Rostonstown


Cottonweed

Rostonstown

Location

Rostonstown (Grid Ref: T 08 05) is a townland located on the South Wexford Coast 4km west-north -west of Carnsore Point, the extreme south-east corner of the island of Ireland[1 & 2]. The townland is one of the starting points for exploring the barrier at Lady's Island Lake.

Location map: Screenshot from https://maps.wexford.ie/imaps/.
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Introduction

Lady's Island Lake is a coastal lagoon. Coastal lagoons are defined as expanses of shallow water of varying salinity and water volume, wholly or partially separated from the sea by a barrier[3]. At Lady's Island Lake the barrier is a ridge of sandy gravel separating the lagoon from the adjoining Celtic Sea. The barrier extends from west of Rostonstown to Carnsore Point. It adjoins the mainland at Rostonstown and Chour on opposite sides of the southern end of the lagoon. The free-standing portion of the barrier between these two locations is 1.8km long, is mostly about 100m wide (range 54-168m) and is less than 8m tall.

Location map: Screenshot from https://maps.wexford.ie/imaps/.
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Two townlands comprise the barrier: Rostonstown Burrow on the western side and Burrow (E D Lady's Island) on the eastern side. Both of the townlands are privately-owned. The barrier is breached mechanically each year to drain the lagoon; the breach is known locally as 'The Cut'. The traditional location of The Cut is on the Burrow side of the boundary between the two townlands.

Sunny South East

Ireland normally gets between 1100 and 1600 hours of sunshine each year. The sunniest months are May and June. During these months, sunshine duration averages between 5 and 6.5 hours per day over most of the country. The extreme southeast gets most sunshine, averaging over 7 hours a day in early summer[4].

Soils

Soil has developed on the barrier from wind-blown sand. Over time, vegetation colonised the loose, mobile sand and stabilised it. The vegetation traps fresh wind-blown sand and as plants die their remains add humus to the sand in an on-going soil-forming process. Plants have also colonised gravel at The Cut and mud on the lagoon shore.


Yellow Horned-poppy colonising gravel at The Cut.

Geology

The free-standing portion of the barrier impounding Lady's Island Lake is under-laid with Carnsore Granite[5], a coarse reddish-brown rock type with large crystals. The granite is not exposed anywhere along the free-standing portion of the barrier but is exposed at Carnsore Point where the extreme eastern end of the barrier is anchored to that headland.


Carnsore Granite

Heritage resource value

The natural heritage resource values of the free-standing portion of the Lady's Island Lake barrier are four-fold: its landform, its profusion of wild flowers, its wild birds and its conservation status.

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

The barrier at Rostonstown Burrow looking west with Lady's Island Lake on the right and the Celtic Sea and the distant Saltee Islands on the left.

Landforms

The main landform present at Rostonstown Burrow and Burrow (ED Lady's Island) is the fringing gravel barrier separating Lady's Island Lake from the eastern Celtic Sea (panorama above; aerial image below).

Great Barrier Coast

The South Wexford Coast is Ireland's Great Barrier Coast as it is the coastline that gives greatest expression to the 'Southern barrier, lagoon and cliff erosion province' in the classification of the east coast of Ireland into geomorphological provinces associated with changes in wave energy, tidal range and sea-level history along the Irish Sea[6].

> *"The most impressive barrier coast in Ireland is that extending for 30km from Carnsore Point ... excellent examples of gravel-based barrier landforms ... among the best examples in Europe."*
> (Orford and Carter, 1982)[7]

Three lagoons

The South Wexford Coast supports three lagoons: Lady's Island Lake (350ha), Tacumshin Lake (430ha) and the Ballyteige Channels (8ha). Lady's Island Lake is the largest lagoon in Ireland and together, the three south Wexford lagoons comprise about 32% of the country's coastal lagoon heritage[8].

Fringing barriers

The three coastal lagoons are impounded by long gravel barriers that separate them from the adjoining Celtic Sea. The gravel allows water to percolate both landwards and seawards through the barriers. The lagoons are interpreted as the remains of glacial outwash channels and/or glacial lakes from the last ice age. The barriers are interpreted as coarse, wave-worked glacial sediments that formed shore-parallel tidal ridges. These ridges subsequently transgressed landwards with rising sea level as the ice sheets melted. While the barriers are anchored on the rocky headlands at Forlorn Point and Carnsore Point, their free-standing portions are still transgressing inland. The swash-aligned barriers face the direction of the prevailing weather and the approaches of both the dominant local wind-waves and Atlantic swells[7, 9 & 10].

