The Three Lagoons

Introduction and location

The Three Lagoons are three waterbodies on the south coast of Co Wexford in the extreme south-east corner of the island of Ireland: Lady's Island Lake, Tacumshin Lake and Ballyteige Channels[1 & 2]. Lady's Island Lake and Tacumshin Lake are located on the coast immediately north-west of Carnsore Point, Ireland's south-eastern cornerstone. The Ballyteige Channels are located on the coast immediately north-west of the fishing port and village of Kilmore Quay (Figure 1).

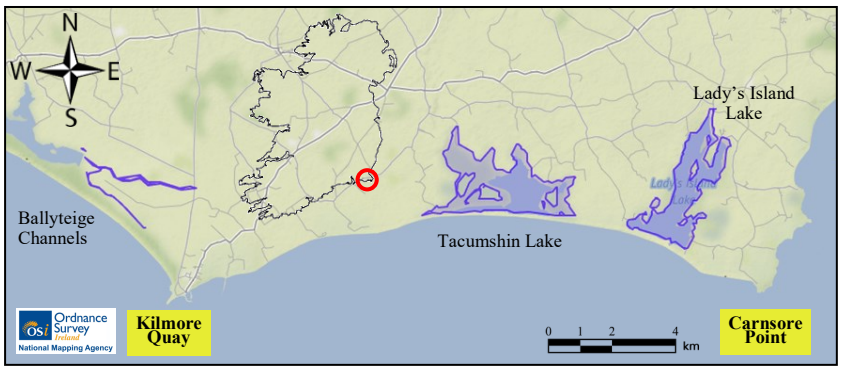


Figure 1. Location map; screenshot from https://data.gov.ie/dataset/inventory-of-irish-coastal-lagoons-2007. Ordnance Survey Ireland Permit No MP 003519. © Ordnance Survey Ireland/Government of Ireland.

What is a coastal lagoon?

A coastal lagoon is an expanse of shallow water of varying salinity and water volume, wholly or partially separated from the sea by a natural barrier[3].

Natural barriers (Figure 2) of sand and gravel impound the three lagoons found on the South Wexford Coast. The sand and gravel in the barriers allows water to percolate both landwards and seawards thereby altering both the salinity and the volume of the lagoons.

Figure 2. The barrier (right) and sandy beach at Ballyteige Burrow with part of the Celtic Sea on the left. The lagoon is impounded behind the barrier on the right.

What is a habitat?

Habitats are places that support wildlife, for example, coastal lagoons. The 1992 European Union Habitats Directive[4] sets out obligations on member states to protect vulnerable habitats. Annex 1 of the Directive targets 233 natural habitats found in the territories of member states that are of Community interest and that require the designation of Special Areas of Conservation (SACs) to achieve their protection. Fifty-eight of these Annex 1 habitats occur in Ireland[5]; 20 of them on the South Wexford Coast. The requirements of the Habitats Directive are transposed into Irish domestic law by several pieces of legislation[6].

What are priority habitats?

Priority habitats are a sub-set of the Annex I list of 233 habitat types. They are defined as being 'priority' because they are considered to be particularly vulnerable and are mainly, or are exclusively, found within the territory of the European Union.

By virtue of their priority status they require special site protection measures to ensure their continued survival.

Two priority habitat types are found on the South Wexford Coast: coastal lagoons (Habitats Directive Annex 1 code 1150) and fixed sand dunes.

Each of The Three Lagoons on the South Wexford Coast is a priority habitat and each is protected by Special Area of Conservation (SAC) designation under both Irish and European law.

Lagoon name	SAC Site Code
Lady's Island Lake	IE0000704
Tacumshin Lake	IE0000709
Ballyteige Channels	IE0000696

Nature conservation

The National Parks and Wildlife Service (NPWS), an executive agency of the Department of Housing, Local Government and Heritage, is the statutory body responsible for nature conservation and natural heritage in Ireland and has responsibility for managing coastal lagoon biodiversity. The NPWS website at www.npws.ie gives descriptions of all lagoons together with maps, aerial photographs and other useful information. The NPWS contact person for the South Wexford Coast is Tony Murray, Conservation Ranger, telephone 01 539 3212, email Tony.Murray@npws.gov.ie.

