

THE COAST

Portrush is a peninsula, so that means that it sticks out into the sea with coastline nearly all the way around.

From the White Rocks at the very end of East Strand to the West Strand and Black Rocks, our coastline is full of interesting finds! There are fossils, sculptures, sandy beaches, very important rocks and lots of water!

This topic will look at all the interesting finds along our coastline.

East Strand & White Rocks ①

East Strand

The East Strand, the larger of the two beaches of Portrush, is well loved by holiday makers and by surfers. It is also well-known for its connection to the golf courses overlooking the sands. International surfing competitions have been held there in recent times.

The beach was originally known as the Curran Strand, so called because of the Curran Point where the beach turns East towards the White Rocks. The waters off the Curran Point are treacherous due to the meeting of several tides and currents in that area.

East Strand Sculpture



To the People of the Sea is a public sculpture at East Strand, Portrush that takes its inspiration from both sails and the sea. The iconic Drontheim's sails become a metaphor for the surface of the sea; the flapping sails changing into crests of breaking waves as the bellowing sail canvas is turned into sheets of glistening bronze.

The sculpture is a metaphorical vessel for sea-related imagery that offers many angles of interpretation: It suggests a sea creature emerging out of the depth of Irish mythology brought to this coast by early seafarers. Its vertical surface reminds us of an angry ocean and is a reminder of legendary voyages that passed through the historic waters of Moyle. The deep

blue colour gives a glimpse of the depth of the ocean.

The 4.2m high repoussé bronze sculpture by Holger C. Lönze was completed in 2011. The work was nominated for the prestigious Marsh Award for Excellence in Public Sculpture in 2012.

The 'War Hollow'



An area behind the dunes, and a hole on the Royal Portrush Golf Club Valley Course, is known as the "War Hollow". This is based on a Norwegian legend about the warrior King Magnus Barefoot, (sometimes called Magnus Barelegs).

Wherever he landed, he would sack the town and sail away with all the gold, jewels and slaves he could get. In 1103, he arrived in Irish waters with his longships.

The chieftain at Dunluce (which was a strong fort, but not yet a castle) ordered a bonfire to be lit on the nearby hills as a signal for his allies to come to his aid. Magnus came ashore after three days and expected to see his men come towards him with all the cattle and slaves from their pillaging; but was ambushed by the hundreds of Ulstermen who had hidden behind the sandhills.

The Vikings lost and retreated with the dead Magnus Barelegs. The Norwegian sailor who returned with the tale in 1790 told of a great treasure which was buried among the sandhills.

Newspaper reports from 1813 record what could have been a Viking Longship found in a bog in Ballywillan, but the timber was carried off by locals and it is impossible to tell whether it would have been proof of the legend or not.

The Girona



La Girona was a 50-gun Spanish warship, with oars and sails, which left Spain in 1588 as part of the Spanish Armada.

It was one of the 130 ships that were sent by King Philip II of Spain to invade England. The Armada was defeated by an English naval force and what was left was blown Northwards by bad weather before it could return to friendly ports.

Many of the Armada ships were forced to flee into the unwelcoming Atlantic seas along the west coast of Ireland and up to 24 vessels were lost on our shores.

La Girona was among the ships which was destroyed along the Irish coast. It had anchored in Killybegs harbour, Co. Donegal, to repair a damaged rudder and had taken on other men who had been rescued from other Armada ships which had already sunk.

The ship set sail for Scotland, in the hope of finding assistance, but on 26th October 1588 with over 1,300 men crowded onboard, a fierce gale dashed the ship onto rocks at Lacada Point, near the Giant's Causeway. Only nine men survived.

The first salvage attempts of the Girona were made within months by Sir George Carew.

Sorley Boy MacDonnell, the Constable of Dunluce Castle, is alleged to have recovered 3 brass cannon and 2 chests of treasure from the wreck.

In 1967, La Girona was re-discovered by a Belgian underwater archaeologist named Robert Sténuit. He excavated the wreck site and found a huge haul of jewellery, gold and silver coins, religious tokens and other valuable artefacts, many of which are currently on permanent display at the Ulster Museum, Belfast. The museum paid £132,000 for the discovered renaissance artefacts in 1972.