Glacial heritage

On rare occasions when waves are particularly destructive, the sea combs great depths of sand and gravel off the barrier beach to reveal an underlying bed of peat.

Wood peat on Rostonstown beach after a storm with tree trunks and branches (inset).

Large fragments of the peat are broken off during storms, are dispersed by the sea and litter the barrier to the east.

Evidence of transgression

Eroded blocks of solidified but easily split, blue-black clay with plant remnants from the bed of the lagoon also occur on the beach face suggesting that the lake bed is emerging on the seaward beach as the barrier moves inland[9].

Sea-rounded block of lagoon bed peat on Rostonstown beach.

Estimates of the rate at which the barrier is transgressing vary widely because it moves in quantum leaps rather than at a constant pace. Peat on the Lady' Island Lake barrier has been dated to 4900±85 years before present, suggesting a barrier roll-over rate of about 0.05m/year or 5m per century in the past[11].

Another source suggests that the roll-over rate of the entire barrier over the last 5000 years was five time faster (0.25m/year)[12]. The mean rate of retreat at The Cut was calculated to be 0.2m/year based on an examination of historic map data. However, retreats of 3-20m are theoretically possible during individual storms based on average grain diameter sizes of 3-1mm[13].

It is not known what impact global warming, climate change and sea-level rise will have on these rates in the future. Future sea level rise during the next 100 years could raise tide and extreme levels by 0.55-1.05m at The Cut[13].

Immediately after it has been opened, The Cut affords a rare opportunity to examine the full width of the barrier in cross section. The section shows a series of overlapping, landward-dipping sediment units composed of mixtures of sand, fine and coarse grit, gravel, and the occasional cobble or boulder. Each veneer is added as the sea over-washes the barrier ridge transporting sediment from the seaward beach face to the back barrier slope in an ongoing landward migration of material.

Sand dunes

The fringing gravel barriers on the South Wexford Coast are topped with a decoration of wind-blown sand. The sand forms impressive tall dunes at Ballyteige Burrow, only low, hummocky dune fields at Tacumshin Lake and just a ridge with a few very small dunes at Lady's Island Lake. Information about the age of the dunes is scant; borehole data yielded dates of 1,955±60 years before present (BP) at Ballyteige Burrow and 2,310±60 years BP at Carnsore Point[14]. Opportunities for further dune development are limited due to paucity of building material. Sediments deposited by ice sheets are a finite resource.

Wild flowers

The barrier supports a great diversity of wild plants. Trees are absent. Woody shrubs are scarce; the three largest dark smudges on the aerial image below are stands of Sea-buckthorn. The smaller dark smudges are mostly stands of Gorse with one small Hawthorn. Marram grass dominates the barrier ridge. Trampled paths allow a more diverse

vegetation to flourish. Pioneer colonisers like Sea Sandwort, Sea-holly and Yellow Horned-poppy struggle to gain a foothold in the extreme conditions on the exposed seaward face of mobile sand and gravel. The more sheltered and muddier lake shore supports a strip of salt marsh. In late summer and autumn large stands of the rare Spiral Tasselweed, together with Fennel Pondweed, may be seen growing underwater in the shallows by the lake shore. The rarest plant on the barrier is the critically endangered Cottonweed.


Pyramidal Orchids

Cottonweed

Cottonweed *Achillea maritima* (formerly *Otanthus maritimus*) is a native Irish plant. A yellow-flowered member of the very large daisy family, it gets its English name from the fact that the plant is densely covered with soft, cottony hairs. In the past it was reported from counties Wicklow, Wexford, Waterford and Kerry. It is now confined to just one site in Ireland: the barrier at Lady's Island Lake[15 & 16]. The species underwent a major decline in north-west Europe since 1850. It became extinct in the Channel Islands in 1926 and in mainland Britain in 1936[17]. The reason for the major decline is not fully understood.

On 29 July 1882, the Donegal botanist Henry Hart visited the barrier at Lady's Island Lake. He found Cottonweed at The Cut and growing *"... abundantly on the margin of the lake, at its seaward end, and along the coast for about a mile to the bar of Tacumshin Lake ..."*[18]. At present, only nine discrete clumps of stalks remain at the species' last location in Ireland and Britain.

While Cottonweed enjoys legal protection[19], the species is red-listed as *'critically endangered'* and is *"at imminent risk of extinction in Ireland without immediate intervention"*[20]. In early 2017, the National Parks and Wildlife Service conducted an experiment that involves removing some Marram grass from the barrier at Lady's Island Lake and importing sandy gravel from The Cut to recreate an area of the bare, open habitat that the species appeared to formerly thrive in. Unfortunately, experiments carried out in the past, when Cottonweed plants were translocated from the barrier at Lady's Island Lake to the barriers at Tacumshin Lake and Ballyteige Burrow did not meet with success.


