



Lough Donnell 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

Vegetation was surveyed by P. Hatch in 1996 (Hatch 1996, Hatch & Healy 1998). Water depth in 1996, over most of the lagoon was less than 50cm, except at the outlet and the freshwater inflow only. Therefore, the aquatic species of this lagoon were more comprehensively surveyed than those of most sites.

*Ruppia maritima* was the only aquatic higher plant species and is listed as a lagoonal specialist. It was widely distributed across the site, being completely absent from the vicinities of the outlet pipe and the freshwater inflow and the area of periodic flooding to the south only. *Ruppia* had a patchy cover to the north of the freshwater inflow and a more extensive cover to the south. It was typically low-growing.

*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.

There is a high diversity of swamp and other marginal communities. *Scirpus maritimus*, *Schoenoplectus* and *Phragmites australis* occur in mixed and single species stands on the eastern and southern shores. These are all fairly extensive in places. Eastern swamps grade to freshwater *Phragmites* fen. A community of salt tolerant species with dominant *Eleocharis uniglumis* and *Agrostis stolonifera* occurs in the south. An open shore community consisting of *Glaux maritima*, *Spergularia marina* and *Triglochin maritima* is found in the north and south of the site and *Puccinellia maritima* dominated saltmarsh vegetation borders part of the barrier shore.

Lough Donnell is an interesting site in terms of the diversity of its marginal communities. However, aquatic species composition is poor and based on vegetation the lagoon is rated as of **no conservation value**. (Hatch 1996).

## Fauna

Aquatic fauna was sampled at five stations in Lough Donnell (Figure 35.2), by Healy & Oliver (1996, Oliver & Healy 1998), details of which are shown in Table 35.1

Table 35.1 Positions of sampling stations in Lough Donnell, with sampling date, salinity, depth of water and type of substratum.

	Sampling stations				
	Sta A	Sta B	Sta C	Sta D	Sta E
Sampling dates	8-9/8/96	8-9/8/96	8-9/8/96	8-9/8/96	8-9/8/96
GPS position	R 0041 7092	R 0441 7092	R 0399 7068	R 0022 7065	R 0056 7075
Salinity (psu)	2-6	3-4	3	5	5-6
Depth(cm)	0-100	25-100	25-50	25-50	10-40
Substratum	Sand, occasional stones	Soft organic silt	Firm sand	sand	Sand and cobble

A total of 32 taxa were recorded in Lough Donnell, of which 27 are identified to species (Table 35.2). Two of these species are lagoonal specialists (*Sigara stagnalis*, *Palaemonetes varians*), both of which are common species in Ireland. Two other species (*Notonecta viridis*, *Jaera normanni*) are proposed lagoonal specialists in Ireland, and appear to be relatively uncommon.

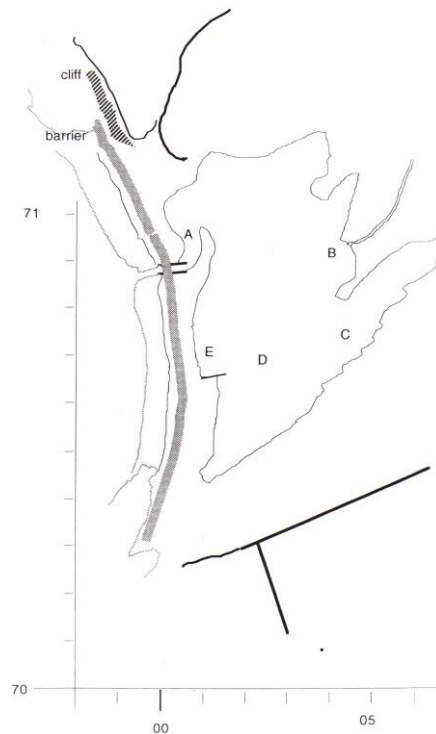


Figure 35.2 Sampling stations used at Lough Donnell.

