists in Britain.

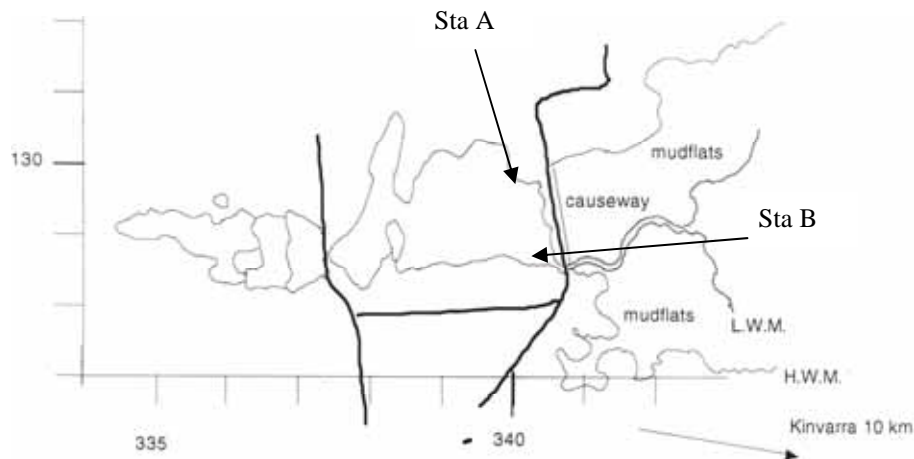


Figure 47.2 Sampling stations used at Bridge Lough.

*Idotea chelipes* is a common, lagoonal, isopod crustacean, often found in association with the lagoonal form of *Chaetomorpha linum*. Found at 23 of the 87 (26.4%) lagoons surveyed, mostly at relatively high salinity.

*Palaemonetes varians* Decapod crustacean listed as a lagoonal specialist in the U.K. by Barnes (1989) and Bamber (1997), but apparently is no longer regarded as such. Although found in estuaries, this species appears to be far more characteristic of lagoons in Ireland, found in 64 of the 87 lagoons surveyed (73.6%) and may require a lagoonal environment for reproduction. Therefore, it remains on the proposed list of lagoonal specialists for Ireland.

*Enochrus bicolor* Water-beetle recorded at 12 lagoons of the 87 surveyed, from the southern half of the country from Co. Wicklow to Connemara including the Aran Islands. There are only two recent records from N. Ireland (Nelson *et al.* 1998).

*Hydrobia ventrosa*. Gastropod mollusc commonly found in brackish lagoons and ditches and generally not on the open coast. Recorded at 18 of the 87 (20.7%) lagoons surveyed up to 2006.

*Cerastoderma glaucum* Bivalve mollusc. A common lagoonal specialist found at 30 of the 87 lagoons (34.5%) surveyed.

*Conopeum seurati* Bryozoan recorded at 49 of the 87 lagoons surveyed (56.3%), but is not listed in a recent review of Irish marine Bryozoa (Wyse Jackson 1991). Either the species is under-recorded or is truly a lagoonal specialist.

*Cercyon littoralis* was recorded at Bridge L. and Mill L. in 1996 (Oliver and Healy, 1998) and at L. an Aibhnín and Kilmore Lake in 1998. Driftline species with few recent records.

Most of the recorded species occurred on the thick masses of *Enteromorpha* or *Chaetomorpha*, or on stones on the soft substratum. *Idotea chelipes* and *Cerastoderma glaucum* were particularly abundant. A feature of the site was the presence of a dark variety of the common beadlet anemone *Actinia equina*, a variety also found at Ballyvodock, Co. Cork and known to be tolerant of brackish conditions.

The short list of species indicates an assemblage characteristic of a lagoon in which medium to high salinities are maintained by frequent tidal incursions. The relatively high proportion of lagoonal specialists makes it particularly interesting.

For the high number of species in such a small lagoon and the high proportion of lagoonal specialists, Bridge Lough is rated as of **moderate to high conservation value**.

Further investigations should be carried out if possible as a more detailed survey may indicate a higher rating.

Table 47.2 Fauna Recorded in Bridge Lough, Co. Galway. 23/6/96,  
+ = present; o = occasional; c = common; a = abundant. Species in bold text are lagoonal specialist or rare species.

Taxa		Sampling Stations	
		A	B
<b>Cnidaria</b>	<i>Actinia equina</i>	(c)	c
<b>Annelida</b>	<i>Arenicola marina</i>	(c)	
<b>Crustacea</b>			
	Mysidacea <i>Praunus flexuosus</i>	(+)	
	Isopoda <b><i>Idotea chelipes</i></b>	(a)	
	<i>Jaera sp.</i>	(+)	
	Amphipoda <i>Dexamine spinosa</i>	(+)	(+)
	Decapoda <i>Carcinus maenas</i>	(+)	+
	<b><i>Palaemonetes varians</i></b>	(c)	
<b>Insecta</b>			
	Coleoptera <b><i>Enochrus bicolor</i></b>	+	
	<b><i>Cercyon littoralis</i></b>	+	
	Diptera Chironomidae	(c)	
<b>Mollusca</b>			
	Prosobranchia <b><i>Hydrobia ventrosa</i></b>	(c)	
	<i>Littorina littorea</i>	(o)	c
	Opisthobranchia <i>Limapontia depressa</i>	(+)	
	Bivalvia <b><i>Cerastoderma glaucum</i></b>	a	
	<i>Mytilus edulis</i>		c
<b>Bryozoa</b>	<b><i>Conopeum seurati</i></b>	+	
<b>Teleostei</b>	<i>Pomatoschistus microps</i>	1	
	<i>Gasterosteus aculeatus</i>	+	

### Ecotonal coleoptera

Twenty eight species of staphylinid and eleven species of carabid were recorded at Bridge lough by Good & Butler (1998, Healy 1999), only one of which (***Brundinia meridionalis***) is an indicator species. Based on ecotonal coleoptera, the site is regarded as of **no conservation interest**.

### Summary

Bridge Lough is a **karst lagoon**, which is an unusual lagoon type in Europe, but it is partly artificial that it is formed partly by construction of a causeway. The lake appears to be highly eutrophic and seems unlikely to improve in the immediate future, and there has been at least one attempt recent infill parts of it. The vegetation is dominated by two lagoonal specialist species (***C. linum***, ***R. maritima***) and despite the fact that only one area was sampled, and very briefly, some interesting species were recorded with a relatively high proportion of lagoonal specialists. Based on aquatic invertebrates the lake is of moderate conservation value as an artificial lagoonal environment. Ov Bridge Lough is small and rated as of moderate conservation value, but further investigations are encouraged.

**Overall Conservation Value = Moderate**

### Conservation Status Assessment (from Oliver 2007)

Impacts	Moderate eutrophication in shallow lagoon but significant tidal flushing. Silting up.
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**Further Information**

Bridge Lough was surveyed in 1996 for vegetation (Hatch 1996, Hatch & Healy 1998), aquatic fauna (Healy & Oliver 1996, Oliver & Healy 1998) and ecotonal coleoptera (Good 1996, Good & Butler 1998). Results of these surveys are summarised by Healy *et al.* (1997a,b,c), Healy & Oliver (1998), and Healy (1999, 2003). Included in a biological classification of Irish coastal lagoons (Oliver 2005) and in the Conservation Status Assessment (Oliver 2007).

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**4.48** **Doorus Lakes (3), County Galway O.S. M 357 117**  
**O.S. Discovery Sheet 52**



**Conservation Designation:** Galway Bay complex SAC 000268 pNHA 000268

**General description:**

Doorus Lakes are a group of small **karst** lakes situated 2km northwest of Kinvarra, Co. Galway. Three of these, L. Fadda, L. Namona and a small un-named pool are brackish and regarded as lagoons. All others in the area are believed to be freshwater and were not surveyed. However, this is a difficult area to survey due to undulating topography and difficult access across small fields with high overgrown stone walls, and other lagoons may have been overlooked.

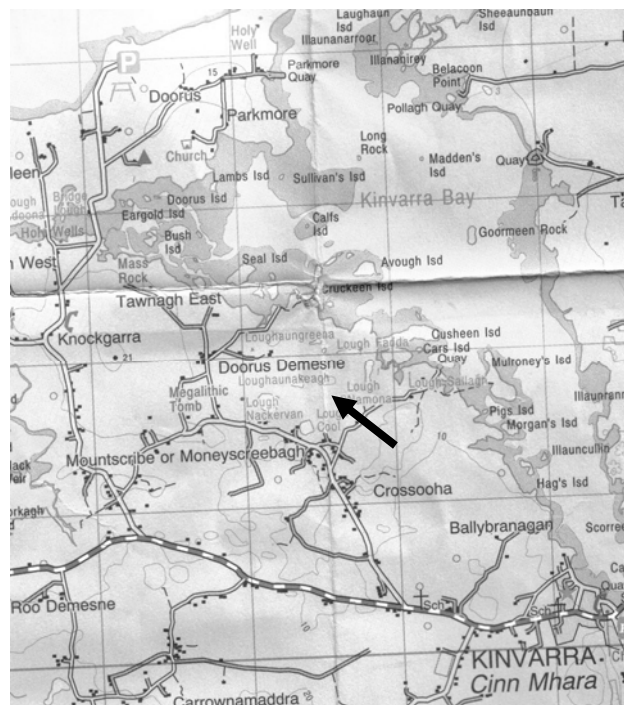


Figure 48.1 Location map of Doorus Lakes.

