4.62 **Loch an tSaile, County Galway** O.S. L 954 390
(L. Ahalia) O.S. Discovery Sheet 45

Conservation Designation: Connemara Bog complex SAC 002034, pNHA 002034

General description:

Loch an tSaile is one a series of lakes with a natural outlet, at the north end of Camus Bay, 1.5 km west of Screeb. There are three large connected lakes with several smaller embayments which almost form separate lakes in themselves. The two lower lakes are regarded as **rock/peat lagoons** and together these cover an area of approximately 90ha. Seawater enters from the south on all tides but the lakes also receive large volumes of freshwater from a large catchment area. The lower lake is relatively shallow (0-4m) and brackish throughout while the middle lake is deep (13m) and permanently stratified with water below 3m measuring 14psu.

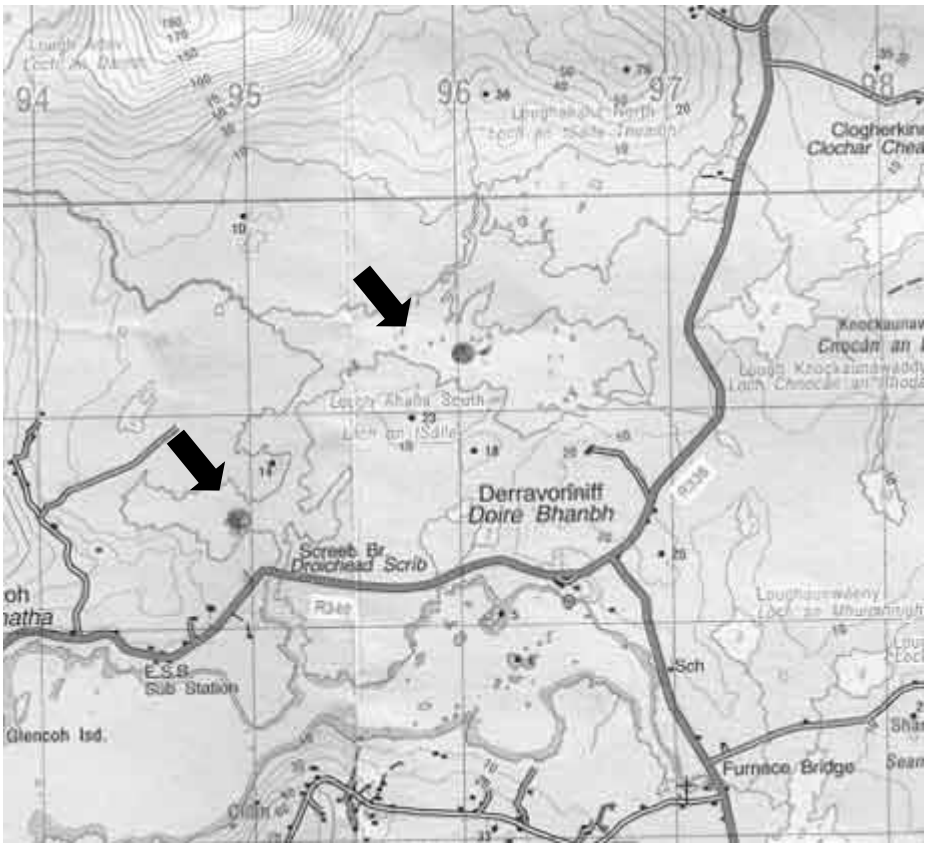

Figure 62.1 Location of map of L. an tSaile (L.Ahalia).

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).

Flora

The vegetation of L. an tSaile was surveyed in 1998 by C. Roden. The following is taken mostly from Roden (1999):

Underwater observations

This lagoon consists of several partially separated basins. Two types of water can be distinguished, with a stratified upper freshwater layer up to 4m deep in the upper basin but much shallower in the lower basin, and a lower more saline layer. The less saline layer is very clear while the more saline layer is cloudy, possibly due to algal growth.

