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Lough Bofin, Inishbofin, County Galway O.S. L 525 656

O.S. Discovery Sheet 37



Conservation Designation: Inishbofin and Inishark SAC 000278

General description:

Lough Bofin is a small (8ha), shallow (<1.5m) **natural sedimentary lagoon** with a cobble barrier. The lagoon is situated on the north shore of the island of Inishbofin, approximately 2km to the west of the harbour. The barrier is high and seawater enters the lagoon by percolation and by overwash during storms. Although there is no direct connection with the sea, the volume of the lagoon is small and the amount of seawater that enters, either by percolation or overwashing can be relatively high. Large amounts of freshwater can also enter at times of high rainfall and it appears that the lagoon undergoes extreme variations in salinity. Salinity measured 13-17psu during the sampling period (5-7/8/98), but 32.3-33.1psu was recorded in August 1995.

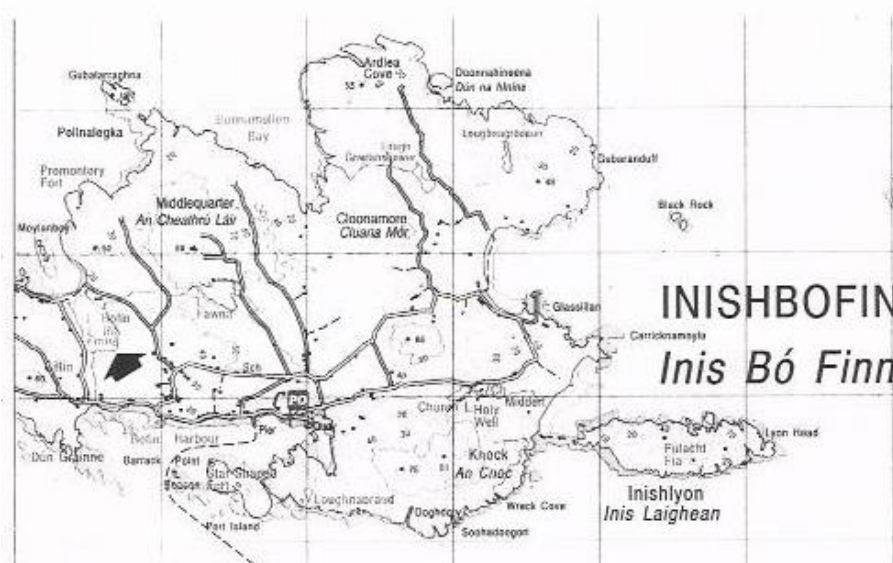


Figure 70.1 Location of map of Lough Bofin.

Lough Bofin was surveyed in 1998 for vegetation (Roden 1999), aquatic fauna (Oliver 1999) and ecotonal coleoptera (Good 1998, Good & Butler 2000). Results of these surveys are summarised by Healy (1999a,b; 2003).

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

Flora

The vegetation of L. Athola was surveyed in 1998 by C. Roden. The following is based on the report by Roden (1999), following his survey on 4-5/8/98.

The benthic vegetation is uniform consisting of stands of *Ruppia cirrhosa* and *Ruppia maritima*, as well as a mixed *Ruppia* and *Lamprothamnion papulosum* community with some *Chaetomorpha linum*. There are very few bare mud or sand patches and the vegetation is dense.

All four of the above species are lagoonal specialists.

Lamprothamnion 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 also now 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 Maghery, 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.* 2001). These Irish locations are very important in European terms, and it is especially encouraging to have found new sites.

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. *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. *Ruppia cirrhosa* was only identified at 23 lagoons (26%), 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).

Marginal vegetation includes areas of *Juncus gerardii* association, including the *Potentilla anserina* variant and communities of gravel shores.

The phytoplankton is interesting with several brackish species of the genus *Procentrum*.

The benthic vegetation of Lough Bofin is an excellent example of the *Ruppia/Lamprothamnium* community. The phytoplankton appears to contain unusual species. All four of the aquatic plants recorded are lagoonal specialists, and one (*L.*

papulosum) is a rare charophyte. Based on aquatic flora, the site is rated as of **exceptional conservation value**.

Fauna

Four sampling stations were chosen for faunal sampling in 1998 (Figure 70.2, Table 70.1). The fauna of this lagoon was extremely poor with only 11 taxa recorded, of which 8 were identified to species (Table 70.2). One is a proposed lagoonal specialist in Ireland. None can be described as rare. Copepods were described as abundant in 1996 but were not identified. Surprisingly there were no Hydrobiids of any species found.

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. 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).