Doorus Lakes were surveyed on 22-23/7/06 and 18-19/10/06 for aquatic fauna and flora. Four stations were selected for sampling at this time (Figure 48.2, Table 48.1)

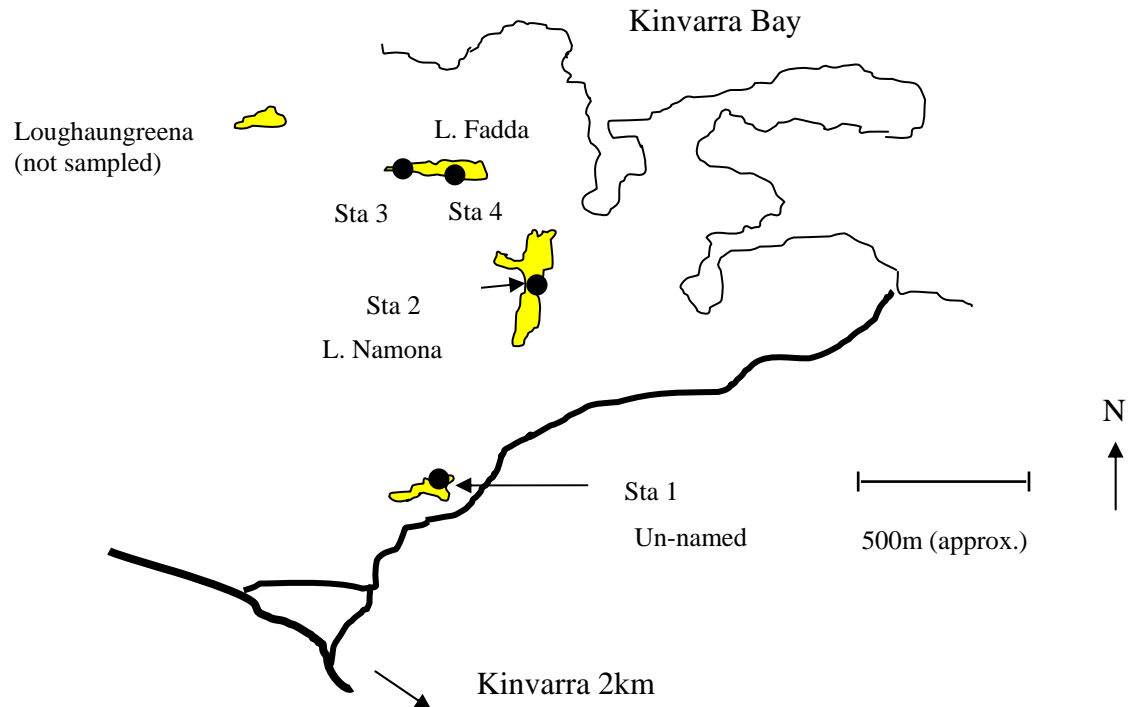


Figure 48.2 Sampling stations used at Doorus Lakes on 22-23/7/06 and 18-19/10/06

### Flora

Only five floral taxa were recorded in the three pools sampled in 2006, although all three pools are quite different from each other.

The small pool beside the road un-named on the O.S. Discovery map (Sta 1) is very shallow and is almost (90%) bare, very soft marl, with a fringe of *Schoenoplectus lacustris* and a few decaying plants of what may have been *Ruppia*. It was rather surprising to find that this pool was brackish and may have been more interesting in the past, but it now appears to be threatened by encroaching marginal vegetation, nutrient enrichment from domestic waterfowl and deliberate infilling.

Lough Namona (Sta 2) is the most interesting site with dense growths of *Ruppia maritima* and it is somewhat surprising that no charophytes were found at this site. This lagoon appears to be eutrophic and is poached by cattle along most of the shoreline.

Lough Fadda is similar to the small pool by the road except that it is larger, but is mostly bare very soft marl with a dense growth of *Schoenoplectus lacustris* around the margins. It is also very shallow and may dry out almost completely in the summer.

*Ruppia spp.* are the most characteristic aquatic plant taxa of Irish coastal lagoons. The species are hard to distinguish when not flowering, and remain uncertain at some sites, but *Ruppia* of one species or the other (*R. maritima*, *R. maritima* var *brevirostris*, *R. cirrhosa*) was found at 62 of the 87 lagoons (71.3%) surveyed, and is one of the most useful indicators of coastal lagoon status.

*Ruppia maritima* appears to be the more common of the species and was found at 41 of the lagoons surveyed (47%).



Based on vegetation, apart from the fact that one pool is dominated by *R. maritima*, Doorus Lakes are not botanically interesting, and as coastal lagoons, they are rated as of **low conservation value**.

Table 48.1 Positions of sampling stations in Doorus Lakes, with hydrological variables (salinity, temperature and depth of water) type of substratum and percent cover of vegetation, bare ground and rotting vegetation. Species in bold text are lagoonal specialist species.

	L. Namona		L. Fadda	
	Sta 1	Sta 2	Sta 3	Sta 4
GPS position	M 35745 11540	M 35819 11887	W 35546 12031	W 35004 12017
Salinity (psu)	1.6	16.2	6.4	8.5
Temperature	20.6	23.3	13.7	13.6
Depth (cm)	10-20	0-40	0-50	0-100
Substratum	soft mud, marl	soft mud in centre, stones & limestone pavement	soft mud in centre, stones & limestone pavement  (may dry out in summer)	soft mud in centre, stones & limestone pavement  (perhaps anoxic in summer)
Percentage cover				
Algae				
Chlorophyceae				
<i>Cladophora</i> sp.		5	60	
<i>Enteromorpha</i> sp.	+		+	
Angiosperms				
<i>Juncus</i> sp.			30	20
<b><i>Ruppia maritima</i></b>	?	70		
<i>Schoenoplectus lacustris</i>	10		60	
Bare soft mud	90	20		70
Rotting vegetation		5		

## Fauna

A total of 28 faunal taxa were recorded at Doorus Lakes, of which four species are lagoonal specialists (Table 48.2), but all of these are relatively common in lagoonal habitats. Somewhat surprisingly, the “lagoon prawn” *Palaemonetes varians* was found in the small pool beside the main road (Sta 1). The water boatman *Sigara stagnalis* was found in L. Namona and L. Fadda. Small shells of *Cerastoderma glaucum* were also found in L. Namona, as were small patches of the bryozoan *Conopeum seurati*.

*Palaemonetes varians* is listed as a lagoonal specialist in the U.K. by Barnes (1989) and Bamber (1997), but apparently is no longer regarded as such. Although found in estuaries, this species appears to be far more characteristic of lagoons in Ireland, found in 64 of the 87 lagoons surveyed (73.6%) and may require a lagoonal environment for reproduction. Therefore, it remains on the proposed list of lagoonal specialists for Ireland.

*Sigara stagnalis* A common lagoonal specialist found at 36 of the 87 (41.4%) lagoons surveyed.

*Cerastoderma glaucum* A common lagoonal specialist found at 30 of the 87 lagoons (34.5%) surveyed.

*Conopeum seurati* Recorded at 49 of the 87 lagoons surveyed (56.3%), but is not listed in a recent review of Irish marine Bryozoa (Wyse Jackson 1991). Either the species is under-recorded or is truly a lagoonal specialist.

Table 48.2 Faunal taxa recorded at stations in Doorus Lakes 2006.

r = rare, o = occasional, c = common, a = abundant . Species in bold text are lagoonal specialist species.

