4.38 **Aughinish lagoon, County Clare** O.S. M 286 134
O.S. Discovery Sheet 51

Conservation Designation: Galway Bay complex SAC 000268, pNHA 000268

General description:

Aughinish Lagoon is situated on the south side of Galway Bay, 5 km west of Kinvarra, County Clare. A small (8.5ha), shallow (<2m) natural **karst lagoon** with a **sedimentary** cobble barrier. A Martello tower was constructed on the barrier and the road leading to the tower originally had a bridged outlet, but the bridge has now collapsed and the road is partly eroded due to changes in the course of the outlet stream. Aughinish is a good example of a shallow, sometimes hypersaline lagoon (34 – 40psu on 5/8/96) with a cobble barrier, fed to an unknown extent by underground channels.

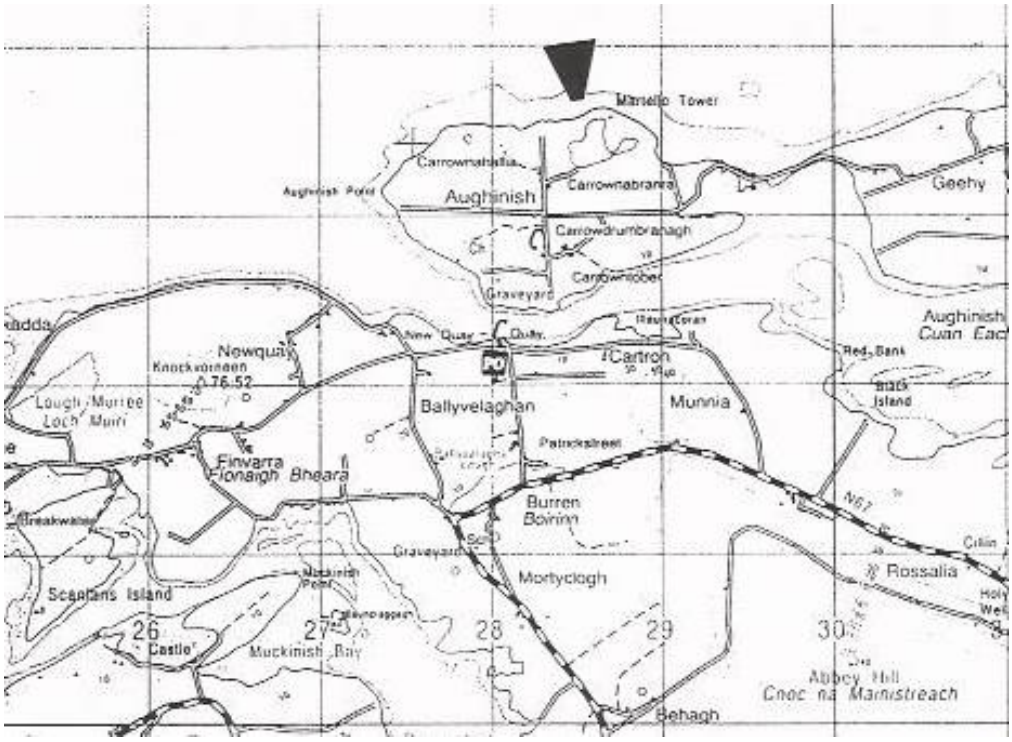

Figure 38.1 Location map of Aughinish lagoon.

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.

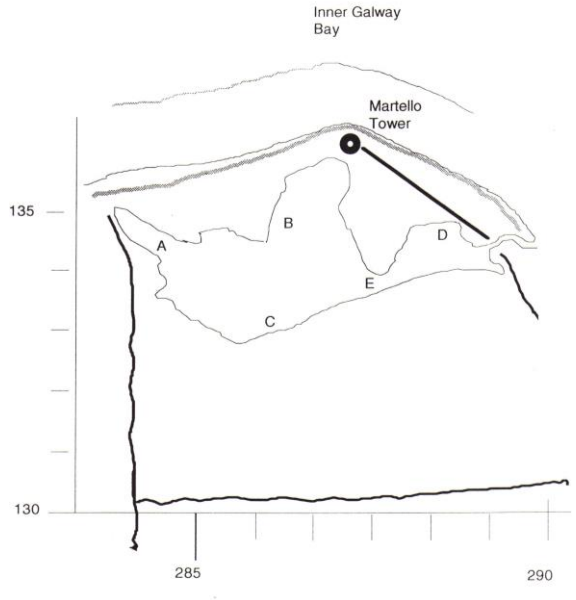

Figure 38.2 Sampling stations used at Aughinish lagoon.

