



**BITHSFÉIR**  
Chuan Bhaile Átha Cliath  
Dublin Bay  
**BIOSPHERE**

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# OSPHERE

of Dublin Bay by designating North Bull Island as a nationally important habitats and species of interest. UNESCO's concept of a Biosphere has evolved to include not just areas of ecological value but also the areas around them and the communities that live and work within these areas. There have since been additional international and national designations, covering much of Dublin Bay, to ensure the protection of its water quality and biodiversity.

To fulfil these broader management aims for the ecosystem, the Biosphere was expanded in 2015. The Biosphere now covers Dublin Bay, reflecting its significant environmental, economic, cultural and tourism importance, and extends to over 300km<sup>2</sup>. Over 300,000 people live within the newly enlarged Biosphere.

Dublin Bay Biosphere contains three different zones, which are managed in different ways:

The core zone of Dublin Bay Biosphere comprises 50km<sup>2</sup> of areas of high natural value. Key areas include the Tolka and Baldoyle Estuaries, Booterstown Marsh, Howth Head, North Bull Island, Dalkey Island and Ireland's Eye.

The buffer zone comprises 82km<sup>2</sup> of public and private green spaces such as parks, greenbelts and golf courses, which surround and adjoin the core zones.

The transition zone comprises 173km<sup>2</sup> and forms the outer part of the Biosphere. It includes residential areas, harbours, ports and industrial and commercial areas.



## Brent Geese

As the days shorten and the temperatures drop in autumn the first Brent Geese arrive in Dublin Bay after a 5,000 kilometre migration from Arctic Canada. Like many of the geese and swans, the young birds stay with their parents over winter, following them on migration and learning from them about the best places to feed. The long lines of geese that fly daily across the city are moving from overnight roosts on the Bull Island to daytime feeding areas. Normally, one of the experienced adults takes the lead in these daily commuting flights with the younger birds falling in behind. Brent Geese are essentially vegetarians and they need to graze more or less continuously during daylight hours to maintain their body in suitable condition for the long migration to the arctic breeding grounds. When they first

arrive the geese feed on green seaweeds and other plants on the shoreline.

However, as the population wintering in Ireland has grown steadily, the amount of intertidal feeding habitat in Dublin Bay has been exceeded and the geese have gradually moved on to feeding on coastal grasslands, including parks, sports pitches and other open spaces all around Dublin City.

## Plants of the mudflats

Green seaweeds are abundant on some of the mudflats, especially in the northern part of Dublin Bay. Typical species are Sea Lettuce and Intestine Weed although a total of 32 species of green seaweeds have been recorded from the Dublin Bay mudflats. They grow abundantly during summer months and die back or get eaten by waterbirds such as Brent Geese in winter. These are algae that are related to the brown seaweeds growing on rocks and harbour walls around the bay. The green seaweeds probably depend on anaerobic mud beneath them for their nutrient supply. This influenced the design of the new Ringsend treatment works, which greatly reduces the release of particulates into Dublin Bay. As the tide rises most of the seaweed mat floats free from the mud surface and drapes its long fronds around any obstacle such as a post. Whilst many records of algal biomass with season are available, the detailed ecology of each species has yet to be worked out.



## Seals

There are two common species of seals in Irish waters – the Harbour Seal and the larger Grey Seal. Both can be seen in Dublin Bay although they can be difficult to tell apart,



especially when the animals are young. All seals spend part of every day in the sea feeding and part of the day on land where they rest, digest their food and replace the oxygen that they need in their blood when they perform deep dives. Lying on rocks or beaches is known in the seal world as 'hauling out'. In Dublin Bay there are regular seal haul-outs on the northern tip of Bull Island and on the rocks around Dalkey Island. A Dalkey the seals are very tolerant of

visitors and will even swim around kayaks with great curiosity. On the Bull Island they are more wary because they are often chased by dogs here and they normally retreat to the water for safety. Breeding (or pupping) by either seal species in Dublin Bay itself is unusual as the pups are quite vulnerable to disturbance. Occasional Grey Seal pups are born on Dalkey Island or Howth Head. Young pups are sometimes found on Bull Island.