National Parks & Wildlife Service

Coastal lagoons are listed in the *Wexford County Development Plan* and the *County Wexford Biodiversity Action Plan*, both policy documents of Wexford County Council. Both documents may be accessed at www.wexfordcoco.ie. Via its function as the local planning authority, Wexford County Council is a major player in conserving coastal lagoons in county Wexford. The Wexford County Council contact person is Catherine McLoughlin, Heritage Officer, telephone 053 919 6453, email catherine.mcloughlin@wexfordcoco.ie.

Wexford County Council

Text and photos: Jim Hurley, SWC Promotions, Grange, Kilmore, Co Wexford Y35 YN35. Email: southwexfordcoast@gmail.com. Mobile: 086 163 7199. Copies of this leaflet are available to download as a PDF file at www.southwexfordcoast.com. Version: 202303.

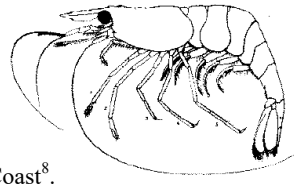
SWC Promotions: promoting the natural heritage resource values of the South Wexford Coast.

Lagoonal specialists

The water in coastal lagoons is brackish, that is, it is a mixture of freshwater and seawater. The mixture can vary from being very fresh to being very salty. Salinity is a measure of how salty the water is.

Some freshwater plants and animals can live in lagoons if the salinity is low and some marine plants and animals can live in lagoons if the salinity is high. In addition to the freshwater and seawater elements of the plants and animals that are found in lagoons, there is a third component: the lagoonal specialists. These are plants and animals that are more characteristic of coastal lagoons than of any freshwater or seawater habitat[7]. Lagoonal specialists thrive in coastal lagoon conditions.

A lagoon prawn, commonly known as the Common Ditch Shrimp (*Palaemon varians*; pictured) is an example of a lagoonal specialist found in all three of the coastal lagoons that occur on the South Wexford Coast[8].



In a 1996 survey of Lady's Island Lake, the animal life in the lagoon was found to be *"rich"* with 44 species recorded including the most diverse community of lagoonal specialists of any Irish lagoon: *"At least 13 lagoonal specialist species have been recorded which is the highest number for any lagoonal habitat in the country."*[9] In the 2016-2017 survey, 14 lagoonal specialists were recorded in The Three Lagoons: 10 of the 14 were recorded in Lady's Island Lake, and 9 were recorded in both Tacumshin Lake and Ballyteige Channels[8].

Lady's Island Lake

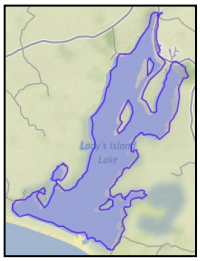
Location: 4km north-west of Carnsore Point.

Grid reference: T1007.

Description: A natural sedimentary lagoon. *"Lady's Island Lake is by far the largest and best example of a sedimentary lagoon in the country and one of the best in Europe".*[10]

Dimensions: About 3.5km long by 1km wide and 1-5m deep approximately (Figure 3).

Figure 3. Lady's Island Lake: Screen snip from https://maps.wexford.ie/imaps/. Ordnance Survey Ireland Permit MP 003519. © Ordnance Survey Ireland/Gov of Ireland.



Area: 340.4ha[11] with a favourable reference area of 299.6ha[12 & 13].

Designation: Special Area of Conservation (SAC) Site Code IE0000704[14].

Water level. Water level fluctuates seasonally and is controlled by breaching the fringing barrier each year to drain the lake[15].

Water quality. In a survey carried out in 2016 -2017, water quality was rated 'Bad'[8].

Conservation objectives: "*To restore the favourable conservation condition* [of the coastal lagoon]".[12]

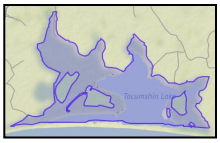
Main management challenges: Controlling the fluctuating water level and reducing pollution.

Tacumshin Lake

Location: 8km west-north-west of Carnsore Point.

Grid ref: T0506.

Description: A natural sedimentary lagoon. A former tidal inlet/outlet at the south-western corner of the lagoon closed naturally in 1972. The coastal lagoon was subsequently drained by means of a sub-barrier pipeline.



Since 1972, much of the open water shown in Figure 4 has transitioned to reed and large sedge swamp (Figure 5) with developing willow scrub.

Dimensions: About 3km long by 1.5km wide and 1.0-1.5m deep approximately.

Area: 413.53ha[16] with a favourable reference area of 380.7ha[17 & 13].

Designation: Special Area of Conservation (SAC) Site Code IE0000709[18].

Water level. Water level is controlled by a sub-barrier pipeline installed in 1974 to drain the lake[19].