All the basins have a similar structure, with rocky steeply shelving sides descending to a flat muddy floor. The eastern part of the lower basin is very shallow and is covered by a ***Potamogeton pectinatus/Ruppia*** sp. mixture. In the upper basin much of the lagoon is covered by the characteristic spherical balls of ***Cladophora aegagropila***. However, part of this basin is very deep (unreachable using a snorkel) and probably is covered only by mud. The remaining basins are only metres deep but the dark colour of the water seems to inhibit plant growth. In the lower basin a sparse population of ***Zostera*** occurs with some ***Chaetomorpha linum***, while *P. pectinatus* is common in the middle basin.

The sloping sides of the upper basin are very unusual. Close to the surface a sparse flora of freshwater plants including *Littorella uniflora, Myriophyllum alternifolium* and *Potamogeton polygonifolius* grow amongst granite boulders and gravel. In places a green blanket of drift *Oedogonium* and freshwater filamentous algae cover the granite rock. However, as one descends this flora is replaced by a band of ***Ruppia cirrhosa***, which in turn is replaced (in places) by specimens of ***Fucus ceranoides*** and dead mussel shells. Elsewhere the *Ruppia* extends into the *C. aegagropila* zone.

In the other basins a brackish flora extends from the surface downwards. *Enteromorpha* and *F. ceranoides* occur on bare rock while *Ruppia* sp. occur in mud and gravel. *C. linum* forms a distinct band at the base of the rocky sloping sides.

Results

The great depth of the site (>14m) and the strong salinity gradient result in a wide range of vegetation communities:

1. Charophyte communities in shallow water less than 1.0m. Four different species occur depending on salinity.

   Chara virgata occurs in the upper and middle basin often in association with *Littorella uniflora.*

   Chara aspera occurs in the middle basin and the eastern arm of the lower basin.

   Chara baltica and ***Lamprothamnium papulosum*** are confined to the lower basin.

2. The surface 3m of the upper basin contains a freshwater community of *Myriophyllum alterniflorum, Potamogeton polygonifolius* and *C. virgata.*
3. A band of ***Ruppia* sp.** grows below this zone. The saline nature of this community is shown by dead *Mytilus* and *Cerastoderma* shells.
4. Mud and sand areas are covered by drifting balls of ***Cladophora aegagropila***.
5. The small middle basin contains *Ruppia/Potamogeton pectinatus* communities with some ***Chaetomorpha linum***.
6. The western arm of the lower basin is the most saline area. Rocky shores are covered by ***Fucus ceranoides***, *Cladophora rupestris* and *Enteromorpha* sp.

7. At 1-2m depth, *F. serratus* and *F. vesiculosus* occur. At greater depths dense mounds of *C. linum* are found.
8. Soft sediments support *Ruppia* sp. and at greater depths, ***Zostera marina*** and *Ruppia* with some *C. linum*.
9. The eastern arm is shallow with a dense growth of *P. pectinatus, Ruppia* sp., *L. papulosum* and *C. linum*.
10. The channel which links the four basins is 2-4m deep. The floor is largely bare mud with occasional large boulders. A sparse growth of *Zostera marina, Ruppia* sp., *P. pectinatus* and *C. linum* occurs.

Six of the species recorded are lagoonal specialists, and two of these are rare charophytes (***C. baltica, L. papulosum***). One other species of chlorophyte algae (***Cladophora aegagropila*****)** appears to be a rare species:

Chara ?baltica. Recent records from 3 lagoons. This species was first reported by Hatch & Healy (1998) in L. Aconeera, identified as *C. baltica* by Jim Ryan and confirmed by Mr. Nick Stewart. However, recently Stewart wrote to C. Roden expressing reservations about his identification. The population was resampled and depending on one's interpretation of the cortex it keys out as either *Chara baltica* or *Chara aspera*, using standard works. Another related lagoonal taxon, known from Brittany and southern Europe is *C. gallioides* which is larger than *C. aspera* and has larger reproductive organs and lacks bulbils. It has not been possible to obtain fertile material which would help in identification, from L. Aconeera and the species remains to be verified.