## Oystercatchers

One of the most distinctive of the waders seen throughout the year in Dublin Bay is the Oystercatcher. With its smart black and white plumage, bright orange-red bill and pink legs it is difficult to confuse with any other species. The Oystercatcher feeds mainly on worms and shellfish, including Cockles in sandy shores and Mussels in rocky areas. Oystercatchers also move inland to feed on earthworms in grassland. Recent

research by BirdWatch Ireland, using colour-ringing and satellite tracking of Oystercatcher, has uncovered other secrets of the birds' lives. From the thousands of re-sightings of these birds (normally using a telescope) it has been found that there is a remarkable consistency in their daily movements around Dublin Bay and neighbouring grasslands.

# Cockles

Empty Cockle shells are very common on the surface of the beaches at Sandymount and Dollymount. They live their entire lives buried in clean sand using their big fleshy foot to pull themselves under the surface. They can burrow deeper in the sand to avoid being eaten by a passing flatfish such as a Plaice or a bird such as an Oystercatcher. The most vulnerable parts of the Cockle are the soft siphons which are like two hosepipes stretching to the water above the sand. Using one siphon as an inflow and the other as an outflow, the shellfish constantly filters seawater through its body. From the water, they filter out tiny planktonic food items and organic detritus. The ridges and furrows on the shell of the Cockle help it to anchor itself in the mobile sand. Cockles are so plentiful on Sandymount Strand that part of the beach is called 'Cockle Lake'. In the nineteenth century hundreds of people collected cockles to on the beaches of Dublin Bay to sell on the city streets.

# Cordgrass

A pioneer plant on the mudflats is the Common Cordgrass. In the late nineteenth century it was realized that this grass had the capability to rapidly colonize coastal mudflats and create a dense sward that was seen as potential new land. At the Bull Island there is evidence that the Cordgrass was planted in straight lines along the upper saltmarsh on the northern side of the golf courses. It was first recorded on the island in 1934. The building of the causeway in the mid-1960s caused some rapid siltation and disturbance of the plants almost certainly caused their spread. In the 1970s, it was suggested that this spread of cordgrass might "lead to the elimination of the mudflats" so Dublin Corporation began a programme of control of the grass by digging up and removing the plants. However, Dr Mark McCorry found that the covering of Cordgrass actually increased on a sampled area despite the control efforts. McCorry also sampled the invertebrate diversity beneath clumps of cordgrass and found that the fauna here was just as abundant and species-rich as areas that were covered with the native glasswort. Attitudes to cordgrass have changed significantly since the 1990s and control measures are no longer considered either necessary or feasible in Dublin Bay.

# Marram the dune-building plant

Sand dunes depend on a supply of wind-blown sand from the beach. This is then stabilised by Marram Grass and other sand-binding grasses. Marram has a thick waxy surface which

prevents it losing water and protects the plant from damage by sand grains. It intercepts blowing sand by reducing wind speed causing the sand to pile up around the plants. Marram Grass can match the pace of sand accumulation, growing upwards by as much as a metre each year. As a dune surface becomes higher, it moves away from the freshwater. Growth and repair of the dunes depends on an uninterrupted supply of blown sand from the nearby beach. Marram grass and other dune vegetation are also very sensitive to trampling which can kill them and open up the sand dunes to wind erosion.

## **Plants of the mudflats**

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## **Life on rocky shores**

On rocky shores the plants and animals show clear zones, parallel to the tideline, dependent on often they are covered by the tide and the degree of exposure to waves. Animals and plants need to be strongly attached or living in crevices or under boulders to prevent their being washed off into the sea. The main rocky shores on the south side of Dublin Bay are between Seapoint and Dalkey and on the north side from Sutton around Howth Head. Most of the harbours and sea walls also provide hard surfaces that give artificial habitats for similar plant and animal communities. Seaweeds on rocky shores provide valuable food sources for a wide range of marine animals including barnacles, tunicates, anemones and polychaete worms. Sea urchins and sea cucumbers graze on the larger weeds. Smaller fragments of the seaweeds are eaten by planktonic animals such as copepods. Seaweeds also provide vital shelter for smaller animals preventing them from being washed off by waves. To appreciate this, simply lift one of the curtains of brown seaweeds growing near

low water mark and notice the myriads of animals from scuttling green crabs to fixed limpets, barnacles and anemones.