		Sta 1	L. Namona Sta 2	L. Fadda Sta 3	Sta 4
<b>Annelida</b>					
	Polychaeta		<i>Nereis diversicolor</i>	<b>o</b>	
	Oligochaeta	<b>o</b>	Tubificidae indet.		<b>o</b>
<b>Crustacea</b>					
	Ostracoda	<b>o</b>	indet.	<b>o</b>	<b>o</b>
	Copepoda		Calanoida indet.	<b>a</b>	
			Harpacticoida indet.	<b>o</b>	<b>o</b>
	Isopoda	<b>o</b>	<i>Idotea</i> sp.		
	Amphipoda		<i>Gammarus duebeni</i>	<b>o</b>	<b>o</b>
	Decapoda	<b>o</b>	<b><i>Palaemonetes varians</i></b>	<b>o</b>	
<b>Acarina</b>					
		<b>o</b>	indet.		
<b>Insecta</b>					
	Trichoptera			<b>r</b>	<b>c</b>
	Heteroptera	<b>r</b>	<i>Notonecta</i> sp.		
		<b>o</b>	<i>Sigara lateralis</i>		
		<b>c</b>	<i>Sigara nigrolineata</i>		
			<b><i>Sigara stagnalis</i></b>	<b>a</b>	<b>o</b>
	Coleoptera	<b>o</b>	<i>Helophorus fulgidicollis</i>		
			<i>Hydrobius</i> sp.	<b>o</b>	<b>o</b>
		<b>o</b>	<i>Hydroporus</i> sp.	<b>o</b>	
		<b>a</b>	<i>Hygrotus</i> sp.		
		<b>o</b>	<i>Noterus clavicornis</i>	<b>o</b>	
	Diptera		Chironomidae indet.	<b>c</b>	
			Syrphidae indet.	<b>o</b>	
<b>Mollusca</b>					
	Gastropoda		<i>Hydrobia ulvae</i>	<b>r</b>	
		<b>o</b>	<i>Lymnaea peregra</i>		
			<i>Potamopyrgus antipodarum</i>	<b>c</b>	<b>o</b>
	Bivalvia		<b><i>Cerastoderma glaucum</i></b>	<b>Spat shells</b>	
<b>Bryozoa</b>					
			<b><i>Conopeum seurati</i></b>	<b>o</b>	
<b>Pisces</b>					
			<i>Gasterosteus aculeatus</i>	<b>c</b>	

Doorus Lakes are interesting brackish pools with a total of 4 lagoonal specialist species, but all of these are common in lagoonal habitats in Ireland. As coastal lagoons, they are rated as of **low conservation value**.

### Summary

The lagoons of Doorus Lakes are interesting natural **karst lagoons** but they are small and largely impacted by nutrient inputs and poaching from cattle. Biologically, they again are interesting, with five lagoonal specialists (1 floral and 4 faunal species), but all of these are common in lagoonal habitats in Ireland. These lagoons may have been more interesting in the recent past, and perhaps may improve, but based on results of the survey in 2006, they are rated as of **low conservation value**. However, some of the beetle species remain to be identified and a repeat visit may reveal greater conservation value.

**Overall Conservation Value = Low**



<b>Conservation Status Assessment (from Oliver 2007)</b>	
Impacts	Moderate eutrophication in shallow lagoons. Cattle poaching in some areas. Very low water levels in dry summers.
Conservation Status	<b>Unfavourable-Inadequate</b>

#### **Further Information**

Listed as a lagoon by Healy *et al.* 1997, Healy 2003 and Oliver 2005 and included in the Conservation Status Assessment (Oliver 2007).

#### References:

- Bamber, R.N. 1997. Assessment of saline lagoons within Special Areas of Conservation. *English Nature Research Reports* No. 235.
- Barnes, R.S.K. 1989. Coastal lagoons of Britain: an overview and conservation appraisal. *Biological Conservation* **49**: 295–313.
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4.49

**Mweeloon pools (2) County Galway O.S. M 335 196**  
O.S. Discovery Sheet 52



**Conservation Designation:** Galway Bay complex SAC 000268,  
SPA 004031, pNHA 000268

**General description:**

Mweeloon Pools are two small (0.5ha) natural “**saltmarsh**” lagoons, situated 9km southwest of Oranmore, Co. Galway, on a peninsula at the eastern end of Galway Bay. The lagoons are shallow (<1m) and separated by the main road running east to Tawin. Salinity at the time of sampling (17-18/10/06) measured 29.7psu in both lagoons.

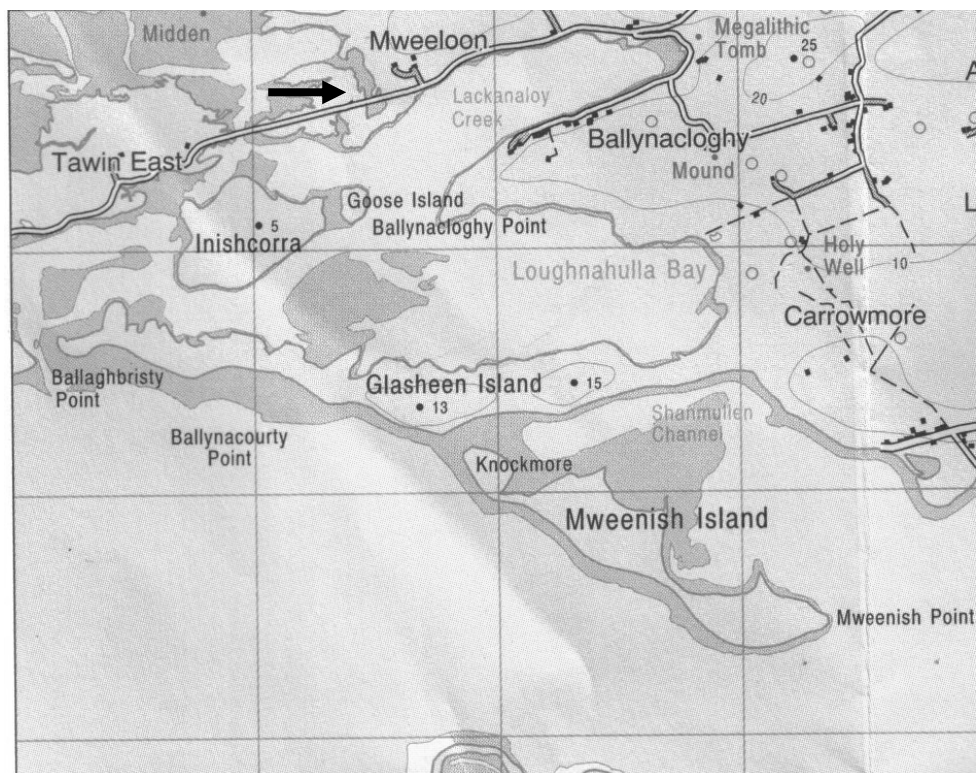


Figure 49.1 Location map of Mweeloon Pools.

Mweeloon Pools were surveyed from 17-18/10/06 for aquatic fauna and flora. The pools are small and each pool was regarded as one sampling station at this time (Figure 49.2, Table 49.1)

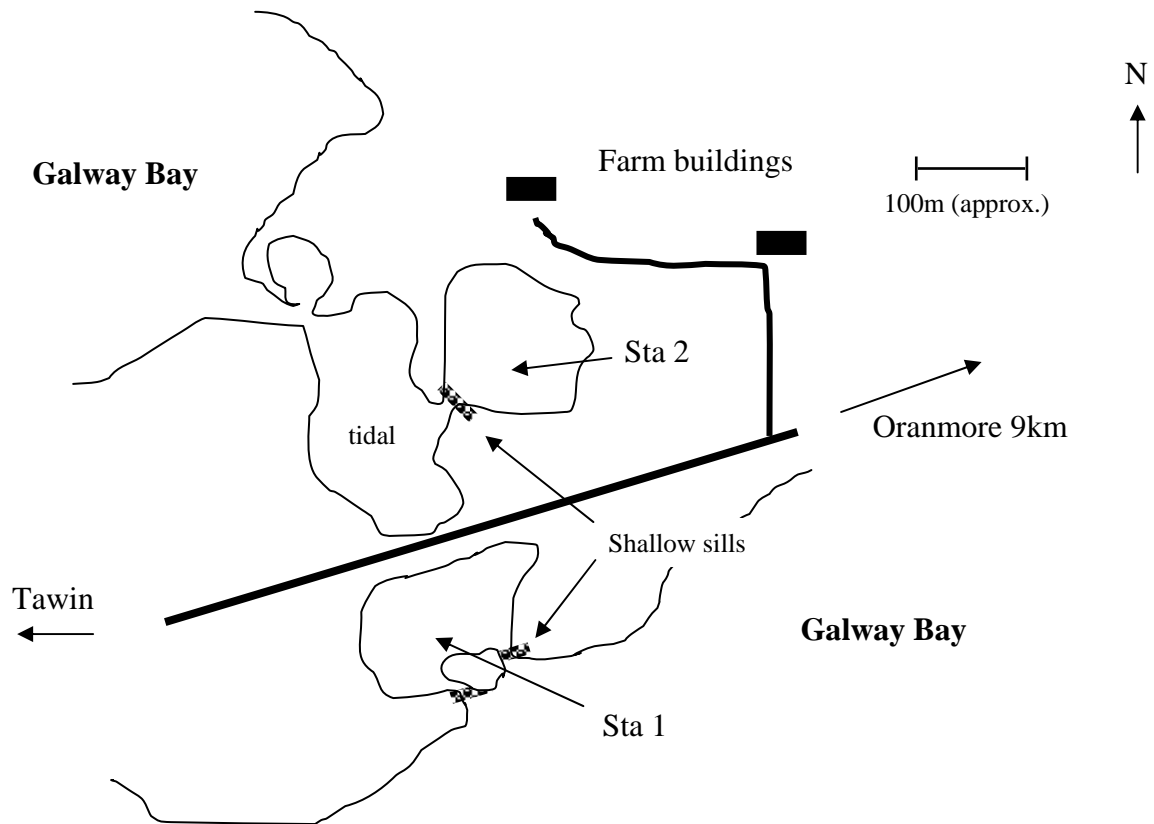


Figure 49.2 Sketch map of sampling stations at Mweeloon Pools from 17-18/10/06.