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

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	Unfavourable-Inadequate

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).

References:

Bamber, R.N, Gilliland, P.M. & Shardlow, M.E.A. 2001b. *Saline lagoons: a guide to their management and creation* (interim version).ISBN 1 85716573 X. Peterborough, English Nature.

Costello, M.J., Holmes, J.M.C., McGrath, D. & Myers, A.A. 1989. A review and catalogue of the Amphipoda (Crustacea) in Ireland. *Irish Fisheries Investigations.* Series B (Marine), **33:** 3-70.

De Grave, S. & Myers, A.A. 1997. The occurrence of *Pontocrates arcticus* in Ireland and confirmation of *Gammarus chevreuxi* as an Irish species (Crustacea: Amphipoda). *Irish Naturalists' Journal*, **25**: 383.

Good, J.A. 1996. *Coastal lagoons in the Republic of Ireland: Ecotonal Coleoptera (Staphylinidae and Carabidae)*. Dúchas, Dublin.

Good, J.A. & Butler, F.T. 1998. Coastal lagoon shores as a habitat for Staphylinidae and Carabidae (Coleoptera) in Ireland. *Bulletin of the Irish Biogeographical Society*. **21:** 22-65.

Hatch, P. 1996. A survey of the vegetation of Irish coastal lagoons.1996. Unpubl. Report to NPWS. Dublin.

Hatch, P. & Healy, B. 1998. Aquatic vegetation of Irish coastal lagoons. Bulletin of the Irish Biogeographical Society. 21: 2-21.

Healy, B. 1999. *Survey of Irish coastal lagoons. 1996 and 1998. Vol. 1 Part 1. Background, description and summary of the surveys*. Dúchas, Dublin.

Healy, B. 2003. Coastal Lagoons. In: *Wetlands of Ireland.* R. Otte (ed). Chapter 4. University College Dublin Press. Dublin. 44-78.

Healy, B. & G.A. Oliver. 1996. *A survey of Irish coastal lagoons: Aquatic Fauna.* Unpublished report for Dúchas, The Heritage Service. Dublin.

Healy, B. & Oliver, G.A. 1998. Irish coastal lagoons: summary of a survey. *Bulletin of the Irish Biogeographical Society*. **21:** 116-50.

Healy, B., Oliver, G.A., Hatch, P. & Good, J.A. 1997a. *Coastal lagoons in the Republic of Ireland. Vol. 1. Background, outline and summary of the survey.* Report to the National Parks and Wildlife Service, Dublin.

Healy, B., Oliver, G.A., Hatch, P. & Good, J.A. 1997b. *Coastal lagoons in the Republic of Ireland. Vol. 2. Results of site surveys Parts 1-20.* Report to the National Parks and Wildlife Service, Dublin.

Healy, B., Oliver, G.A., Hatch, P. & Good, J.A. 1997c. *Coastal lagoons in the Republic of Ireland. Vol. 3. Inventory of lagoons and saline lakes.* Report to the National Parks and Wildlife Service, Dublin.

Oliver, G.A. 2005. *Seasonal changes and Biological Classification of Irish Coastal Lagoons.* PhD Thesis. U.C.D.

Oliver, G.A. 2007. Conservation status report: Coastal Lagoons (1150). Unpublished report to the National Parks and Wildlife Service, Dublin.

Oliver, G.A. and Healy, B. 1998 Records of aquatic fauna from coastal lagoons in Ireland. *Bulletin of the Irish Biogeographical Society*. **21**: 66-115.

Pinkster, S. 1978. Amphipoda. In: *Limnofauna Europea.* Illies, J. (ed), 2nd, ed., Stuttgart, Fischer. 244-253.

Spooner, G.M. 1957. Amphipoda. In: *Plymouth Marine Fauna*. (ed. 3), Marine Biological Association of the United Kingdom, Plymouth. 207-234.