



**Conservation Designation:** Great Island Channel SAC 001058, pNHA 001058

**General description:**

Rostellan Lake is an artificial lagoon in Cork harbour, with artificial barrier and outlet, though possibly it was a natural lagoon historically. The lagoon is moderate sized (50ha), shallow (<2m) and it seems that brackish conditions only exist near the causeway. In September 2003, salinity ranged from 0.5psu at the eastern end to 25psu near the outlet.



Figure 9.1 Location of map of Rostellan Lake.

Rostellan Lake was surveyed in 2003 as part of a PhD study (Oliver 2005) and used in a biological classification of Irish coastal lagoons. Four stations were selected for the sampling of aquatic fauna and flora (Figure 9.2, Table 9.1)

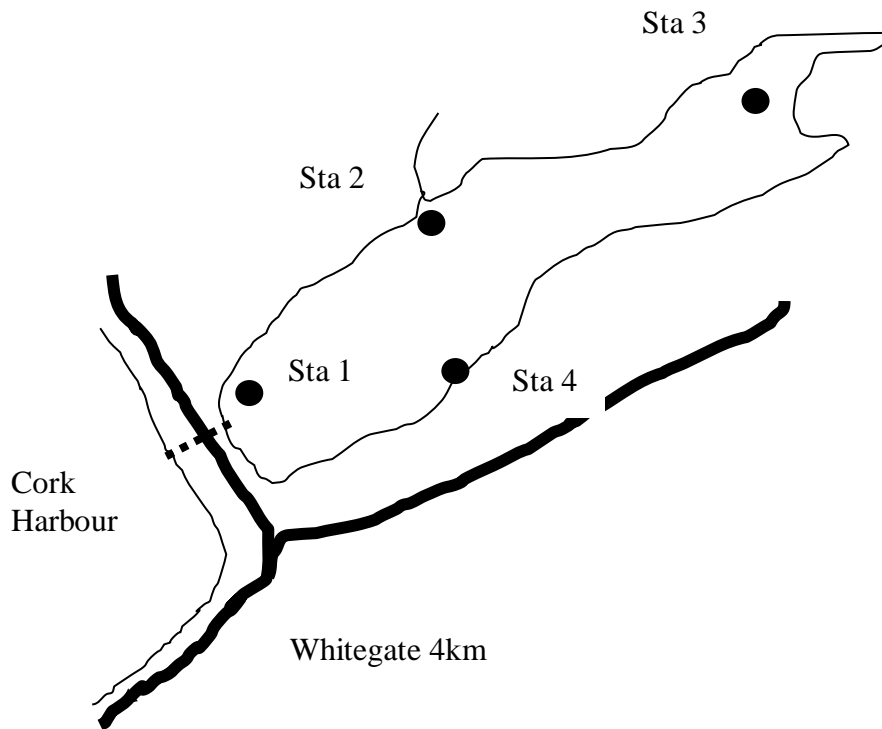


Figure 9.2 Sampling stations used at Rostellan Lake from 10-11/9/03.

## Flora

Only 10 floral taxa were recorded at Rostellan Lake (Table 9.1) at the time of sampling. Most of the lagoon is oligohaline and dominated by monocultural dense growths of *Potamogeton pectinatus* and surrounded by reed beds of *Phragmites australis* with patches of *Scirpus maritimus* in places. Nearer the barrier the *Potamogeton* is replaced by *Ruppia* sp., which is regarded as a lagoonal specialist. This was not flowering at the time and was not identified specifically. Also near the outlet were scattered plants of *F. spiralis* and *Gracilaria verrucosa*.

***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. The *Ruppia* at Rostellan is assumed to be *Ruppia maritima* which appears to be the more common of the species and was found at 41 of the lagoons surveyed.

Table 9.1 Positions of sampling stations in Rostellan Lake, with sampling date, hydrological variables (salinity, temperature and depth of water) type of substratum and percent cover of vegetation, bare ground and rotting vegetation. Species in bold text are "lagoonal specialist" or rare species.