### Flora

A total of 11 floral taxa were recorded in Mweeloon Pools on 17-18/10/06, most of which are common marine algae (Table 49.1), but two species are regarded as lagoonal specialists:

***Chaetomorpha linum***. There is some doubt about the taxonomic status of the unattached lagoonal form of this species, and it was recorded by Hatch and Healy (1998) as *C. mediterranea*. It is a common, characteristic alga of semi-isolated Irish lagoons, recorded at 49 of the 87 (56.3%) lagoons surveyed.

***Ruppia* spp.** are the most characteristic aquatic plant taxa of Irish coastal lagoons. The species are hard to distinguish when not flowering, and remain uncertain at some sites, but *Ruppia* of one species or the other (*R. maritima*, *R. maritima* var *brevirostris*, *R. cirrhosa*) was found at 62 of the 87 lagoons (71.3%) surveyed, and is one of the most useful indicators of coastal lagoon status. ***Ruppia maritima*** appears to be the more common of the species and was found at 41 of the lagoons surveyed (47%).

The pool north of the road (Sta 2) is the slightly deeper pool with a more interesting flora, with abundant *Ruppia* (30% cover) and a small fragment of *Chara* sp. was found in this pool, but despite a careful search no other charophytes were found. A repeat visit is recommended to search for more of this charophyte which may prove to be a rare species.

The pool south of the road (Sta 1) is a more "estuarine" type lagoon, very shallow with extensive areas of bare mud, but also with rafts of *C. linum*.

Table 49.1 Positions of sampling stations in Mweeloon pools, with sampling date, hydrological variables (salinity, temperature and depth of water) type of substratum and percent cover of vegetation and bare ground and rotting vegetation. Species in bold text are "lagoonal specialist" species.

Date of survey	17-18/10/2006	
	Sta 1	Sta 2
GPS position	M 33474 19611	M 33596 19702
Salinity (psu)	29.7	29.7
Temperature	13.6	12.5
Depth (cm)	0-30	0-60
substratum	soft mud, gravel	gravel, stones, soft mud
<b>Percentage cover</b>		
<b>Algae</b>		
<b>Chlorophyceae</b>		
<i>Chaetomorpha linum</i>	40	20
<i>Enteromorpha</i> sp.	2	2
<i>Ulva</i> sp.	+	+
<b>Phaeophyceae</b>		
<i>Ascophyllum nodosum</i>	+	+
<i>Fucus vesiculosus</i>	2	2
<i>Pelvetia canaliculata</i>	+	+
<b>Rhodophyceae</b>		
<i>Chondrus crispus</i>	+	+
<i>Gigartina stellaris</i>	+	
<i>Gracilaria verrucosa</i>	+	+
<i>Polysiphonia</i> sp.	+	+
<b>Charophyceae indet.</b>	?	
<b>Angiosperms</b>		
<i>Ruppia maritima</i>		30
<b>Bare soft mud</b>	50	30
<b>Stones</b>	10	20

The pools are small but the aquatic vegetation is interesting and characteristically lagoonal. Based on this vegetation the site is regarded as of **moderate conservation value** as a coastal lagoon.

## Fauna

The fauna of these pools is surprisingly rich with a total of 53 taxa recorded (Table 49.2). Most of these are common marine animals and only three are lagoonal specialist species, all of which are common in lagoonal habitats, but the unidentified *Corophium* species is possibly *C. insidiosum* which is another specialist and a rare species.

*Corophium insidiosum* Amphipod crustacean recorded for the first time in Ireland (Oliver *et al.* 2007) at three lagoons in Co. Cork (Rostellan, Cuskinny, Rosscarbery), following Pinkster's prediction (1978) that it would be found in Ireland. Recent unconfirmed record from Raffeen (Co. Cork). Regarded as a lagoonal specialist in England but possibly an introduced invasive species in Ireland.

*Palaemonetes varians* Decapod crustacean listed as a lagoonal specialist in the U.K. by Barnes (1989) and Bamber (1997), but apparently is no longer regarded as such. Although found in estuaries, this species appears to be far more characteristic of lagoons in Ireland, found in 64 of the 87 lagoons surveyed (73.6%) and may require a lagoonal environment for reproduction. Therefore, it remains on the proposed list of lagoonal specialists for Ireland.

*Cerastoderma glaucum* Bivalve mollusc. A common lagoonal specialist found at 30 of the 87 lagoons (34.5%) surveyed.

Table 49.2 Faunal taxa recorded at stations in Mweeloon pools 17-18/10/06  
 r = rare, o = occasional, c = common, a = abundant; species in bold text are lagoonal specialist species.

		Sta 1	Sta 2
<b>Porifera</b>	<i>Halichondria panicea</i>	o	
<b>Cnidaria</b>	<i>Actinia equina</i>	c	o
	<i>Laomedea flexuosus</i>	r	
	<i>Anthopleura</i> sp.	a	c
<b>Nematoda</b>	indet.	o	
<b>Nemertea</b>	<i>Lineus ?viridis</i>	c	o
<b>Annelida</b>			
Polychaeta	<i>Arenicola defodiens</i>	a	a
	<i>Manayunkia estuarina</i>	o	
	<i>Nereis diversicolor</i>	o	?
	<i>Orbinia</i> sp.	o	
	<i>Pomatoceros triqueter</i>		o
	Spionid indet.	r	
	<i>Janua pagenstecheri</i>	c	c
	<i>Spirorbis spirorbis</i>	o	
Oligochaeta	Tubificidae indet.	o	
<b>Crustacea</b>			
Cirripedia	<i>Balanus crenatus</i>	o	o
	<i>Elminius modestus</i>	o	o
Mysidacea	<i>Praunus flexuosus</i>	o	c
Isopoda	<i>Idotea ?baltica</i>	a	o
Amphipoda		c	o
	<b><i>Corophium ?insidiosum</i></b>	c	
	<i>Melita palmata</i>	o	
	<i>Microdeutopus gryllotalpa</i>	c	c
	<i>Stenothoe ?</i>	o	o
Decapoda	<i>Carcinus maenas</i>	c	c
	<i>Palaemon elegans</i>	o	o
	<b><i>Palaemonetes varians</i></b>	c	c
<b>Insecta</b>			
Diptera	Chironomidae indet.	o	o
<b>Mollusca</b>			
Polyplacophora	<i>Lepidochitona cinerea</i>	c	c
Gastropoda	<i>Cerithiopsis tubercularis</i>	o	
	<i>Hydrobia ulvae</i>	c	a
	<i>Littorina littorea</i>	c	c
	<i>Littorina saxatilis</i>		c
	? <i>Pusillina sarsi</i>	o	o
	<i>Rissoa membranacea</i>	o	a
	<i>Skeneopsis planorbis</i>	o	o
Opisthobranchia	<i>Limapontia</i> sp.	o	o
Bivalvia	<b><i>Cerastoderma glaucum</i></b>	c	?
	<i>Modiolula phaseolina</i>		r
	<i>Mytilus edulis</i>	c	
	<i>Tapes decussata</i>	r	
<b>Bryozoa</b>	<i>Bowerbankia gracilis</i>	o	c
	<b><i>Conopeum seurati</i></b>	o	o
	<i>Cryptosula pallasiana</i>	a	a
<b>Echinodermata</b>	<i>Amphipholis squamata</i>		c
<b>Tunicata</b>	? <i>Aplidium proliferum</i>		o
	<i>Ascidia scabra</i>		o
	<i>Botryllus schlosseri</i>		c
	<i>Ciona intestinalis</i>	o	c
	<i>Clavelina lepadiformis</i>	o	
<b>Pisces</b>	<i>Anguilla anguilla</i>		r
	<i>Gasterosteus aculeatus</i>	o	c
	<i>Gobius niger</i>		r
	<i>Pomatoschistus microps</i>	c	c

*Conopeum seurati* Bryozoan recorded at 49 of the 87 lagoons surveyed (56.3%), but is not listed in a recent review of Irish marine Bryozoa (Wyse Jackson 1991). Either the species is under-recorded or is truly a lagoonal specialist.

The aquatic fauna of these two pools is surprisingly rich for such a small area. Only three of the recorded species are lagoonal specialists, but one other species (*C. insidiosum* unconfirmed) appears to be another specialist which is a rare species in Ireland. Based on this fauna the site is regarded as of **moderate conservation value**.

### Summary

The lagoons referred to as Mweeloon Pools are small and geomorphologically not of great interest but biologically they are relatively rich, especially the northern pool. In total, a large number of taxa were recorded in 2006 with five lagoonal specialists (2 floral, 3 faunal) and another unconfirmed species (*C. insidiosum*) is a rare lagoonal specialist amphipod. A small fragment of charophyte was found and the site should be revisited to look for more evidence of this possibly rare species. Overall, the site is rated as of **moderate conservation value**.