The White Rocks



The White Rocks are tall cliffs made of chalk to the east of Portrush.

They were formed when the sea was much shallower, and dinosaurs roamed the Earth. The chalk is composed of the skeletons of tiny single-celled organisms which accumulated on the seabed and were later compressed over time. Chalk also formed in other areas in North-East Ireland, but the other areas of soft rock have eroded over time. The chalk bed at the White Rocks is among those which remains intact as it was capped by a layer of hard basalt rock which takes much longer to erode.

Coastal erosion is when the rock is 'eaten away' by the sea or by other rocks. There are four different types of coastal erosion which create the



interesting shapes of the rocks we can see today at the White Rocks.

'Abrasion' (sometimes called corrasion) is when the sea throws pebbles and sand against the rock and acts like a wrecking ball or sandpaper in grating away the rock face.

'Hydraulic action' is when the waves push water and air into cracks in the rock and causes the rock to shatter due to the force of the air being compressed and expanded.

'Solution' (sometimes called corrosion) is the sea dissolving soluble materials like calcium carbonate from the rocks such as chalk and limestone- like the white rocks- and attrition is when the rocks which have already been broken off from the main rock face knock against each other and are slowly worn into smaller boulders and pebbles.

Erosion makes different shapes and coastal rock forms such as caves, which can turn into arches and finally stacks and stumps as the sea erodes further into the rock. The White Rocks have examples of these features.

The chalk in the White Rocks is full of fossils, many of which are the tubular-shaped belemnites.



It is also contains considerable quantities of flint, which was used by Stone Age communities to make weapons and tools. It can also be used to make fires and is considered a survival tool even today.

Archaeologists have discovered several Stone Age settlements along the coast, and it is believed that the abundant supply of flint to make tools, the fish for food and the fresh drinking water from nearby streams were what attracted these people to live here almost 9,000 years ago.



Dr AEP Collins concluded that the importance of the White Rocks sandhill site, which he excavated in 1971, was because the structures and objects ranged all the way from the Neolithic to the Medieval on a single old land surface. The number of worked flints found at the site may indicate that it was an industrial site i.e. a "Flint Factory"; however, this could not be conclusively proven.



In more recent centuries, chalk was burned in kilns to make quicklime which helped to enrich soils for farming and was also used extensively in making Lime Mortar for building. Lime is still used by farmers to enrich their soil and make it more workable, which is why you can see the fields covered in a white substance between Winter and Spring as farmers prepare their fields for the planting season in the Spring.



Salmon Fisheries 2

Keywords: anadromous, alevins, fry, parr, smolting, grilse, kelts

The salmon fisheries are a long-established part of coastal life in Portrush.



The first people who settled on the Causeway Coast valued the salmon as a major food source and this has continued throughout the millennia. Local fishermen can recall when over 5,000 fish would be caught in a season (March – September) and landing a catch became a daily attraction as the huge 'bag nets' were hauled ashore.

The fisheries have now been bought over by the government and strict guidelines are in place to protect the declining number of salmon due to climate change, overfishing and pollution.



The Salmon Fishery was established in the seventeenth century under the ownership of Lord Antrim. For many years fixed nets were placed at right angles to the shore: one at the fishery, a second adjacent to the Lansdowne foreshore, a third at Revigerry Point and a fourth on the West side of Ramore Head.

These nets were fixed at one end to the rocky shoreline and at the other to a heavy anchor sunk in the sea. The nets were regularly inspected by the Salmon Fishery staff using heavy wide-beamed boats from which they lifted a section of the net to remove the salmon before moving on to the next section. Leaving from and returning

to the jetty and slipway at the Salmon Fishery could be a hazardous undertaking in rough weather as large waves rolled past the entrance.