Water quality. In the 2016-2017 survey, water quality was rated 'Moderate'[8].

Conservation objectives: "*To restore the favourable conservation condition* [of the coastal lagoon]".[17]

Main management challenges: The main management challenges are

- Removing reedbeds and willow scrub that have been invading the lagoon since 1972.
- Upgrading the sub-barrier pipeline to allow seawater into the lagoon.
- Controlling the naturally fluctuating water level.
- Strengthening the fringing barrier to prevent overwashing.
- Improving water quality in the lagoon from the its present 'Moderate' status to 'Good' status.

Figure 4. Tacumshin Lake location map: Screenshot from https://maps.wexford.ie/imaps/. Ordnance Survey Ireland Permit MP 003519. © Ordnance Survey Ireland/Gov of Ireland.

Figure 5. Looking east over extensive reedbeds at the western end of Tacumshin Lake colonising areas of former open lagoon water.

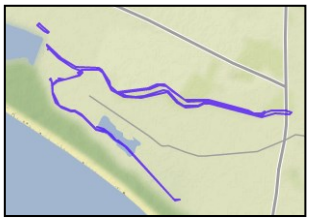
Figure 6. Flooding of both fields at The White Hole and the public road at the bottom of Hore's Hill on 16 February 2014 due to a combination of high tide storm water blocking the sub-barrier pipeline at Tacumshin Lake and overwashing the fringing barrier there.

Ballyteige Channels

Location: 3km north-west of the fishing port and village of Kilmore Quay.

Grid reference: S9506.

Description: An artificial lagoon. Following the intaking of some 660ha of former wetlands during the period 1847-1852[20] (Figure 7) and the creation of the new townland of Inish and Ballyteige Slob, lagoonal specialists from the former natural lagoons behind the Ballyteige Burrow barrier colonised the newly constructed excavations. The present lagoon habitat (Figure 7) comprises the following three main elements:



- The Main Channel extending from the Cull Bank (Figure 7: A) to Big Bridge on the Baldwinstown Road (B). Pre-1850, the Main Channel was natural, but it was artificially modified, straightened and deepened during drainage works since the 1850s. The Cull Reservoir (C) was excavated to hold drainage water but is long redundant, silted and overgrown.
- the Back Channel (D) branching off the Main Channel and running south of the pond in the quarry operated by Inish Pebble Company Ltd., to the southern end of Furlong's Road (E). Again, pre-1850, it was natural, but it was artificially modified, straightened and deepened during drainage works since the 1850s.
- the Cull Pond (F), the flooded hole left in the ground when a large volume of soil and subsoil was extracted that together with spoil from the Cull Reservoir (C), was used to build part of the Cull Bank during the period 1847-1852.

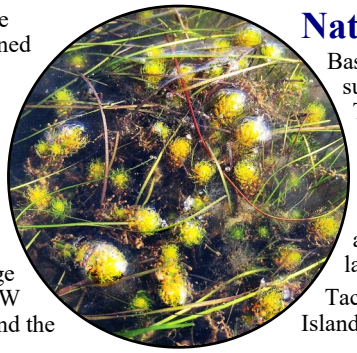
Dimensions: The Main Channel is 3.4km long approximately, is up to 25m wide and 1-3m deep. For much of its length, the channel divides into a northern branch and a southern branch. These branches re-join thereby enclosing a long, narrow, curving, uncultivated lens dominated by Common Reed and willow scrub. The Back Channel is 2.6km long, up to 11m wide and less than 1m deep. The Cull Pond measures 160m long, 20m wide and 1m deep approximately.

Area: The area of the existing coastal lagoon habitat (Figure 7, orange) is 12.5ha[21 & 22].

Designation: Special Area of Conservation (SAC) Site Code IE0000696[23].

Water level. Water level in the drains and channels is maintained by the Office of Public Works (OPW) by pumping water into the estuary through the Cull Bank[24]. On an on-going, routine basis, the OPW also removes vegetation and silt from the network of drainage channels to improve water flow to the pumps. For drainage maintenance purposes, the OPW calls the Main Channel 'C2' and the Back Channel 'C2/1'[25].

Water quality. In 2016-2017, water quality was rated 'Bad'[8].



Foxtail Stonewort (*Lamprothamnium papulosum*) a rare alga and lagoonal specialist.