Juvenile Dunlin bathing at the water's edge on the lake shore

Other wildlife

Common Blue and Large White are common resident butterflies while migrants like the Red Admiral and Painted Lady occur in varying numbers. The most noticeable of the day-flying moths are the Six-spot Burnet and the Cinnabar Moth. Black and amber hooped caterpillars of the Cinnabar Moth occur on Ragwort. The most common molluscs are the Vineyard Snail and the Brown-lipped Snail. Bootlace Weed is the most common seaweed on the sea shore. It is an annual plant so it is most often seen in summer.


Cottonweed coming into flower.

Wild birds

Terns and Black-headed Gulls abound in summer. Flocks of terns roost at The Cut in August especially when sea fog occurs. Ringed Plover, Grey Heron and Little Egret are regulars at the lake edge. Starlings are common on the barrier in winter and a Short-eared Owl can be expected. Passing seabirds can be watched from the seaward beach where small numbers of Oystercatchers and Sanderlings are often present.

Nature conservation

All of the barriers on the South Wexford Coast are legally protected for the habitats and species that they support. Protection of the barrier at Lady's Island Lake was first proposed in 1915 when the site was identified a possible Rothschild Reserve.

Rothschild Reserve

In 1912, Charles Rothschild, an English banker and naturalist, founded the 'Society for the Promotion of Nature Reserves' (SPNR). The aim of the society was to create a list of the finest wildlife sites in the United Kingdom for potential purchase as nature reserves. Sites were identified over the following three years.

By 1915, a list of 284 sites had been compiled. Twenty of these sites were in Ireland, three in County Wexford. Two of the Wexford sites were rated of 'Primary Interest': Rostonstown Burrow (No 216) and The Raven (No 217). The remaining site, the Saltee Islands (No 10), was rated an 'Area of Secondary Importance'.

The survey form with regard to classifying the Rostonstown Burrow site is blank except for one entry in Section B, Question 1: *"To whom does it belong?"* to which the answer given is *"Irish Land Commission; Dorothy Murphy"*. No reason is given as to why the site was selected as a potential reserve.

Due to the outbreak of World War I, the gaining of the independence of the Republic of Ireland from the Crown and other historical circumstances, the proposed 'Rothschild Reserve' at Rostonstown Burrow was never advanced[21, 22 &23].

Natura 2000 sites

Under the EU Habitats Directive, coastal lagoons are a priority Annex I habitat type (code 1150). The Lady's


Six-spot Burnet moth on Ragwort

Island barrier-lagoon system is a protected area to conserve the habitats and wild birds that the site supports. The barrier is part of two Natura 2000 sites: Lady's Island Lake Special Area of Conservation (SAC) Site Code IE0000704 and Lady's Island Lake Special Protection Area (SPA) Site Code IE0004009. The features of special interest are its "Perennial vegetation of stony banks [1220]" (SAC)[24] and its range of wild birds (SPA).