Life Cycle of the Salmon

The Atlantic Salmon which is found in our waters has a very interesting life cycle. They are 'anadromous', which means they spend time in both freshwater rivers and the sea. The salmon will start as a small pea-sized egg which is usually hidden among the loose gravel of a river between November and January. The female will dig a groove in the gravel to deposit her eggs and the male will swim over the eggs and fertilise them. The female then buries the eggs quickly to a depth of several centimetres to protect them from bumps or attack from predators such as eels or trout. A large female salmon can lay up to 15,000 eggs at a time, giving a higher rate of survival. These eggs slowly develop until you can see eyes and increasing movement as they feed on a small sac of food inside the egg.

Just-hatched salmon fish are called 'alevins' and they still have the 'yolk-sac' of food attached to them in Spring. They absorb this and become more active, rising through the gravel until they are strong enough to swim up to the surface to get their first gulp of air called a "swim-up". Believe it or not, this air is important for the fish as it will fill its swim bladder and make it easier to swim with natural buoyancy.



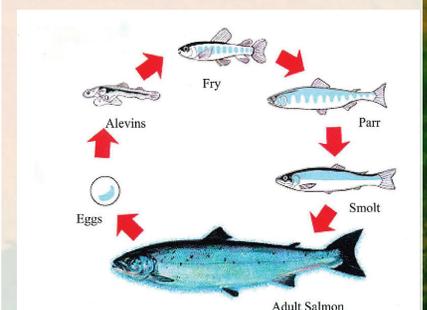
Once the alevins can swim they are now addressed as 'fry'. They have eight fins which are used to maintain their swimming in fast-flowing streams over the summer months. If you can

see salmon in a river, it means it is good quality water as salmon are very sensitive to changes in water quality, habitat and climate. Over the Autumn the fry develop into 'parr' with vertical stripes and spots for camouflage as they are now more exposed to predators. They will stay this way for one to three years until they are around 10-25cm in length. They will then undergo a process called 'smolting' when they gain a silver appearance and begin to swim with the tide instead of against it. The smolt will migrate along the Atlantic Drift to sea for a couple of years and prey on other fish such as herring and sand eel.

If they make it to the sea as an adult salmon, they are called 'grilse' after one year there. Once they are a suitable weight or size, they will return to the river which they were born in to breed a new generation of salmon. Salmon have a remarkable 'homing instinct' and can tell exactly where to return to from distances of over 3,000km!



It is on this journey back to their river that many are caught offshore at Portrush. Once they arrive back in their river, they do not eat until they have spawned a successful batch of eggs so they can focus their energy. After they have done this, they are called 'kelts' and are more susceptible to disease and predators due to weakness. However, some do make it back out to sea to repeat their amazing journey again .



Coastal Zone 3

Bath House



What we can now see as 'Coastal Zone' was once the location for a popular bath house where Victorian holidaymakers would come to enjoy the hot and cold baths.

The first bath house was built in 1834 by Lord Mark Kerr for the use of the people of Portrush and gave Bath Street, Bath Road and Bath Terrace their names. Lord Mark Kerr (pronounced Carr) was principal landlord of Portrush through marriage to Lady Charlotte McDonnell, younger daughter of the 6th Earl of Antrim.

Guests could enjoy seawater or freshwater baths of all temperatures, with or without added seaweed, and the Portrush baths became so popular that the 'Bathkeeper' was even provided with his own residence on the opposite side of Bath Road.

In 1888, improvements were made to the baths and a new petroleum engine was used to pump water into the bathhouse, replacing the old steam engine. However, by the beginning of the twentieth century, the baths were proving too expensive to run and most hotels had their own in-house bathrooms.

By 1912, the building was converted into a stables and garage for the horses and the motorcars, which were starting

to become more popular on the roads. The seawater pump was retained and, from 1934, was used to pump seawater up through Antrim Gardens to the new indoor swimming pool in the Northern Counties Hotel.

During World War II, the building was used as a cookhouse and canteen for American Soldiers training for the D-day invasion of continental Europe. It later fell into a state of disrepair and, in the early 1970s, was converted firstly into Portrush Countryside Centre and then into the Coastal Zone we can see today.