## **Sand Mason Worms**

One of the most abundant species on the sandy seabed is a tube worm which is now known to be a key species in the ecology of Dublin Bay. The Sand Mason Worm lives in clean sand below low water mark where its crown of tentacles waves in the tide searching for food particles in the water. The worms collect particles of sand and broken pieces of shell which are selected in just the right size fragments for building the tubes which protect their soft bodies. After storms large piles of these hard tubes are washed up on the shores. The worms are up to 30 centimetres in length, with many segments that are yellow, pink and brown in colour although the bushy gills are coloured blood red. Bottom-feeding fish like Plaice occasionally bite off the tentacles and some shorebirds like Bar-tailed Godwit can feed on sand mason worms at extreme low tide as they wade in water up to 10cm deep.

## **Sand eels**

The Sandeel is one of the most abundant of the surface-dwelling fish in Dublin Bay. Although they are not related to true eels their slim bodies are about 20 centimetres long and have an overall silvery appearance. In summer, great shoals of Sandeels move into shallow water to spawn. They can live in quite shallow water near high tide mark or move out to deeper water. Here they are hunted by other fast-swimming fish shoals like Mackerel. Eggs are laid in the softer sand where they stick to sand grains. Each female sand eel can produce up to 20,000 eggs which will hatch within a few weeks. Sand eels are an important component of the diet of many seabirds including Razorbills, Guillemots and terns. They are also hunted by seals and porpoises. This makes them a keystone species in the estuarine ecosystem. However, Sandeel stocks in the North-east Atlantic are changing due to both fisheries and climate change.. Sandeels are not free to move into deeper waters in response to warming sea temperatures because their ecology depends on sandy seabeds, leaving them susceptible to increased pressure from fisheries.

## **Jellyfish**

Warm summer temperatures often bring plenty of jellyfish into the sheltered waters of Dublin Bay. These beautiful animals drift with the tides and winds but are usually dead or dying by the time they strand on the beach. The common Moon Jellyfish feeds by trapping

tiny plankton all over its surface. In summer there are many larger Barrel Jellyfish in the Irish Sea. They can measure up to one metre across the bell-shaped body. There are occasional visits to Dublin Bay by other more dangerous species such as the Portuguese Man-o-War which is a colony rather than one individual. This colony can kill a person with the poison in its sting. All jellyfish can sting and they should not be touched even when stranded on the beach. Most



jellyfish begin life as tiny free-swimming medusa in the plankton. As the jellyfish grow they migrate towards the sun bringing mature adults into sheltered spawning areas such as Dublin Bay. After the breeding is finished the jellyfish are often dispersed by winds and tides possibly because their ability to swim in one direction declines as they near the end of their lifespan. This is when large numbers of jellyfish come ashore on beaches such as Dollymount and Sandymount strands.



United Nations  
Educational, Scientific and  
Cultural Organization



- Dublin Bay
- Biosphere Reserve since 2015
- Man and the Biosphere Programme
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## INFORMATION

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Biospheres are places where nature and culture connect. They are internationally recognised for their biological diversity yet also actively managed to promote a balanced relationship between people and nature.

### GET INVOLVED

## INFORMATION

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The Dublin Bay Biosphere is building up a video library detailing the biosphere and the interactions between man and nature. Check out the resources here.

### VIDEO LIBRARY

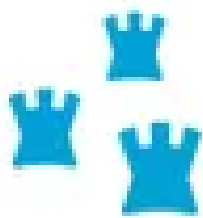
## INFORMATION

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The Biosphere is packed full of 'must see' places, take time to review some of them here.

## PLACES



Comhairle Cathrach  
Bhaile Átha Cliath  
**Dublin City Council**



**COMHLACHT CHALAFORT**  
**ÁTHA CLIATH**  
**DUBLIN PORT COMPANY**

**Comhairle Contae  
Fhine Gall**  
Fingal County  
Council



**dlr**

**Comhairle Contae County Council**



**An Roinn Cultúir,  
Oidhreacht agus Gaeltachta**  
Department of Culture,  
Heritage and the Gaeltacht



# Fáilte Ireland

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