(Roden (1999) recorded *C. baltica* in L. an tSaile in 1998, which is apparently the same species as the *Chara* in L. Aconeera, and similarly remains to be verified).

Another charophyte found in Ballyconneely L. since 1998 easily keys out as *Chara baltica* on the basis of size (>60cm), spines single or in pairs, large reproductive organs and long uncorticated branchlet end cells, as well as slight encrustation. However this identification has not been confirmed by an expert in the group and Schubert and Blindlow (2004) note differences between the form of *Chara baltica* found in the Baltic Sea and all other European populations identified as this species.

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 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.

Cladophora aegagropila is a rare species recorded only in L. an tSaile during the lagoon surveys (confirmed by Prof. Van den Hoek). Roden (1999) lists this species as a lagoonal specialist but it is also found in freshwater. Status as a lagoonal species remains uncertain at the moment.

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%). ***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. *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).

Summary

The aquatic flora of L. an tSaile is rich with a total of 26 floral taxa recorded in 1998, of which six species are lagoonal specialists. Two of these are rare charophytes (***C. baltica, L. papulosum***) and one other species of chlorophyte algae (***Cladophora aegagropila*)** appears to be a rare species in Europe. Based on aquatic flora, this site is regarded as of **high conservation value.**

Fauna

Eleven stations were selected for sampling aquatic fauna in 1998 (Figure 62.2, Table 62.1, Oliver 1999)

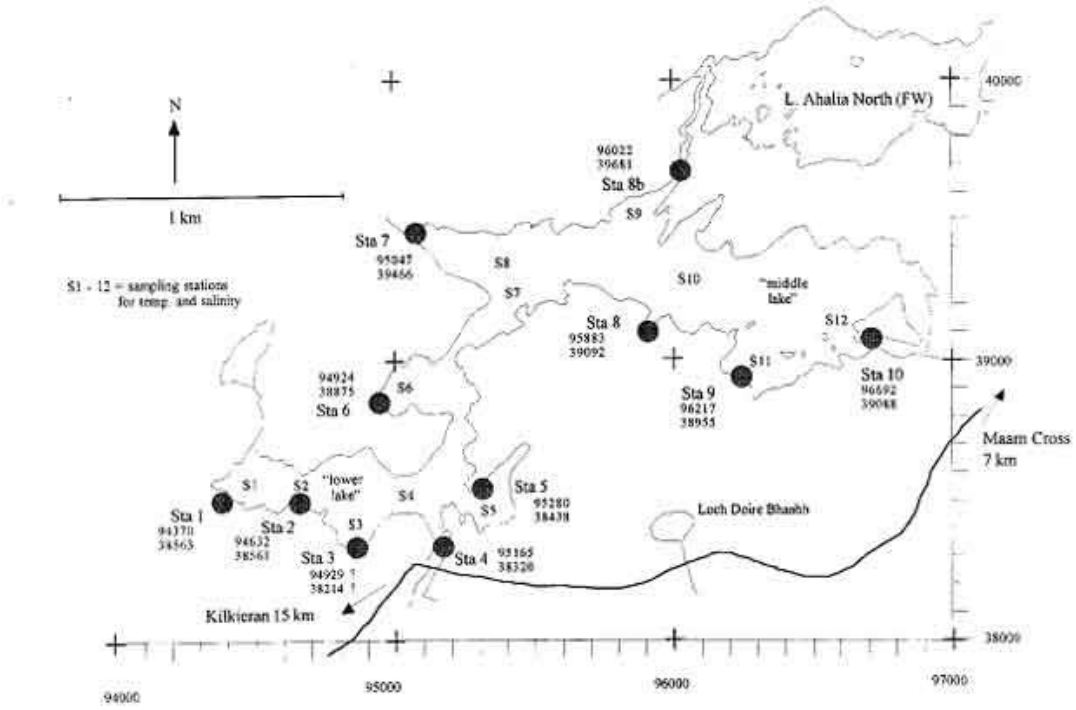

Figure 62.2 Sampling stations used at Loch an tSaile.