Blue Pool 4



The Blue Pool was also known as the "Gentlemen's Bathing Place" in the latter years of the 19th and early years of the 20th Century. Mixed bathing was frowned upon by Victorian and Edwardian society boys and girls had their own bathing places.

Naturally formed, it was host to a range of spectacles to large audiences in the past. The crowds were treated to "high, fancy and long diving, somersaults, hoop and trick diving, porpoise rolling" and other exciting choreographed performances by the Blue Pool Swimming Club as well as swimming competitions and polo matches.

The highest cliff dive was nearly 7 metres and boys of 11 could even claim the title of 'most fearless'. More experienced members of the Diving Club would jump blindfolded, with tied hands and feet, or even inside a tied sack in acts of escapology. For many years these displays were held in the evening under floodlights installed around the pool. Members of the club also became famous for endurance demonstrations, swimming to the Skerries and back or racing each other across the Harbour.

After 1916, women joined the men in their daredevil exhibitions, but by the mid-twentieth century the appeal of outdoor diving displays and swimming competitions in changeable weather had faded and the Blue Pool lost its popular appeal.



Skerries

The Skerries are a chain of very small islands immediately offshore to the East of Ramore Head. They used to be attached to Ramore Head but have now been separated by erosion.

In 1996 the islands were designated as part of the Ramore Head and The Skerries Area of Special Scientific Interest. Each island has a name, and the list includes Little and Big Carr, Middle and West Isle, North and South Island Ean, the Otter Isles, Winkle Island, Castle Island and Black Rock.



These bleak, rocky islands are uninhabited and are therefore ideal for supporting a diverse ecological habitat. The most significant of which are the breeding birds, such as the Kittiwake, Black Guillemot and Eider Duck. A common myth is that they were

the final resting place of the Great Auk, a seabird which became extinct in 1852. It looked rather like a penguin, but they were not biologically related.

The Skerries Road is the name for the stretch of water on the landward side of the chain of islands. Since medieval times, the calm water has been used to shelter ships who needed to escape bad weather or needed a place to take on cargo, crew or passengers. In the 1700s & early 1800s, newspaper articles advised people emigrating from Ireland to find better lives abroad that their ship would depart from "the Skerries Road, off Portrush" before sailing for America.



In 1858, there was a proposal to build a 'Harbour of Refuge' at the Skerries Road. The plan was to form the whole chain of islands into a continuous breakwater, leaving an open channel between Ramore Head and the western islands. This was anticipated to create more business in Portrush as a commercial port, but the idea was abandoned as the ports at Coleraine and Londonderry feared they would lose business and did not support the project.

The Skerries Road was also the site of a sea tragedy in December 1863 when the coal ship Providence sank as crowds on the shore watched. Six men were lost.

Ecological Breeding Grounds for Coastal Birds

Portrush is home to many different types of birds which use the area as breeding grounds. This is important for the natural landscape of the area as, with more biodiversity the land will be more adaptable and productive. In Northern Ireland, we rely heavily on our land for many purposes such as tourism, farming, sport, relaxation and entertainment. It is also important to provide an environment which suits coastal birds to use as breeding

grounds so that their species can continue.

In the spring, we can see many types of birds returning to Portrush after migrating to warmer climates during the winter. The Kestrel is one of the first to return and is one of the more common birds of prey found in Portrush. It is found in the grassier areas bordering Portrush and above the grasses in the sand dunes as it feeds on field voles, mice and shrews. The Kestrel can be identified by its ability to hover, which it can do for longer and much better than the other Falcons.



Similarly the slightly larger Buzzard has recently come back from being 'critically endangered' over the last 20 years and eats prey such as rabbits and other smaller birds. It is more easily identified from its call of "mew".



The most common type of bird to be found in Portrush is the Gull. There are eight types of Gull in Northern Ireland and four of these are commonly seen in Portrush. The Black-headed Gull was rare to spot inland over 100 years ago, but now they are the most common Gull you can see in gardens. The Black-headed Gulls lose their black (which are actually brown) heads through the winter months and replace it with a small black spot behind the eye. This makes them look very like the Common Gull, but the difference is that the Black-headed Gull has red legs while

the Common Gull has yellow legs. The other larger Gulls are the Herring and Black-backed Gulls.