Sources

1. Ordnance Survey of Ireland. Discovery Series. Sheet 77. Scale: 1:50,000.
2. Ordnance Survey of Ireland website at http://maps.osi.ie/publicviewer/#V2,709362,605373,9,10.
3. European Environment Agency at http://eunis.eea.europa.eu/habitats/10007#sites.
4. Met Éireann webpage at http://www.met.ie/climate-ireland/sunshine.asp.
5. Geological Survey of Ireland Spatial Resources Viewer at https://www.gsi.ie/Mapping.htm and Tietzsch-Tyler, D., and Sleeman, A. G. 1994. *Geology of South Wexford*. Dublin: Geological Survey of Ireland.
6. Carter, R. W. G., McKenna, J., Orford, J. D. and Devoy, R. J. N. 1994. The Irish Sea coast of Ireland: a brief review of coastal processes, erosion and management. Anon, 1994 pages 7-12. Rising Sea Level and Coastal Protection. *Seminar Report No. 4*. Liverpool: Irish Sea Forum.
7. Orford, J. D. and Carter, R. W. G. 1982. Geomorphological changes on the barrier coasts of south Wexford. *Irish Geography*, Volume XV, pages 70-84.
8. NPWS. 2007. *The Status of EU Protected Habitats and Species in Ireland: Backing Documents, Article 17 forms, Maps*. Volume 1. Dublin: National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government. Available online at http://www.npws.ie/sites/default/files/publications/pdf/NPWS_2007_Cons_Ass_Backing_V1.pdf.
9. Carter, R. W. G. and Orford, J. D. 1980. Gravel barrier genesis and management: a contrast. Volume 2, pages 1304-1320, in Coastal Zone '80: Proceedings of the Second Symposium on Coastal and Ocean Management held in Miami, Florida. Four volumes. New York: American Society of Civil Engineers.
10. Ruz, M-H. 1989. Recent evolution of the southeast barrier coast of Ireland. *Journal of Coastal Research*, Volume 5, Number 3, pages 523-539. Available online at http://www.jstor.org/stable/4297563?seq=1#page_scan_tab_contents.
11. Carter, R. W. G., Allen, J. R. L., Carr, A. P., Nicholls, R. J. and Orford, J. D. 1991. *Coastal Sedimentary Environments of Southern England, South Wales and Southeast Ireland.* (Field guide compiled for the 13th International Sedimentological Congress, 1990.) Cambridge: British Sedimentological Research Group.
12. Carter, R. W. G., Bauer, B. O, Sherman, D. J., Davidson-Arnott, R. G. D., Gares, P. A., Nordstrom, K. F., and Orford, J. D. 1992. *Dune development in the aftermath of stream outlet closure: Examples from Ireland and California*. In Coastal Dunes (Editors Carter, R. W. G., Curtis, F. G. F., and Sheehy-Skeffington, M. J.), Proceedings of the Third European Dune Congress held in Galway, 17-21 June 1992. Rotterdam: Balkema.
13. Parle, P. 2012. *Lady's Island Lake Drainage Options Report*. Unpublished consultants' report from Malachy Walsh and Partners to the Office of Public Works and the National Parks and Wildlife Service. Document No 14210-6001 Rev C. Cork: Malachy Walsh and Partners.
14. Quigley, M. B. (Editor). 1991. *A guide to the Sand Dunes of Ireland*. Compiled for the 3rd Congress of the European Union for Dune Conservation and Coastal Management in Galway, Ireland. Dublin: Trinity College.
15. Parnell, J. and Curtis, T. 2012. *Webb's An Irish Flora*. Cork: Cork University Press.
16. Stace, C. 1997. *New Flora of the British Isles*. Second Edition; 2001 reprint. Cambridge: University Press.
17. Preston, C. D., Pearman, D. A. and Dines, T. D. (Editors). 2002. *New Atlas of the British and Irish Flora*. Oxford: University Press.
18. Hart, H. C. 1885. Report on the flora of the Wexford and Waterford coasts. *Scientific Proceedings, Royal Dublin Society*, New Series, Volume IV, B, pages 117-146.
19. *Flora (Protection) Order, 2015* S I No 356/2015. Available online at http://www.irishstatutebook.ie/eli/2015/si/356/made/en/print.
20. National Botanic Gardens website at http://www.botanicgardens.ie/herb/census/threatnd.htm.
21. Webpages of The Wildlife Trusts at http://www.wildlifetrusts.org/Rothschild-Reserves and http://www.wildlifetrusts.org/who-we-are/history/rothschild-reserves/

The beach on the seaward side of Rostonstown Burrow.

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22. Ray, K., Sikora, E. and Counsell, D. 2014. *Rothschild Reserves in Ireland: 1914-2014*. Cork: Centre for Planning Education and Research, University College Cork. Available online at http://www.wildlifetrusts.org/who-we-are/history/our-centenary/rothschild-reserves/rothschild-reserves-ireland.
23. Rothschild, M. and Marren, P. 1997. *Rothschild's Reserves: Time and Fragile Nature*. Rehovot, Israel: Balaban Publishers and Colchester, Essex, England: Harley Books.
24. Website of the National Parks and Wildlife Service at https://www.npws.ie/protected-sites/sac/000704.

Vineyard Snails on Sea-holly

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Conservation concerns

Concerns regarding nature conservation should be addressed to Tony Murray, the local National Parks and Wildlife

Cottonweed was one of the aggressive pioneer colonisers of a washover channel near The Cut in the 1980s (pictured above). As vegetation stabilised the sandy gravel of the overwash channel, Marram invaded, succeeded the pioneer colonisers and became the dominant ground cover confining the Cottonweed to open, trampled ground along tracks made by people walking through the Marram. In recent years, Cottonweed appears to have lost its ability to colonise bare ground. Its most northerly population in Europe is now in very sharp decline.