**Overall Conservation Value = Moderate**

### Conservation Status Assessment (from Oliver 2007)

Impacts	Natural eutrophication. Poached by cattle in some areas. Small area of infilling
Conservation Status	<b>Unfavourable-Inadequate</b>

### Further Information

Listed as a lagoon by Healy *et al.* 1997, Healy 2003 and Oliver 2005 and included in the Conservation Status Assessment (Oliver 2007).

### References:

- Bamber, R.N. 1997. Assessment of saline lagoons within Special Areas of Conservation. *English Nature Research Reports* No. 235.
- Barnes, R.S.K. 1989. Coastal lagoons of Britain: an overview and conservation appraisal. *Biological Conservation* **49**: 295–313.
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- Healy, B. 2003. Coastal Lagoons. In: *Wetlands of Ireland*. R. Otte (ed). Chapter 4. University College Dublin Press. Dublin. 44-78.
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- Pinkster, S. 1978. Amphipoda. In: *Limnofauna Europea*. Illies, J. (ed), 2nd, ed., Stuttgart, Fischer. 244-253.
- Wyse Jackson, P.N. 1991. Distribution of Irish marine Bryozoa, together with biographical notes relating to the chief researchers in the group. *Bulletin of the Irish Biogeographical Society*. **14**: 129-18.



4.50

**Ardfry Oyster pond, County Galway O.S. M 351 211**  
O.S. Discovery Sheet 46



**Conservation Designation:** Galway Bay complex SAC 000268, pNHA 000268

**General description:**

Ardfry Oyster Pond is a small (0.5ha), shallow (<1ha) **artificial “estuarine” lagoon**, 5km southwest of Oranmore, Co. Galway, on a peninsula leading to Ardfry Point, on the eastern shore of Galway Bay. The pond was presumably created for the cultivation of Oysters and is formed in a small bay with a sluiced inlet. Salinity is presumably generally high and measured 23.6psu on 17/10/06, after a period of heavy rainfall



Figure 50.1 Location map of Ardfry Oyster pond.

Ardfry Oyster pond was surveyed in 2005/2006 for aquatic fauna and flora. 17/10/2006. Ardfry Pond is a small lagoon and the entire lagoon was sampled as one sampling station at this time (Figure 50.2, Table 50.1)

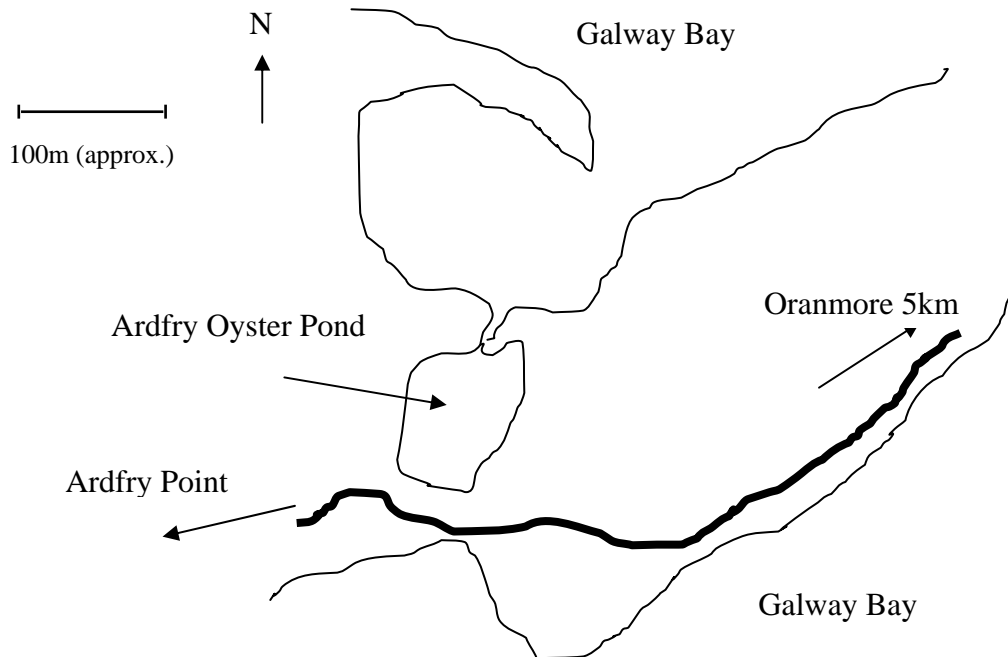


Figure 50.2 Sketch map of Ardfry Oyster Pond, Co. Galway.

### Flora

The lagoon is described as an “estuarine lagoon” and most of the bed of the lagoon is bare mud (Table 50.1). A total of 14 floral taxa were recorded on 17/10/06, mostly near the inlet, and most of which are common marine algae, but one species, *Chaetomorpha linum*, is regarded as a lagoonal specialist, though only small amounts were found.

There is some doubt about the taxonomic status of the unattached lagoonal form of *C. linum*, and it was recorded by Hatch and Healy (1998) as *C. mediterranea*. It is a common, characteristic alga of semi-isolated Irish lagoons, recorded at 49 of the 87 (56.3%) lagoons surveyed.

Based on this flora, the site is regarded as of **low conservation value** as a coastal lagoon.



Table 50.1 Percentage cover of vegetation and bare ground in Ardfry Oyster Pond, 17/10/2006, with salinity, temperature, depth of water and type of substratum. Species in bold text are lagoonal specialist species.

Salinity (psu)		23.6 (after heavy rain)
Temperature		13.6
Depth (cm)		0-70
Substratum		soft mud, gravel, shells
<b>Percentage cover</b>		
<b>Algae</b>		
Chlorophyceae	<b><i>Chaetomorpha linum</i></b>	1
	<i>Cladophora</i> sp.	20
	<i>Cladophora rupestris</i>	10
	<i>Enteromorpha</i> sp.	+
	<i>Ulva</i> sp.	+
Phaeophyceae	<i>Ascophyllum nodosum</i>	+
	<i>Fucus vesiculosus</i>	5
	<i>Fucus serratus</i>	5
	<i>Pelvetia canaliculata</i>	+
Rhodophyceae	<i>Ceramium</i> sp.	10
	<i>Chondrus crispus</i>	+
	<i>Chondria tenuissima</i>	10
	<i>Furcellaria lumbricalis</i>	+
	<i>Gracilaria verrucosa</i>	+
<b>Bare soft mud</b>		70
<b>Stones</b>		5

## Fauna

The fauna of Ardfry Oyster Pond is quite rich with a total of 36 taxa recorded on 17/10/06 (Table 50.2), most of which are common marine animals. Only three taxa are regarded as lagoonal specialists and all of these are relatively common in lagoonal habitats.

***Rissoa membranacea* var.** Gastropod mollusc recorded at eleven of the 87 lagoons surveyed on the west coast from Co. Cork to Co. Galway and also at Castle Espie, Co. Down. These records refer to a 'lagoonal' variety of the species, proposed as a lagoonal specialist for Ireland by Oliver and Healy (1998).

***Cerastoderma glaucum*** Bivalve mollusc. A common lagoonal specialist found at 30 of the 87 lagoons (34.5%) surveyed.

***Conopeum seurati*** Bryozoan recorded at 49 of the 87 lagoons surveyed (56.3%), but is not listed in a recent review of Irish marine Bryozoa (Wyse Jackson 1991). Either the species is under-recorded or is truly a lagoonal specialist. None of the other faunal species appear to be of particularly high conservation interest.

The aquatic fauna of the pond is interesting and relatively rich, but only three lagoonal specialists were recorded, all of which are relatively common in lagoonal habitats in Ireland. Based on this fauna, the site is regarded as of **moderate conservation value** as a coastal lagoon.

Table 50.2 Faunal taxa recorded in Ardfry Oyster pond 17/10/06.

r = rare, o = occasional, c = common, a = abundant. Species in bold text are lagoonal specialists.