A bird that may be mistaken for a Gull but is actually one of our cliff-nesting birds is the Kittiwake, named for its call which sounds much the same.



The Gannet may also be spotted, with its black wing tips and yellow heads. It is a rather large bird which is very well adapted to fishing. It can glide very low over the sea until it sees its prey, when it will quickly climb in height before shooting back down to catch its prey up to speeds of 100 km/h from

Razorbill



up to 30 metres high! To help with this, it has cushioning air pockets on its face and chest and eyes placed in a way which provides binocular vision to help it accurately gauge distance when it is diving for prey.

There are also other coastal birds visible from Portrush, such as the Razorbill and the Cormorant.



Cormorant

Lansdowne Rockpools 5

Keywords: coprolite, ammonite, belemnite, Vulcanists and Neptunists, geologist, dorsal, pelvic and caudal fins, crustaceans, molluscs, barbels, algae, tentacles, photosynthesis

Fossils

Fossils are the product of organic materials which have been preserved over a long period of time. It is actually very rare for living organisms to be fossilised, as most will simply decay once they die.

However, fossilisation can occur under special circumstances. This is when the soft parts of a living organism, (which decay the fastest,) decompose and leave the skeletal remains of the organism behind.

If sediment gathers above and around

the organism's remains, over time and with a large amount of sediment, the weight and pressure will cause the organism to fossilise and we are left with the 'shell' of the original organism part which can then be preserved by palaeontologists.

Fossils are an excellent way to learn about the past and the types of animals and plants which were alive.

A very important type of fossil is a 'coprolite'- fossils of faeces . These tell us of the diet and ecology of animals and can, for example, tell us the diet of dinosaurs and extinct animals. The most expensive coprolite is of a Viking human and is estimated at £30, 000 !



Portrush is a fantastic site for fossils and they are a major part of what makes the area so important to Scientists as an Area of Special Scientific Interest (ASSI).

The most common type of fossil found in Portrush is the ammonite - spiral fossils of animals which are related to other cephalopods such as squids or octopi. The remains we can see today were the shells of these animals, which became extinct around the same time as the dinosaurs. The biggest ammonite was found in Germany and is almost 2 metres across but most ammonites are small enough to fit in your hand .



The White Rocks are also popular for finding fossils- most of which are the tubular belemnites which were also cephalopods- closely related to the squid . The remains are the fossilised skeleton of the 'rostrum', the hard part of the tail we can see today.



Portrush Rock

"Portrush Rock" discovered on the Lansdowne foreshore in the late 18th Century was of such importance as to make the site one of the most important cultural sites in international geology.

These rocks proved instrumental in the scientific argument between Vulcanists and Neptunists, over whether minerals in the ocean crystallised together to form the Earth's rocks (Neptunism) or if rocks were created either by volcanic activity or the result of compacted sediments (Vulcanism). These two theories were named after the Roman god of the sea, Neptune, and the Roman god of volcanoes and fire, Vulcan, and were extensively debated in the 18th and 19th centuries.

In 1786 rocks were found in Portrush on the east side of Ramore Head that appeared to support the Neptunist cause. Dark grey to black rocks containing clearly preserved fossil ammonites were found along a 250m stretch of the shore. They were interpreted by early Neptunist observers as basalts. Since the Vulcanists considered basalts to be solidified lava flows, how, the Neptunists argued, could ammonites live in molten rock? No animal could survive such heat so, they asserted, the rocks must have been formed in the primeval ocean. However, John Playfair, an eminent Scottish geologist saw specimens soon after the death of his mentor James Hutton, a leading proponent of the Vulcanist movement in 1797, and visited the Portrush site in 1802. He immediately (and rightly) recognised the rock as a hornfels. He showed that the Portrush fossils were originally formed in sedimentary mudstone rock which was later 'baked' (or metamorphosed) when an underlying massive flow (or sill) of volcanic rock known as dolerite came into contact with it. The result was a rock superficially resembling basalt. This view was later upheld by influential observers and has prevailed ever since.