Differences between stations are mainly correlated with habitat as the salinity was similar at all stations. *Sigara dorsalis*, *Notonecta viridis*, *Ischnura elegans* and four of the Coleoptera were only taken at B at the edge of the reed beds, while *Jaera nordmanni* and *Ligia oceanica* were confined to the seaward shore where they were found under cobbles. *Crangon crangon*, and *Palaemonetes varians* were only found at A, near the main tidal stream. *Potamopyrgus antipodarum*, *Neomysis integer* and *Sigara stagnalis* were common throughout the lake. Chironomid larvae constituted the only fauna in the sediment.

***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).

***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.

***Notonecta viridis*** Hemipteran insect (back-swimmer) recorded on the east coast at Kilcoole, on the south coast at North Slob, Lady's Island L., Tacumshin L., Ballyteige, Clogheen/White's Marsh and Kilkeran L. and also on the west coast at Reenydonegan, Co. Cork and L. Donnell, Co. Clare. A rare brackish water species in

Ireland. According to Southwood and Leston (1959), it was recorded only for Wexford and North Kerry. Recorded previously in Lady's Island L (Healy *et al.* 1982) in Lady's Island L. and the North Slob by Galvin (1992) and from the Dingle Peninsula by McCarthy and Walton (1980). *N. viridis* is found at inland sites in the U.K. but appears to be largely restricted to lagoons in Ireland, and was proposed as a lagoonal specialist for Ireland by Oliver and Healy (1998).

Table 35.2 Aquatic Fauna Recorded at Lough Donnell, Co. Clare. June and September, 1996.

L.T. = Light Trap, ( ) = records for June, + = present, o = occasional, c = common, a = abundant, F = fyke net. Species in bold text are lagoonal specialists or notable species.

	Sampling Stations								
	A	L.T.A	B	L.T.B	C	L.T.C	D	L.T.D	E
<b>Crustacea</b>									
Mysidacea <i>Neomysis integer</i>	+		c		c	c100	a	a	
Isopoda <b><i>Jaera nordmanni</i></b>	+						+		
Amphipoda <i>Gammarus duebeni</i>	+		+						+
Decapoda <i>Carcinus maenas</i>	+		+						
<i>Crangon crangon</i>	+		(+)						
<b><i>Palaemonetes varians</i></b>	1								
<b>Acarina</b>					+				
<b>Insecta</b>									
Odonata <i>Ischnura elegans</i>			o						
<i>sp. 2</i>			1						
Trichoptera (cases)	+		+						
Hemiptera Corixidae	a	150	o	2	a	50	a	40	
<b><i>Sigara stagnalis</i></b>	+		+		+		+		
<i>S. dorsalis</i>			+						
<b><i>Notonecta viridis</i></b>			o						
Coleoptera <i>Dryops luridus</i>	+								
<i>*Gyrinus caspius</i>									
<i>Haliplus flavicollis</i>							+		
<i>H. lineatocollis</i>				+					
<i>H. ruficollis</i>				+	+				
<i>H. wehnckeii</i>	+			+					
<i>Helophorus brevipalpis</i>	+								
<i>Hygrotus inaequalis</i>				+					
<i>Noterus clavicornis</i>			+						
Diptera Chironomidae	+		+		o		a		
Culicidae	+	10							
<i>Ephydra riparia</i>	+								
<b>Mollusca</b>									
Prosobranchia Hydrobiidae	a		a		o		o		
<i>Potamopyrgus antipodarum</i>	+		+		+		+		
<b>Teleostei</b>									
<i>Anguilla anguilla</i>			F, 4						
<i>Dicentrarchus labrax</i>			F, 1						
<i>Gasterosteus aculeatus</i>	+	5	+		+	15	o	7	
Mugilidae	F, 1		F, 7						
<i>Platichthys flesus</i>	F, 1		F, 6		+				
<i>Pomatoschistus microps</i>	+	2	+		+	1	+	2	

The faunal assemblage reflects the predominance of freshwater over marine influence throughout the lake. Although seawater may enter on most tides, it is flushed out by the

river water and no fucoids or marine fauna were established near the sea inlet. The fauna was moderately rich and typical of a lagoon with persistently low salinity but with an open inlet allowing some colonisation from the sea.