<b>Porifera</b>		<i>Halichondria panicea</i>	<b>c</b>
<b>Cnidaria</b>		<i>Actinia equina</i>	<b>c</b>
<b>Nematoda</b>		indet.	
<b>Annelida</b>			
	Polychaeta	<i>Arenicola</i> agg.	<b>a</b>
		<i>Janua pagenstecheri</i>	<b>a</b>
		<i>Lepidonatus clava</i>	<b>r</b>
		<i>Platynereis dumerili</i>	<b>c</b>
		<i>Pomatoceros triqueter</i>	<b>c</b>
<b>Crustacea</b>			
	Mysidacea	<i>Praunus flexuosus</i>	<b>c</b>
	Amphipoda	<i>Gammarus</i> sp.	<b>r</b>
		<i>Microdeutopus gryllotalpa</i>	<b>c</b>
	Decapoda	<i>Carcinus maenas</i>	<b>o</b>
		<i>Pagurus bernhardus</i>	<b>o</b>
		<i>Palaemon elegans</i>	<b>c</b>
		<i>Palaemon serratus</i>	<b>c</b>
<b>Insecta</b>			
	Diptera	Chironomidae indet.	<b>r</b>
<b>Mollusca</b>			
	Polyplacophora	<i>Lepidochitona cinerea</i>	<b>c</b>
	Gastropoda	<i>Cerithiopsis tuberculosus</i>	<b>c</b>
		<i>Gibbula umbilicalis</i>	<b>o</b>
		<i>Hydrobia ulvae</i>	<b>o</b>
		<i>Littorina littorea</i>	<b>c</b>
		<i>Littorina saxatilis</i>	<b>o</b>
		<b><i>Rissoa membranacea</i> var.</b>	<b>o</b>
	Opisthobranchia	<i>Elysia viridis</i>	<b>o</b>
	Bivalvia	<i>Anomia ephyppium</i>	<b>o</b>
		<b><i>Cerastoderma glaucum</i></b>	<b>r</b>
		<i>Chlamys varia</i>	<b>c</b>
		<i>Modiolula phaseolina</i>	<b>c</b>
		<i>Mytilus edulis</i>	<b>o</b>
		<i>Ostrea edulis</i>	<b>o</b>
		<i>Tapes decussata</i>	shells
<b>Bryozoa</b>		<b><i>Conopeum seurati</i></b>	<b>o</b>
		<i>Alcyonidium gelatinosum</i>	<b>o</b>
		<i>Bowerbankia gracilis</i>	
<b>Tunicata</b>		<i>Ascidella aspersa</i>	<b>o</b>
		<i>Ciona intestinalis</i>	<b>o</b>
<b>Pisces</b>		<i>Pomatoschistus microps</i>	<b>o</b>

### Summary

Ardfry Oyster Pond is a small, artificial lagoon. The biota is quite rich with 14 floral and 36 faunal taxa recorded, but only four of these are lagoonal specialists, all of which are relatively common in lagoonal habitats. Most of the lagoon consists of bare mud with very little fauna or flora. Although artificial, the lagoon functions naturally and is not heavily impacted and overall, it is regarded as of **moderate conservation value**.

**Overall Conservation Value = Moderate**

### Conservation Status Assessment (from Oliver 2007)

Impacts	Artificial but no major impacts.
Conservation Status	<b>Favourable</b>

**Further Information**

Listed as a lagoon by Healy *et al.* 1997, Healy 2003 and Oliver 2005 and included in the Conservation Status Assessment (Oliver 2007).

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**References:**

- Hatch, P. & Healy, B. 1998. Aquatic vegetation of Irish coastal lagoons. *Bulletin of the Irish Biogeographical Society*. **21**: 2-21.
- Healy, B. 2003. Coastal Lagoons. In: *Wetlands of Ireland*. R. Otte (ed). Chapter 4. University College Dublin Press. Dublin. 44-78.
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- Wyse Jackson, P.N. 1991. Distribution of Irish marine Bryozoa, together with biographical notes relating to the chief researchers in the group. *Bulletin of the Irish Biogeographical Society*. **14**: 129-18.

4.51

**Turreen Lough (Rinvile), County Galway O.S. M 363 232**  
O.S. Discovery Sheet 46



**Conservation Designation:** Galway Bay complex SAC 000268, pNHA 000268

**General description:**

Turreen Lough is a small (3ha), shallow (<1m) natural “**saltmarsh lagoon**” with an artificial sluiced inlet, situated 2.5km southwest of Oranmore, Co. Galway on the south side of Oranmore Bay. Salinity probably varies considerably but measured 12.5-16.7psu at the time of sampling (14/10/06).

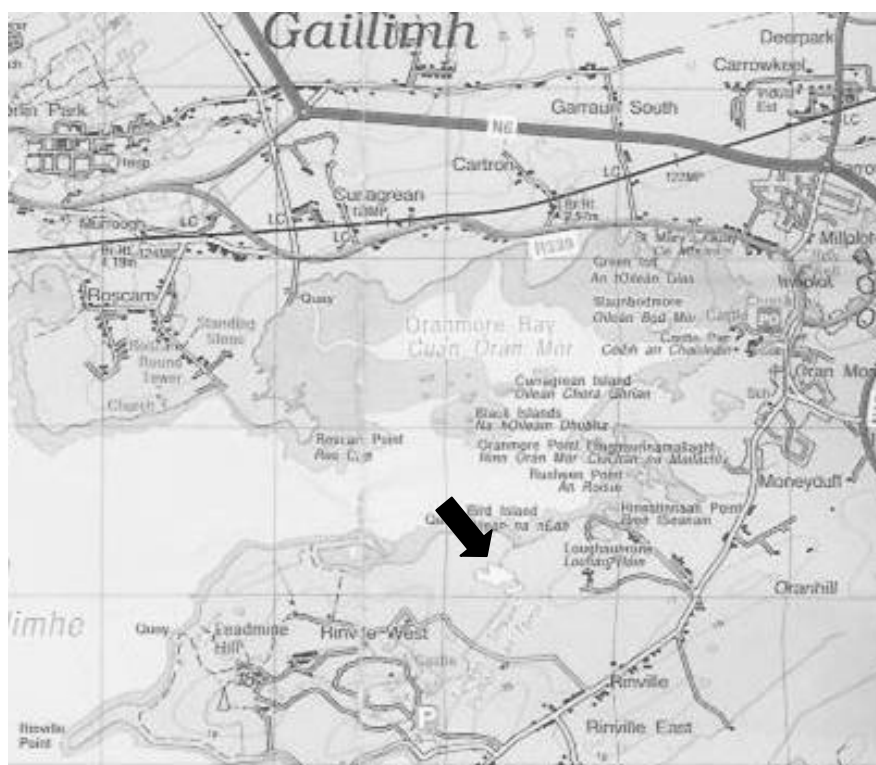


Figure 51.1 Location map of Turreen Lough (Rinvile).

Turreen Lough was surveyed on 14/10/06 for aquatic fauna and flora. Three stations were selected for sampling at this time (Figure 51.2, Table 51.1)

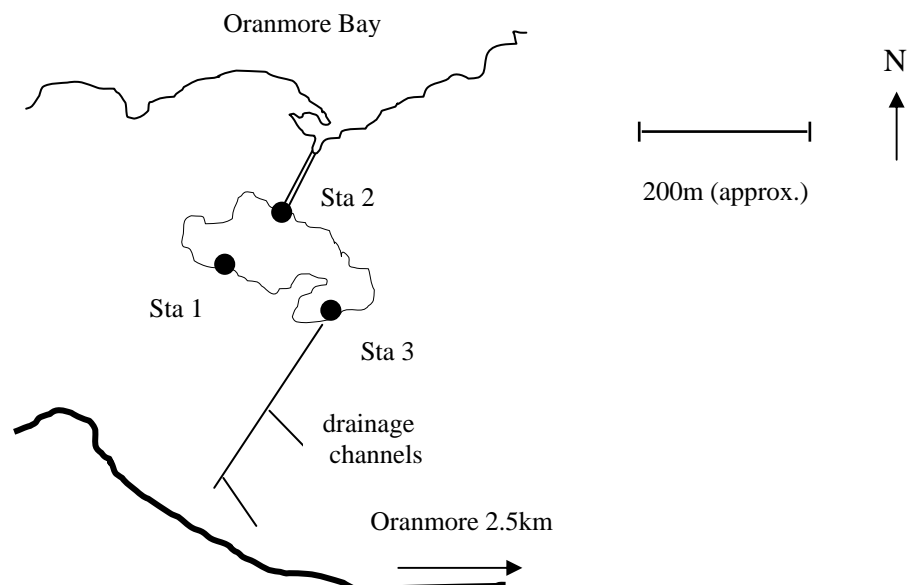


Figure 51.2 Sampling stations used at Turreen Lough on 14/10/06.

## Flora

Turreen Lough is an “estuarine” lagoon and much of the bed of the lagoon is bare mud (Table 51.1). Only 12 floral taxa were recorded on 14/10/06, most of which are common marine algae, but two species are lagoonal specialists.

Table 51.1 Positions of sampling stations in Turreen Lough with hydrological variables (salinity, temperature and depth of water) type of substratum and percent cover of vegetation and bare ground. Species in bold text are lagoonal specialists.