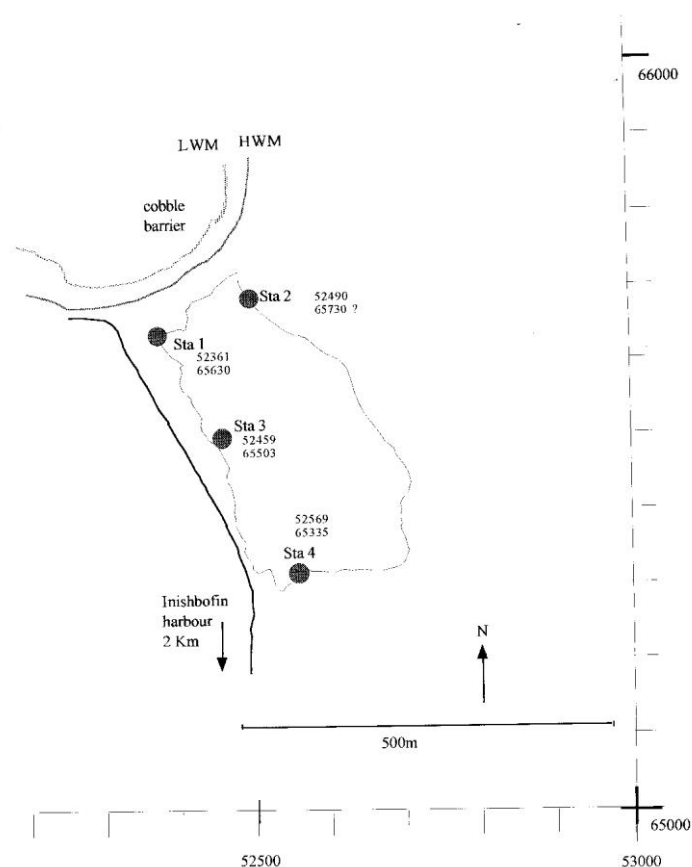


Figure 70.2 Sampling stations used at L. Bofin.

Table 70.1 Positions of faunal sampling stations in L. Bofin, 5-7/8/98, with salinity, depth of water and type of substratum.

	Sta 1	Sta 2	Sta 3	Sta 4
GPS position	L 52361 65630	L 52490 65730	L 52459 65503	L 52569 65335
Salinity(psu0)	16-17.5	15-16	13.1	4-17
Depth(cm)	0-100	0-100	70-100	0-100
Substratum	Occasional large stones, cobbles, muddy gravel, fine silt	Bedrock (schist?) large stones, gravel	Silty peat	Gravelly mud, flat stones, isolated peat clumps.

Table 70.2 Aquatic fauna recorded at stations in Lough Bofin, Co. Galway 5-7/8/98.
L.T. = light trap + = present, o = occasional, c = common, a = abundant, F = fyke net.
Species in bold text are lagoonal specialists or rare species.

		Sampling Stations							
		1	L.T. 1	2	L.T. 2	3	L.T. 3	4	L.T. 4
Turbellaria	<i>Procerodes littoralis</i>								
Annelida		c		c					
	Polychaeta <i>Nereis diversicolor</i>	o				o		c	
Crustacea									
	Copepoda indet	(a)		(a)		(a)		(a)	
	Isopoda <i>Jaera nordmanni</i>	c	7	c		8		6	2
	Amphipoda	a	c250		c250	a	c1000	+	c500
	<i>Gammarus duebeni</i>	28	27	8	60	a	131	11	225
	<i>Melita palmata</i>	1							1
	Decapoda <i>Carcinus maenas</i>								
Insecta									
	Diptera Chironomidae	+							
Bryozoa	<i>Bowerbankia gracilis</i>								
Pisces	<i>Anguilla anguilla</i>					F = 5			
	<i>Gasterosteus aculeatus</i>	c	1	c	3	c		a	20

The aquatic fauna of Lough Bofin is extremely poor, especially in comparison with the vegetation. Only 11 taxa were recorded in 1998, only one of which is a lagoonal specialist and is of any conservation value. Based on this fauna, the lagoon is rated as of **low conservation value**.

Ecotonal coleoptera

Two species of carabid and 9 species of staphylinid beetles were recorded at Lough Bofin (Good 1999, Good & Butler 2000), none of which is an indicator species, and based on ecotonal coleoptera the site is rated as of **no conservation value**.

Summary

Geomorphologically Lough Bofin is an excellent example of a **natural sedimentary lagoon** with a high **cobble barrier**. Aquatic flora is also rated as of exceptional conservation value due to the prolific growths of four lagoonal specialists, which include the rare charophyte *Lamprothamnium papulosum*, as well as both *Ruppia cirrhosa* and *R. maritima* and *Chaetomorpha linum*.

The fauna however is extremely impoverished, possibly due to extreme variations in salinity and periodic anoxia due to rotting algae. The lagoon could be referred to as what Hartog (1974) describes as a "shock system", in which the extreme variations make it impossible for most animals to survive.

Overall conservation, based mainly on the presence of *Lamprothamnium*, is rated as high.

Overall Conservation Value = High

Conservation Status Assessment (from Oliver 2007)

Impacts	Natural eutrophication from decaying algae. Cattle poaching in areas. Urbanisation. Accumulation of organic material.
Conservation Status	Unfavourable-Inadequate

Further Information

Listed as a lagoon by Healy *et al.* 1997. Surveyed in 1998 for vegetation (Roden 1999), aquatic fauna (Oliver 1999) and ecotonal coleoptera (Good 1998, Good & Butler 2000). Results of these surveys are summarised by Healy (1999a,b; 2003). Included in a biological classification of Irish coastal lagoons (Oliver 2005) and in the Conservation Status Assessment (Oliver 2007).

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