

4.64 **Loch an Mhuilinn, County Galway O.S. L 754 331**
 (Mill Loch), O.S. Discovery Sheet 44



Conservation Designation: Kilkieran Bay and Islands SAC 002111

General description:

Mill Lough is a small (6ha), mostly shallow (1-2m), but up to 4-5m at the southern end, “rock/peat” lagoon, with a natural bridged outlet, situated in the north of Ard Bay, western Connemara, 4 km west of Carna. Mill Lough is included as a good example of a type of lagoon, similar to the Scottish “obs”, which are characteristic of parts of the west coast of Ireland, especially in Connemara. They are permanent, shallow and brackish, with restricted tidal influence due to the presence of a “barrier” of peat, and in this case rock. Seawater appears to enter on all tides, but large amounts of freshwater also enter. Salinity probably varies considerably both spatially and temporally, and ranged from 6-31psu at the time of sampling (27-29/9/96).

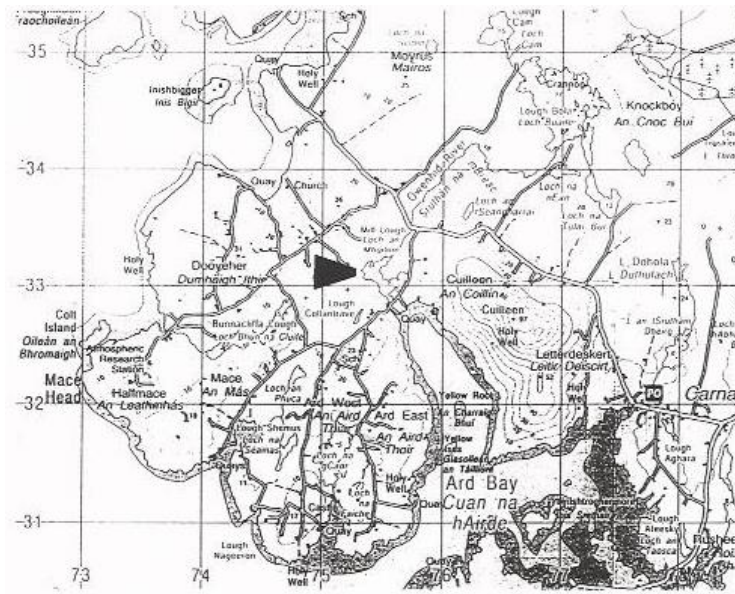


Figure 64.1 Location of map of L. an Mhuilinn (Mill L.)

Mill Loch 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). Sampling stations for fauna do not necessarily correspond with those of flora or ecotonal coleoptera.

Flora

Vegetation was surveyed by P. Hatch in 1996 (Hatch 1996, Hatch & Healy 1998), but no underwater observations were made.

Ruppia cirrhosa occurs around the whole site but was not found in dense beds. Some *Zostera* fragments were found washed up on the shore in places. Furoid algae were common in the tidal inlet with one species occurring frequently along the rocky shores of both the east and west to within approximately 100 metres of the main freshwater inflow.

Relatively few floral taxa were recorded in Mill Lough, and only one species (*R. cirrhosa*) is a lagoonal specialist.

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. *R. maritima* appears to be the more common of the species and was found at 41 of the lagoons surveyed (47%). *R. 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. *R. cirrhosa* was only identified at 23 lagoons (26%), but species was not determined at 12 sites.

Marginal vegetation was more or less uniform. *Juncus maritimus* salt tolerant community was dominant between stretches of bedrock shore. Small open *Phragmites* swamps occurred in sheltered areas of the north and south east.

Mill Lough would seem to be a species-poor site with no particularly notable aquatic species. However, a survey of the deeper regions could well yield more interesting results and the site is therefore rated as **potentially valuable**.

Fauna

Four stations were selected for faunal sampling in Mill Loch in 1996 (Figure 64.2, Table 64.1).

Table 64.1 Positions of faunal sampling stations in Mill Loch 27-29/9/96, with salinity, depth of water and type of substratum.

	Sta A	Sta B	Sta C	Sta D
GPS position	L 7559 3285	L 7543 3308	L 7556 3319	L 7567 3309
Salinity(psu)	31	34	2-6	20
Depth(cm)	0-80	0-60	0-300	0-150
Substratum	Smooth granite bedrock, stones, gravel, sand, silt, peat.	Soft organic mud, loose peat, occasional stones.	Granite bedrock, stones, sand, organic silt/mud	Granite rock, loose peat, soft organic mud.

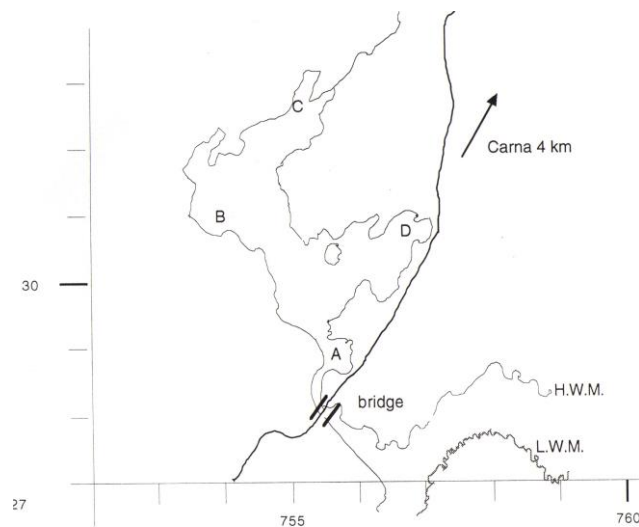


Figure 64.2 Faunal sampling stations used at L. an Mhuilinn (Mill L.).