A total of 43 faunal taxa were recorded in L. an tSaile in 1998 (Table 62.2), of which 5 species are regarded as lagoonal specialists in Britain, one other species is a proposed specialists for Ireland, and three species appear to be rare:

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.

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.

Littorina "tenebrosa" Gastropod mollusc recorded on the North Slob, Co. Wexford, and in a brackish pool close to L. Murree, Co. Clare and at seven lagoons in Co. Galway. These are the only known sites in Ireland. The status of this taxon is still uncertain but specimens appear to be morphologically and ecologically distinct from *L. saxatilis.*

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.

Megasternum obscurum Water-beetle recorded at Ballyteige, Co. Wexford, L. an Chara and L. an tSaile, Co. Galway and at Furnace L., Co. Mayo, but is otherwise described as rather rare in Ireland (Foster *et al.* 1992*).*

Astropecten irregularis was also recorded in Kincas L. but was found at surprisingly low salinity in L. an tSaile.

Table 62.1 Positions of stations used for sampling aquatic fauna in L. an tSaile on 10-12/8/98 and 27-29/9/98, with salinity, depth of water and type of substratum.

	Sta 1	Sta 2	Sta 3	Sta 4	Sta 5	Sta 6	Sta 7	Sta 8	Sta 8b	Sta 9	Sta 10
GPS position	L 94370 38563	L 94632 38561	L 94929 38214?	L 95165 38320	L 95280 38338	L 94924 38875	L 95047 39466	L 95883 39092	L 96022 39681	L 96217 38955	L 96692 39088
Salinity at surface(psu)	1.8	1.5	1.5	3.8	3.5	1.4	0.6	0.2	0	0.2	0
Salinity at depth(psu)	3.6	13.9	7.5	4.8	4.6	2.8	1.6	10.3	0	1.3	1.0
Depth (cm)	0-100	0-400	0-200	0-200	0-100	0-100	0-100	0-400	0-200	0-400	0-100
Substratum	Peaty mud	Soft peaty mud	Granite bedrock, large boulders, coarse sand	Bedrock, stones, coarse sand	Granite boulders, coarse sand	Stones, granite sand, silt.	Stones, granite sand, peat	Stones, gravel, coarse sand.	Stones, gravel, coarse sand	Boulders, stones, gravel, coarse sand	Boulders, stones, gravel, coarse sand

The aquatic fauna of L. an tSaile is rich with 43 taxa recorded in 1998, of which six species are lagoonal specialists, and two are rare species. Based on aquatic fauna, the site is regarded as of **high conservation value**.

Ecotonal coleoptera

Eleven species of carabid and eighteen species of staphylinid were recorded in L. an tSaile in 1998 (Good 1999, Good & Butler 2000). One species, ***Stenus lustrator*** is an indicator species, but based on ecotonal coleoptera the site was rated as of **low conservation value**.

Summary

Loch an tSaile is a large (90ha) lagoon, of a type which is rare in a European context, but characteristic of parts of the west coast of Ireland, especially in Connemara, referred to as **rock/peat lagoons** with restricted tidal influence due to the presence of a "barrier" of bedrock and peat. Flora and fauna are rich, with a total of 26 floral taxa recorded in 1998, of which six species are lagoonal specialists. Two of these are rare charophytes (***C. baltica, L. papulosum***) and one other species of chlorophyte algae (***Cladophora aegagropila*****)** appear to be a rare species in Europe. The fauna is equally rich with 43 taxa recorded, of which six species are lagoonal specialists, and two are rare species. The site is ranked as one of the six most important lagoons in the country and regarded as of **exceptional conservation value**.