	Sta 1	Sta 2	Sta 3
GPS position	M 36211 23090	M 36306 23187	M 36375 23017
Salinity (psu)	15.8	16.7	12.5
Temperature	15.2	14.3	16.7
Depth (cm)	0-20	0-40	0-30
Substratum	soft mud	soft mud, stones	soft mud, occasional stones
<b>Percentage cover</b>			
<b>Algae</b>			
<b>Chlorophyceae</b>			
<i>Chaetomorpha linum</i>	<b>50</b>	<b>10</b>	<b>50</b>
<i>Cladophora</i> sp.		+	+
<i>Enteromorpha</i> sp.		+	+
<i>Ulva</i> sp.		+	+
<b>Phaeophyceae</b>			
<i>Ascophyllum nodosum</i>		<b>5</b>	+
<i>Fucus vesiculosus</i>		+	
<b>Rhodophyceae</b>			
<i>Ceramium</i> sp.		+	
<i>Chondrus crispus</i>		<b>5</b>	
<i>Gracilaria verrucosa</i>	+	<b>2</b>	+
<i>Polyides rotunda</i>		+	
<i>Polysiphonia ?elongata</i>		+	
<b>Angiosperms</b>			
<i>Ruppia maritima</i>	+	+	<b>2</b>
<b>Bare soft mud</b>	<b>50</b>	<b>40</b>	<b>50</b>
<b>Stones</b>		<b>30</b>	+

*Chaetomorpha linum*. There is some doubt about the taxonomic status of the unattached lagoonal form of this species, and it was recorded by Hatch and Healy (1998) as *C. mediterranea*. It is a common, characteristic alga of semi-isolated Irish lagoons, recorded at 49 of the 87 (56.3%) lagoons surveyed.

*Ruppia* spp. are the most characteristic aquatic plant taxa of Irish coastal lagoons. The species are hard to distinguish when not flowering, and remain uncertain at some sites, but *Ruppia* of one species or the other (*R. maritima*, *R. maritima* var *brevirostris*, *R. cirrhosa*) was found at 62 of the 87 lagoons (71.3%) surveyed, and is one of the most useful indicators of coastal lagoon status. *Ruppia maritima* appears to be the more common of the species and was found at 41 of the lagoons surveyed (47%).

The lagoon is not very impressive, but the two dominant species (*C. linum*, *R. maritima*) are both lagoonal specialists. Based on this vegetation, the site is regarded as of **moderate conservation value** as a coastal lagoon.

### Fauna

The fauna of Turreen Lough is quite rich with a total of 34 taxa recorded, most of which are common marine or estuarine animals, but also with a small suite of four lagoonal specialists and one apparently rare species (*Jaera ischiosetosa*) (Table 51.2). Only the shells of *Cerastoderma glaucum* were found, but is likely that spat attach to vegetation in the lagoon at least in some years.

*Idotea chelipes* is a common, lagoonal, isopod crustacean, often found in association with the lagoonal form of *Chaetomorpha linum*. Found at 23 of the 87 (26.4%) lagoons surveyed, mostly at relatively high salinity.

*Palaemonetes varians* Decapod crustacean listed as a lagoonal specialist in the U.K. by Barnes (1989) and Bamber (1997), but apparently is no longer regarded as such. Although found in estuaries, this species appears to be far more characteristic of lagoons in Ireland, found in 64 of the 87 lagoons surveyed (73.6%) and may require a lagoonal environment for reproduction. Therefore, it remains on the proposed list of lagoonal specialists for Ireland.

*Cerastoderma glaucum* Bivalve mollusc. A common lagoonal specialist found at 30 of the 87 lagoons (34.5%) surveyed.

*Conopeum seurati* Bryozoan recorded at 49 of the 87 lagoons surveyed (56.3%), but is not listed in a recent review of Irish marine Bryozoa (Wyse Jackson 1991). Either the species is under-recorded or is truly a lagoonal specialist.

*Jaera ischiosetosa* Isopod crustacean recorded at 12 sites from West Cork to Donegal. The only previous record appears to be for L. Hyne. Co. Cork (Goss Custard *et al.* 1979).

The aquatic fauna of Turreen Lough is relatively rich and characteristically lagoonal with five lagoonal specialists. Based on this fauna, the site is regarded as of **moderate conservation value** as a coastal lagoon.

Table 51.2 Faunal taxa recorded at stations in Turreen Lough on 14/10/06.

r = rare, o = occasional, c = common, a = abundant . Species in bold text are lagoonal specialist or rare species.

			Sta 1	Sta 2	Sta 3
<b>Cnidaria</b>		<i>Obelia dichotoma</i>	r	a	
<b>Nematoda</b>		indet.	r		r
<b>Annelida</b>	Polychaeta	<i>Manayunkia estuarina</i>			c
		<i>Nereis diversicolor</i>	o	c	o
		<i>Pomatoceros triqueter</i>		o	
	Oligochaeta	Tubificidae indet.	o		c
<b>Crustacea</b>	Ostracoda	indet.			o
	Copepoda	Harpacticoidea indet.			r
	Cirripedia	<i>Elminius modestus</i>		o	
	Tanaidacea	<i>Tanais dulongi</i>		r	c
	Mysidacea	<i>Neomysis integer</i>	r		c
		<i>Praunus flexuosus</i>		c	
	Isopoda	<b><i>Idotea chelipes</i></b>	a	a	c
		<b><i>Jaera ischiosetosa</i></b>	c	a	c
	Amphipoda	<i>Corophium volutator</i>	a	r	c
		<i>Gammarus ?salinus</i>	c	c	c
		<i>Gammarus ?zaddachi</i>			r
		<i>Melita palmata</i>	c	o	
		<i>Microdeutopus gryllotalpa</i>	o	c	c
		<i>Carcinus maenas</i>		o	
	Decapoda	<i>Palaemon elegans</i>		o	
		<i>Palaemon serratus</i>		o	
		<b><i>Palaemonetes varians</i></b>	r	o	c
<b>Insecta</b>	Diptera	Tipulid	r		
<b>Mollusca</b>	Gastropoda	<i>Hydrobia ulvae</i>	o	o	
		<i>Littorina littorea</i>		c	
	Opisthobranchia	<i>Phytia myosotis</i>			r
	Bivalvia	<b><i>Cerastoderma glaucum</i></b>		shells	
		<i>Modiolula phaseolina</i>		o	
		<i>Mytilus edulis</i>		c	
		<i>Tapes rhomboides</i>		r	
<b>Bryozoa</b>		<b><i>Conopeum seurati</i></b>	o	a	c
<b>Pisces</b>		<i>Gasterosteus aculeatus</i>		c	o
		<i>Gobius niger</i>		r	
		<i>Pomatoschistus microps</i>		o	r

### Summary

Turreen Lough is a small, shallow “saltmarsh” lagoon with a relatively rich biota, comprised mostly of marine or estuarine species, but with a small suite of lagoonal specialists (2 floral, four faunal) and one apparently rare species (*J. ischiosetosa*), although this animal is small and may simply be under-recorded. Overall, it is an interesting lagoon and rated as of **moderate conservation value**.

**Overall Conservation Value = Moderate**

### Conservation Status Assessment (from Oliver 2007)

Impacts	Moderate eutrophication in shallow lagoon but significant tidal flushing. Poaching by cattle in some areas. Silting up.
Conservation Status	<b>Unfavourable-Inadequate</b>

### Further Information

Listed as a lagoon by Healy *et al.* 1997, Healy 2003 and Oliver 2005 and included in the Conservation Status Assessment (Oliver 2007).

## References:

- Bamber, R.N. 1997. Assessment of saline lagoons within Special Areas of Conservation. *English Nature Research Reports* No. 235.
- Barnes, R.S.K. 1989. Coastal lagoons of Britain: an overview and conservation appraisal. *Biological Conservation* **49**: 295–313.
- Goss Custard, S., J. Jones, J.A. Kitching & Norton, T. A. 1979. Tidepools of Carrigathorna and Barloge Creek. *Philosophical Transactions of the Royal Society of London. Series B*, **287**: 1-44.
- Hatch, P. & Healy, B. 1998. Aquatic vegetation of Irish coastal lagoons. *Bulletin of the Irish Biogeographical Society*. **21**: 2-21.
- Healy, B. 2003. Coastal Lagoons. In: *Wetlands of Ireland*. R. Otte (ed). Chapter 4. University College Dublin Press. Dublin. 44-78.
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- Wyse Jackson, P.N. 1991. Distribution of Irish marine Bryozoa, together with biographical notes relating to the chief researchers in the group. *Bulletin of the Irish Biogeographical Society*. **14**: 129-18.





**Conservation Designation:** Galway Bay complex SAC 000268, pNHA 000268

**General description:**

Lough Atalia is a large (50ha) “**estuarine**” **lagoon**, on the east side of Galway City. It appears to be entirely natural with a shallow sill at the inlet and approximately 80% of the area remains inundated at low tide. Being “estuarine”, salinity probably varies considerably, and measured from 13.4 to 28.3 when sampled in 2006. The lagoon appears to be heavily impacted by industrial and domestic effluents from the city and large areas consist of bare anoxic mud. N.B. A small lagoon referred to as Renmore L. is an extension of L. Atalia in the southeast, and was not surveyed due to problems of access through an Army Barracks.



Figure 52.1 Location map of L. Atalia.

Lough Atalia was surveyed on 17/8/06 and 18/10/06 for aquatic fauna and flora. Four stations were selected for sampling at this time (Figure 52.2, Table 52.1). This is a difficult site to survey using normal methods, due to depth of water, strong tidal currents and very soft mud. For health and safety reasons only a cursory survey was carried out.