	Sampling stations			
	Station 1	Station 2	Station 3	Station 4
dates	10-11/9/03	10-11/9/03	10-11/9/03	10-11/9/03
salinity	13-19	0.5	0.0	5.5-19.8
temp	21.2	18.6	16.6	19.1-20.4
depth	0-100	0-30	0-30	0-200
substrate	soft mud, stones, gravel	soft mud with organic debris	very soft mud	fine soft mud
<b>Percentage cover</b>				
<b>ALGAE</b>				
Chlorophyta				
<i>Cladophora sp.</i>	10	1	1	1
<i>Enteromorpha sp.</i>	2			1
Phaeophyta <i>Fucus spiralis</i>	1			
Rhodophyta				
<i>Gracilaria verrucosa</i>	30			1
<i>Polysiphonia sp.</i>	2			
<b>ANGIOSPERMS</b>				
<i>Lemna minor</i>		1	1	1
<i>Phragmites australis</i>	5	20	10	
<i>Potamogeton pectinatus</i>		40		60
<b><i>Ruppia sp.</i></b>	40			5
<i>Scirpus maritimus</i>	10	10		10
BARE - mineral	20	30	80	20
BARE - rotting vegetation	5	20	10	10

## Fauna

A total of 35 faunal taxa were recorded at Broadmeadow lagoon, of which 27 were identified to species (Table 9.2). Faunistically, Rostellan is a very interesting site as seven of these species are regarded as lagoonal specialists in Britain and at least two others are proposed specialists for Ireland. Several of these are rare species and one had not been recorded in Ireland previously:

***Cordylophora caspia***. Hydroid recorded at four lagoons in Donegal (Kincas L., Inch L., Durnesh L., Blanket Nook), on the North Slob, Co. Wexford, Rostellan, Co. Cork, Muckinish, Co. Clare and an unsurveyed site (Rinmore) in Co. Galway and previously at Lady's Island L. (Healy *et al.* 1982). According to Arndt (1984), the species "appears to be an excellent bio-indicator for eutrophic brackish water in the horohaline zone". 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%).

Table 9.2 Faunal taxa recorded at stations in Rostellan Lake 10-11/9/03

(SWm = mean of 3x 30 second sweeps, Sedm = mean of 3 x 0.005m<sup>2</sup> diameter sediment cores, L.T. = Light trap, **Ab** = overall abundance of all sampling methods, including visual searches)  
 r = rare, o = occasional, c = common, a = abundant. Text in bold indicates lagoonal specialist species.