A total of 30 faunal taxa were recorded, of which 28 were identified to species (Healy & Oliver 1996, Oliver & Healy 1998). Four of these species are lagoonal specialists in Britain and one species (*Jaera nordmanni*) is a proposed specialist for Ireland, but all of these “specialists” are relatively common in lagoonal habitats in Ireland.

Jaera nordmanni. Isopod crustacean recorded at 24 of the 87 lagoons surveyed (27.6%) and may occur at others where it was not recorded due to the fact that only adult males are easily identified. This species may occur in freshwater, as in L. Errol, Cape Clear, Co. Cork. Described in England (Barnes 1994, Hayward and Ryland 1995) as occurring in streams flowing down the shoreline, on south and west coasts only. All records in Ireland are from West Cork to Donegal. Proposed as a lagoonal specialist for Ireland by Oliver and Healy (1998).

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

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.

The greatest number of species was recorded near the sea inlet. One limnic species, a beetle, was recorded from near the freshwater inlet. The aquatic fauna was typical of a lagoon with a significant tidal inflow and a medium to high salinity. Sedentary marine species such as tunicates and bryozoans were occasional near the sea inlet. Localised areas of low salinity allow some oligohaline species to survive e.g. near a stream inlet where one beetle species was taken. No rare species were recorded.

Based on aquatic fauna, Mill Lough is rated as of **moderate conservation value**.

Table 64.2 Aquatic Fauna Recorded in Mill Lough, Co. Galway. June and September 1996. L.T. = light-trap, + = present; o = occasional; c = common; a = abundant; F = Fyke net. Species in bold text are lagoonal specialists.

Fauna	Sampling Stations							
	A	L.T.A	B	L.T.B	C	L.T.C	D	L.T.D
Cnidaria <i>Dynamena pumila</i>	+							
Annelida <i>Arenicola marina</i>	+							
<i>Hediste diversicolor</i>	1						1	
Crustacea								
Mysidacea <i>Leptomysis lingvura</i>					1			
<i>Neomysis integer</i>	c	35	a	500	c	c100	c	c100
<i>Praunus flexuosus</i>	1?							
Isopoda <i>Jaera nordmanni</i>	c		o					
<i>Lekanesphaera hookeri</i>		40	c	?	+	1	c	23
Amphipoda <i>Corophium volutator</i>							c	
<i>Gammarus duebeni</i>							+	
<i>G. zaddachi</i>	+		+				+	
Decapoda <i>Carcinus maenas</i>	+		+		F, 5		c	
<i>Palaemon elegans</i>	o							
<i>P. serratus</i>					F, 1			
<i>Palaemonetes varians</i>	o		o		c		c	4
Insecta								
Coleoptera <i>Cercyon lateralis</i>								
Diptera Chironomidae	c		o		c		o	
Mollusca								
Prosobranchia <i>Hydrobia ulvae</i>	5						7	
<i>Littorina obtusata</i>	1							
<i>Potamopyrgus antipodarum</i>			1		+		1	
Bivalvia <i>Cerastoderma glaucum</i>	c				c			
Bryozoa <i>Conopeum seurati</i>	+		+		+		+	
<i>Flustrellidra hispida</i>					+			
Tunicata <i>Asciidiella scabra</i>	+							
Teleostei <i>Anguilla anguilla</i>	F, 2		+		+			
<i>Gasterosteus aculeatus</i>	o	1	o	3	+		c	
<i>Labrus bergylta</i>	F, 1							
Mugilidae					F, 12			
<i>Platichthys flesus</i>	F, 1						o	
<i>Pomatoschistus microps</i>	o		o	3			o	1

Ecotonal coleoptera

Only 5 species of staphylinid and a single species of carabid were recorded at Mill Lough in 1996 (Good 1996, Good & Butler 1998), none of which are indicator species. Based on ecotonal coleoptera, the site is rated as of **no conservation value**.

Summary

Mill Lough is a natural “**rock/peat**” lagoon, and as such is good example of an unusual type of lagoon in European terms, similar to the Scottish “obs”, but it is small, and no particularly rare species were recorded in 1996. There is some evidence of pollution from domestic and agricultural sources but the effects do not appear to be severe and are probably limited by tidal flushing. The aquatic fauna is typical of a lagoon with a significant tidal inflow and a medium to high salinity. A total of five lagoonal specialists were present but all are relatively common in lagoonal habitats in Ireland. The vegetation appeared to be species poor with only one lagoonal specialist (*R. cirrhosa*) and no other notable aquatic species, but **deeper areas were not sampled, and no underwater observations were made.** Ecotonal Coleoptera were poorly represented and no indicator species were recorded. Overall conservation value is rated as moderate.

Overall Conservation Value = Moderate

Conservation Status Assessment (from Oliver 2007)

Impacts	Dumping in small areas.
Conservation Status	Favourable

Further Information

Mill 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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