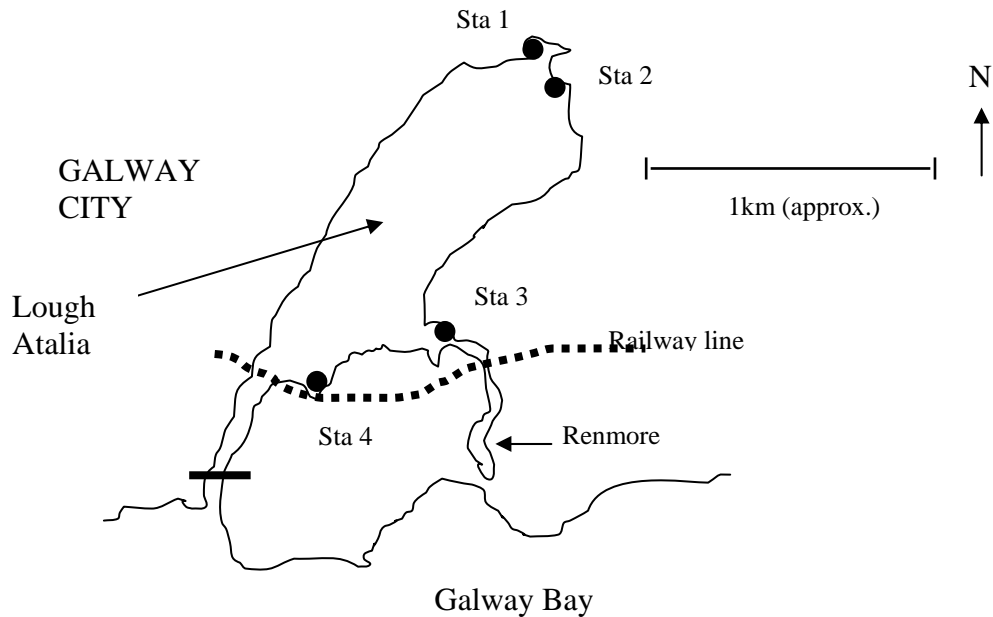


Figure 52.2 Sketch map showing sampling stations used at Lough Atalia, Galway City on 17/8/06 and 18/10/06.

### Flora

Being “estuarine”, much of the bed of the lagoon consists of bare, soft mud (Table 52.1), except in a bay in the inner part of the lagoon (Sta 2), where rafts of *Enteromorpha* sp. and the lagoonal alga *Chaetomorpha linum* had accumulated. Otherwise, only occasional fucoids and small areas of *Vaucheria* sp. were recorded.

There is some doubt about the taxonomic status of the unattached lagoonal form of *Chaetomorpha linum*, and it was recorded by Hatch and Healy (1998) as *C. mediterranea*. It is a common, characteristic alga of semi-isolated Irish lagoons, recorded at 49 of the 87 (56.3%) lagoons surveyed.

Lough Atalia is an “estuarine” lagoon and most of the bed of the lagoon appears to be bare, soft mud. It is also highly polluted, so that even on hard surfaces very few algal plants were found. Based on aquatic vegetation, the site is regarded as of **no conservation value** as a coastal lagoon.

Table 52.1 Positions of sampling stations in Lough Atalia, Galway City, on 17/8/06 and 18/10/06, with hydrological variables (salinity, temperature and depth of water), type of substratum and percentage cover of vegetation and bare ground. Species in bold text are lagoonal specialists.

	Sta 1	Sta 2	Sta 3	Sta 4
GPS position	M 31281 25900	M 31314 25810	M 31089 25189	M 30654 25069
Salinity (psu)	28.3	28.1	13.4	14.2
Temperature	22.8	19.3	15.3	13.8
Depth (cm)	0-30	0-60		
Substratum	very soft deep mud	very soft deep mud, with stones, pier	mud, gravel, broken crockery	soft deep mud
<b>Percentage cover</b>				
<b>Algae</b>				
Chlorophyceae				
<i><b>Chaetomorpha linum</b></i>		30		
<i>Enteromorpha</i> sp.	10	30	10	5
Phaeophyceae				
<i>Fucus serratus</i>			2	
<i>Fucus spiralis</i>		5		
<i>Fucus vesiculosus</i>		5	10	10
<i>Pelvetia canaliculata</i>		5		5
Xanthophyceae				
<i>Vaucheria</i> sp.	10			
<b>Bare soft mud</b>	80	15	70	70
<b>Stones</b>		10	10	20

## Fauna

Only 15 faunal taxa were recorded in 2006, all of which are common estuarine animals, and none of which were abundant. A few specimens of the only lagoonal specialist recorded (*Palaemonetes varians*) were found at Station 4, but this “lagoonal prawn” is often abundant in estuaries.

*Palaemonetes varians* Decapod crustacean listed as a lagoonal specialist in the U.K. by Barnes (1989) and Bamber (1997), but apparently is no longer regarded as such. Although found in estuaries, this species appears to be far more characteristic of lagoons in Ireland, found in 64 of the 87 lagoons surveyed (73.6%) and may require a lagoonal environment for reproduction. Therefore, it remains on the proposed list of lagoonal specialists for Ireland.

Generally, the fauna of the lagoon is extremely poor, presumably due to contamination from industrial effluents. More species are likely to be recorded if more time was spent here, but nothing is likely to change the impression that the site is of **no conservation value** as a coastal lagoon.

Table 52.2 Faunal taxa recorded at stations in Lough Atalia, Galway City on 17<sup>th</sup> August and 18<sup>th</sup> October 2006. r = rare, o = occasional, c = common, a = abundant. Species in bold text are lagoonal specialists.

			Sta 1	Sta 2	Sta 3	Sta 4
<b>Nematoda</b>		indet.	<b>o</b>	<b>o</b>	<b>o</b>	<b>o</b>
<b>Annelida</b>	Polychaeta	<i>Nereis diversicolor</i>	<b>r</b>	<b>o</b>	<b>o</b>	<b>o</b>
	Oligochaeta	Naididae indet.	<b>o</b>	<b>o</b>	<b>o</b>	<b>r</b>
<b>Crustacea</b>	Copepoda	indet.	<b>o</b>	<b>o</b>	<b>r</b>	
	Cirripedia	<i>Elminius modestus</i>		<b>o</b>	<b>o</b>	
	Mysidacea	<i>Neomysis integer</i>		<b>o</b>	<b>o</b>	<b>r</b>
		<i>Praunus flexuosus</i>	<b>o</b>	<b>r</b>	<b>r</b>	<b>o</b>
	Isopoda	<i>Jaera albifrons</i>		<b>r</b>		<b>r</b>
	Amphipoda	<i>Gammarus ?zaddachi</i>	<b>o</b>	<b>o</b>	<b>o</b>	<b>o</b>
	Decapoda	<i>Palaemon elegans</i>		<b>r</b>		<b>o</b>
		<b><i>Palaemonetes varians</i></b>				<b>r</b>
<b>Acarina</b>		indet.		<b>r</b>	<b>r</b>	
<b>Insecta</b>	Diptera	Chironomidae indet.	<b>o</b>	<b>o</b>	<b>o</b>	<b>o</b>
<b>Mollusca</b>	Pulmonata	<i>Hydrobia ulvae</i>		<b>o</b>	<b>o</b>	<b>o</b>
<b>Bryozoa</b>		<i>Alcyonidium gelatinosum</i>			<b>o</b>	<b>o</b>
		<i>Bowerbankia gracilis</i>				<b>o</b>
<b>Pisces</b>		<i>Mugilidae</i> indet.	<b>c</b>			
		<i>Pleuronectes flesus</i>			<b>o</b>	<b>o</b>
		<i>Pomatoschistus microps</i>	<b>o</b>	<b>c</b>	<b>r</b>	<b>o</b>

### Summary

Lough Atalia is a large (50ha) "**estuarine**" lagoon which appears to be heavily impacted by industrial and domestic effluents from Galway City. Very few floral or faunal species were recorded during a survey in 2006, most of which are common estuarine species, and none were abundant. Only two lagoonal specialists were recorded, both of which are common in lagoonal habitats in Ireland. Overall, Lough Atalia is regarded as grossly polluted and of no conservation value.

**Overall Conservation Value = NONE**

### Conservation Status Assessment (from Oliver 2007)

Impacts	Eutrophication and pollution from city effluents. Urbanisation. Ind/commercial activities. Dumping. Silting up.
Conservation Status	<b>Unfavourable-BAD</b>

### Further Information

Listed as a lagoon by Healy *et al.* 1997, Healy 2003 and Oliver 2005 and included in the Conservation Status Assessment (Oliver 2007).

### References:

- Bamber, R.N. 1997. Assessment of saline lagoons within Special Areas of Conservation. *English Nature Research Reports* No. 235.
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- Oliver, G.A. 2007. *Conservation status report: Coastal Lagoons (1150)*. Unpublished report to the National Parks and Wildlife Service, Dublin.