	Sta 1			Sta 2			Sta 3			Sta 4					
	SWm	Sedm	L.T.	Ab	SWm	L.T.	Ab	SWm	Sedm	L.T.	Ab	SWm	Sedm	L.T.	Ab
<b>Cnidaria</b>				a											a
<i>Cordylophora caspia</i>															
<b>Annelida</b>															
Oligochaete								1.0			o				
Polychaeta <i>Nereis diversicolor</i>		1.7		o											
<b>Crustacea</b>															
Cirripedia <i>Balanus ?improvisus</i>				o											
Mysidacea <i>Neomysis integer</i>	87.0		1200	c	178.0	2000	a	5.3	340	o	145.0		270	c	
<i>Praunus flexuosus</i>	7.3		48	o											
Isopoda <i>Jaera sp.</i>	1.3			o											
<b><i>Lekanesphaera hookeri</i></b>	78.7		45	c	10.7		o				103.3		17	c	
Amphipoda	10.7	4.7	1	c	14.0		c	6.0	23	c	4.0		1	c	
<i>Gammarus sp.</i>									23	o	2.3				o
<b><i>G. chevreuxi</i></b>	5.0		1	c	2.0		o		1	r	4.3				c
<i>G. zaddachi</i>	3.3	2.3		c	11.3		c	6.0	11	c				1	r
<i>Corophium volutator</i>			2	o		6	o				2.3		3	o	
<b><i>Corophium insidiosum</i></b>	13.3	1.3	2	c											
<b><i>Leptocheirus pilosus</i></b>		2.3		o											
<i>Melita palmata</i>	0.3			r											
Decapoda <i>Carcinus maenas</i>				c											c
<i>Crangon crangon</i>			2											1	r
<b><i>Palaemonetes varians</i></b>	26.3		1	c	2.0	32	o				39.7		44	c	
<b>Insecta</b>															
Odonata <i>Ischnura elegans</i>											1.7				o
Heteroptera Corixidae	1.3			o	21.3	48	c	1.3	3	o	105.0		1	c	
<i>Callicorixa praeusta</i>					0.7		o	0.3		r					
<i>Corixa punctata/iberica</i>								0.3		r					
<i>Gerris sp.</i>					0.7		o								
<b><i>Notonecta ? viridis</i></b>								0.7		o					
<i>Sigara concinna</i>					0.3										
<i>S. dorsalis</i>															
<b><i>S. stagnalis</i></b>	1.0			o	13.3	40	c	0.7	3	o	105.0		1	c	
Coleoptera									2	o					
<i>Gyrinus sp.</i>					0.7		o		2	o					
Diptera Chironomidae		2.7		o	3.3	2	o	30.0	8.3	2	c	32.0	12.0		c
<b>Mollusca</b>															
Gastropoda <i>Hydrobia ulvae</i>	0.3			r											
<i>Potamopyrgus antipodarum</i>					0.7		o				1.0				o
<i>Lymnaea peregra</i>					2.7		o								
<b>Bryozoa</b>				a											c
<b><i>Conopeum seurati</i></b>															
<b>Pisces</b>				c											c
<i>Anguilla anguilla</i>															
<i>Gasterosteus aculeatus</i>					1.3		o	4.0	10	c					
Mugilidae				a			a				a				a
<i>Pleuronectes flesus</i>				o											

***Corophium insidiosum*** Amphipod crustacean recorded for the first time in Ireland (Oliver *et al.* 2007) at three lagoons in Co. Cork (Rostellan, Cuskinny, Rosscarbery), following Pinkster's prediction (1978) that it would be found in Ireland.

Recent unconfirmed record from Raffeen (Co. Cork). Regarded as a lagoonal specialist in England but possibly an introduced invasive species in Ireland.

***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). The record from Durnesh L., Co Donegal (Oliver and Healy 1998) 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.

***Leptocheirus pilosus*** Amphipod crustacean recorded at three lagoons in Co. Cork (Rostellan, Cuskinny, and Rosscarbery) in association with *C. insidiosum* and possibly Raffeen (unconfirmed), and also at L. Athola, Co. Galway and Furnace L., Co. Mayo. The only other known Irish localities are the south side of Wexford Harbour (Costello *et al.* 1989) and on the North Slob, Co. Wexford (Galvin 1992). 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 (1989a) 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*** Only immature specimens (unconfirmed) were found at Rostellan. 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).

***Sigara stagnalis*** Hemipteran insect (water-boatman). A common lagoonal specialist found at 36 of the 87 (41.4%) lagoons 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.

Based on aquatic fauna, Rostellan Lake is regarded as of **high conservation value**.

### Summary

Although artificial, and of no great botanical interest, faunistically Rostellan Lake is a surprisingly interesting lagoon with a large number of lagoonal specialists and several species which appear to be rare in Ireland.

**Overall Conservation Value = High**

<b>Conservation Status Assessment (from Oliver 2007)</b>	
Impacts	Eutrophication from surrounding farmland and domestic dwellings but significant tidal flushing.
Conservation Status	<b>Unfavourable-Inadequate</b>

### Further Information

Feeding behaviour of wintering Whooper Swans was studied by O'Donoghue and O'Halloran (1994). Listed as a lagoon by Healy *et al.* 1997, and Healy 2003. Surveyed in 2003 as part of a PhD study (Oliver 2005) and used in a biological classification of Irish coastal lagoons and in the Conservation Status Assessment (Oliver 2007).

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