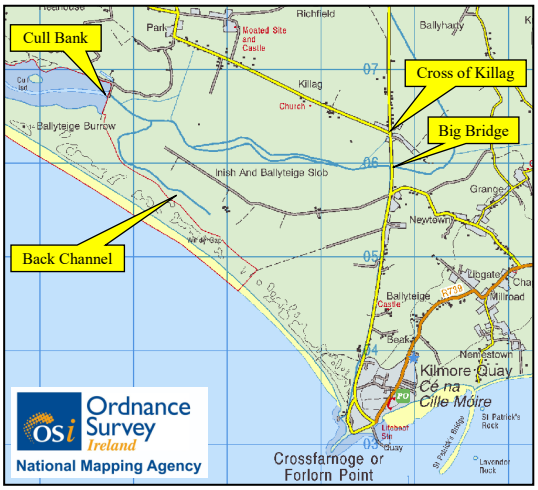


Figure 7. **Above**: Intaken wetland (brown), behind the fringing sand and gravel barrier at Ballyteige Burrow (yellow). **Below**: The present three elements of the existing artificial lagoon habitat (see text). **Right**: Ordnance Survey Discovery Sheet No 77 showing placenames. Ordnance Survey Ireland Permit No MP 003519. © Ordnance Survey Ireland/ Government of Ireland.

(Source: Bing image at https://maps.biodiversityireland.ie/Map)

Conservation objectives: The overriding objective is "*To restore the favourable conservation condition* [of the lagoon]"[21 & 22].

Main management challenge: Reducing pollution. When the quarry operated by Inish Pebble Company Ltd has been worked out and decommissioned, planning conditions mandate that wildlife habitats, including habitat for coastal lagoon specialists, are created and maintained in the flooded sand and gravel workings that are hydrologically isolated from the existing Ballyteige Channels.

National importance

Based on the animal life they supported, Lady's Island Lake, Tacumshin Lake and Ballyteige Channels were each rated of *'exceptional'* conservation value among the sites surveyed in the 1996 and 1998 national coastal lagoon surveys[26].

Tacumshin Lake and Lady's Island Lake are among the largest coastal lagoons in Ireland. Together, the three lagoons that occur on the south coast of County Wexford comprise about 30% of the country's coastal lagoon heritage making the South Wexford Coast a significant resource for that particular habitat type.

Ballyteige Burrow is recognised as one of the most impressive shingle-based dune systems in the country. The site is of major ecological value for its range of good quality coastal habitats, including two habitats given priority status on Annex I of the European Union Habitats Directive: fixed sand dunes and coastal lagoons[23]. The Three Lagoons are also Marine Protected Areas (MPAs).

Water levels

Realtime water level data for The Three Lagoons may be accessed online on the webpages maintained by the Hydrometric Section of the Office of Public Works (OPW) at http://waterlevel.ie/.

Lagoon name	Hydrometric station name and number
Lady's Island Lake	Lady's Island, No 13070
Tacumshin Lake	Sigginstown, No 13071
Ballyteige Channels	Cull Pump House, No 13081

Water quality

Enrichment of the water in The Three Lagoons by phosphates, nitrates and organic matter is an on-going problem. The Water Framework Directive is a piece of European Union (EU) legislation aimed at improving water quality throughout the Union. The Directive was adopted by the EU Parliament and Council in December 2000 and was transposed into Irish law in December 2003. The aim was to achieve 'good ecological status' by 2015 or 2021. However, these aims were not achieved. The aim now is to achieve 'Good' status by 2027.

HIGH
GOOD
MODERATE
POOR
BAD

Water quality is assessed on a five-point scale: High (the best), Good, Moderate, Poor and Bad (the worst). Lady's Island Lake and the Ballyteige Channels scored 'Bad' (red) in a recent (2016-2017) survey while Tacumshin Lake scored 'Moderate' (yellow)[8 and 27].

The aim is that all three coastal lagoons will achieve 'Good' status (green) by 2027.

Overall assessment

Lagoon name	Water quality
Lady's Island Lake	Bad
Tacumshin Lake	Moderate
Ballyteige Channels	Bad

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Complaints and concerns

Complaints regarding water pollution can be made online to Wexford County Council at https://wexford-self.achieveservice.com/service/Environment___Report_Illegal_Dumping.

Concerns regarding nature conservation should be addressed to Tony Murray, the local National Parks and Wildlife Service (NPWS) Conservation Ranger, email Tony.Murray@npws.gov.ie, telephone 01 539 3212.

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Figure 8. Flock of overwintering Coots feeding at Lady's Island Lake close to the village.