Overall Conservation Value = Exceptional

Conservation Status Assessment (from Oliver 2007)	
Impacts	Salmonid cages, but significant flushing. Leisure fishing. Cattle poaching in some areas.
Conservation Status	Favourable

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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Table 62.2 Aquatic fauna recorded at stations in Loch an tSaile, Co. Galway. 1998.

L.T. = light trap; + = present, o = occasional. c = common, a = abundant. Species in bold text are lagoonal specialists or rare species.

		Sampling Stations																
Taxa		1	L.T. 1	2	L.T. 2	3	L.T.3	4	L.T. 4	5	L.T. 5	6	L.T. 6	7	L.T. 7	8a	8b	9	L.T.9	10
Porifera	*Halichondria panicea*					+														
Cnidaria	*Chlorohydra viridis*																+	+		
	Clava multicornis			+		+														
Turbellaria	*Procerodes littoralis*													+						
Annelida	Naididae indet.					+														
	Stylaria lacustris																+			
	Tubificidae indet.																			+
Crustacea																				
Mysidacea	*Neomysis integer*	c	8	+	5							+	5	+	4					4
Isopoda	*Idotea chelipes*			o	2					+	+									
	Lekanesphaera hookeri	+	22	a	56	+	50					+		o		o		o	5	1
	Jaera nordmanni							a				+		+				+	1	c
Amphipoda		+	100	+	20	c	c100		10		10	+	20	1	5			+	3	
	Corophium volutator	a	12	+	2			+	2	+	1	+	1		1					
	Gammarus duebeni				1				2											
	G. zaddachi	7	1	4	13	11	63	14	2		7	6	18	1	4				3	
	Melita sp.								1											
Decapoda	***Palaemonetes varians***	+	1					+	1											
Insecta																				
Ephemeroptera																	+			
Odonata	Aeschnidae indet.													1						1
	Ischnura elegans											+	1	+						+
Trichoptera												+								
Heteroptera	Corixidae indet.											2		8		4	3			1
	Hesperocorixa castanea																			1
	Sigara dorsalis													1						
	S. scotti													3						
	Gerris lacustris													o		o				o
	Velia sp.																			1

Table 62.2 continued. Aquatic fauna recorded at stations in Loch an tSaile, Co. Galway. 1998.
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																	
Taxa		1	L.T. 1	2	L.T. 2	3	L.T.3	4	L.T. 4	5	L.T. 5	6	L.T. 6	7	L.T. 7	8a	8b	9	L.T.9	10
Coleoptera												+		12	1					10
	Gyrinus caspius											5		4						
	G. minutus													1						
	G. substriatus													1						
	Haliplus rufficollis											1		5						5
	(Megasternum obscurum)						1													
	Nebrioporus depressus													1						2
	Stictotarsus 12-pustulatus																		2	
Diptera	Chironomidae indet.	c		o				c				o		o			+			+
Mollusca	Hydrobiidae indet.	+		+	45							+				+	+			
Prosobranchia	*Hydrobia ulvae*	1		c		+		+												
	H. ventrosa			+		+		+												
	Littorina "tenebrosa"			1		+		+												
	Potamopyrgus antipodarum	a		o				c				c		+		c	+	+		c
Bivalvia	*Mytilus edulis*			+				+												
Echinodermata	*Astropecten irregularis*			+		+		+												
Bryozoa	*Conopeum seurati*			+				+												+
Pisces	*Anguilla anguilla*	F=15				F=1								+				F=8		
	Gasterosteus aculeatus	+	5			+	2	+		+				+			+	+	2	+
	Mugilidae					F=1														+
	Pomatoschistus microps		5					+		+		+		+				+	1	
	Salmo trutta																			+