Based on aquatic invertebrate fauna Lough Donnell is rated as of **moderate conservation interest**.

### Ecotonal Coleoptera

Five species of carabid and twenty-four species of staphylinid were recorded by Good and Butler (1998). Two species (*Bembidion bipunctatum*, *Cypha punctatum*) are regarded as indicator species. The former appears to be widespread but local and found in coastal shingle and brackish pools, but also inland. The other, *C. punctatum*, appears to be rare in Europe, with only one published Irish record (Allen, 1975).

Based on ecotonal coleoptera, the site was described as of **low conservation interest** (Good & Butler 1998, Healy *et al.* 1997).

### Summary

Despite the artificial inlet running through the barrier and the number of tourists visiting this part of the coast during the summer, Lough Donnell is still relatively natural and unspoilt by adverse developments. The lagoon is of relatively **low conservation value** based on its invertebrate fauna, vegetation and ecotonal coleoptera. It is of higher value ornithologically and perhaps for commercially valuable fish species. Although possibly becoming increasingly shallow due to siltation, it is still a classic lagoon with one of the most impressive cobble barriers of the entire coastline. Based on the geomorphology and scenic value of the lagoonal barrier, Lough Donnell is rated as of **exceptional conservation value**.

Although, biologically, Lough Donnell is of low conservation value, geomorphologically it is exceptional. Overall value is therefore rated as high.

**Overall Conservation Value = High**

### Conservation Status Assessment (from Oliver 2007)

Impacts	Moderate eutrophication in shallow lagoon but significant tidal flushing. <b>Appears to be becoming increasingly shallow due to siltation.</b> Poaching by cattle.
Conservation Status	<b>Unfavourable-Inadequate</b>

### Further Information

Lough Donnell 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).

**Barrier breached in December 2007, draining the lagoon. Lagoonal status and future now uncertain. (see Oliver 2008).**

### References:

- Allen, A.A. 1975. Records of, and notes on, some of the rarer *Hypocyphus* spp. (Col. Staphylinidae) *Ent. Mon. Mag.* **111**: 191-192.
- Bamber, R.N. 1997. Assessment of saline lagoons within Special Areas of Conservation. *English Nature Research Reports* No. 235.

- Barnes, R.S.K. 1994. *The brackish-water fauna of northwestern Europe: a guide to brackish-water habitats, ecology and macrofauna for field workers, naturalists and students*. Cambridge University Press. 287 pp.
- Barnes, R.S.K. 1989. Coastal lagoons of Britain: an overview and conservation appraisal. *Biological Conservation* **49**: 295–313.
- Galvin, P. 1992. *The ecology of the brackish-water lagoons of Wexford and east Cork*. MSc thesis, University College, Dublin.
- 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.
- Hayward, P. J. & Ryland, J.S. (eds.) 1995. *Handbook of the Marine Fauna of North-West Europe*. Oxford University Press. PB. 899 pp.
- 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., Bates, R. & McGrath, D. 1982. Marine Fauna of Co. Wexford - 5. Lady's Island Lake. *Irish Naturalists' Journal* **20**: 509-560.
- 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.
- McCarthy, T.K. & Walton, G.A. 1980. *Sigara selecta* (Fieb.) (Heteroptera: Corixidae) new to Ireland, with notes on water bugs recorded from the Dingle Peninsula. *Irish Naturalists' Journal* **20**: 64-6.
- Oliver, G.A. 2005. *Seasonal changes and Biological Classification of Irish Coastal Lagoons*. PhD Thesis. U.C.D., Dublin.
- Oliver, G.A. 2007. Conservation status report: Coastal Lagoons (1150). Unpublished report to the National Parks and Wildlife Service, Dublin.
- Oliver, G.A. 2008. *Report on current conservation status and future prospects of Lough Donnell lagoon, Co. Clare*. 3rd March 2008. Unpubl. Report to NPWS.
- 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.
- Southwood, T.R.E. & Leston, D. 1959. *Land and water bugs of the British Isles*. Wayside and Woodland Series. Warne & Co. London. 436 pp.