So it was that the east coast of Ramore Head was the last battleground of the Neptunists and Vulcanists from which the latter emerged triumphant. In an important sense it can be claimed that geology as a science was born from that moment of victory.

Beyond its historic significance the site is also important because it exposes one of the thickest dolerite sills (a tabular injection of molten rock) in Northern Ireland, and shows how the effects of heat (thermal metamorphism) altered the surrounding rocks to hornfels.

Rockpools

SEE SECTION ON ROCKPOOLS IN 'WHAT'S IN THE WATER'

West Strand 6

Peat beds



Above: Picture of the peat beds, courtesy of Dr Peter Wilson

Where is it?

The West or Mill Strand is the smaller of the two Portrush beaches and joins the harbour to the Black Rocks on the West side of the town.



The West Strand is registered as an Area of Special Scientific Interest (ASSI) due to the presence of an underlying peat bed – the fossilised remains of birch and alder trees which are 7,000-9,000 years old!

This means that Portrush was once covered by forest.

The peat deposits were found in 1888 when the sea wall was being built. A sea wall is a wall along the beach which protects the land above it from coastal erosion.

Peat forms at the rate of only 1 millimetre per year, so it must be managed and protected.

Peat is usually found in 'bogs' or 'mires', as it requires a damp but stagnant area of land. Peat is used as fuel for fires.



This site on the West Strand is very important for scientists as it is one of the very few sites which shows how the sand dunes and coastal area has changed over such a long period of time, and therefore how it might change in the future. We still use peat in fires today, but as it is a fossil fuel, more and more people are switching to more sustainable resources such as wind and solar.



Above: Peat beds can be seen clearly before the building of the promenade on West Strand. Pic courtesy of Dr Peter Wilson.

Sea Walls and Promenade

With Portrush being on a rocky peninsula extending out into the Atlantic Ocean with sandy beaches on either side, there was always a risk that wave erosion on both sides could cut away the sand dunes and leave Portrush as an island.



In the mid-1930's a seawall and promenade was constructed from the town for about a quarter of one mile. This would have protected the adjacent holes on the golf course and the land where the East Strand car park is now situated.



In the early 2000's this was replaced by a new promenade with a connection to the promenade below Strandmore. Unfortunately this was severely damaged by storms on at least two occasions and additional work had to be carried out to strengthen it.

On the West Strand the beach was backed by sandhills all the way from the south pier of the harbour to the Black Rocks. The Golf & Hydropathic Hotel was built on a sandhill site overlooking the beach at the end of the 19th century. No seawall was constructed around the base of the hotel at beach level until the 1930's.



There is evidence of some earlier sea defence work of a much more temporary nature before this time, but it was all replaced by the solid concrete construction with a stepped front to dissipate the strength of the waves which is still in place today as part of the later promenade. Between 1950 and 1953 a new concrete seawall and promenade was constructed from the south pier of the harbour to a point just below the start of Barry's garden railway (now Kiddieland): a distance of some 120 metres.



This seawall protected the ground known as Kerr Street Green together with the former lifeboat-house which was then being used as a shelter against inclement weather. During the early 1960's a major construction

contract was placed to construct a new seawall and promenade from the Black Rocks connecting to the existing seawall below the hotel and linking it to the existing promenade from the harbour.



The work included driving interlocking steel sheet piles into the beach some 30 metres deep to form a solid edge from which the curved seawall could be formed. A few years later, during a major storm, the wave action created by the curvature of the new seawall caused the original section adjoining the harbour to be torn apart and wrecked. Following this a new section of seawall was built to match the curved wall and was blended into the south pier and given an access ramp unto the beach.

Seawalls take a tremendous battering, especially during storms, and are designed to withstand this. However additional factors, such as the loose boulders and stones at the Black Rocks end of the West Strand seawall, grind upon the concrete and gradually wear it down causing sections to break away. Because of this the condition of seawalls has to be constantly monitored and corrective action taken where appropriate. Failure to do this could result in catastrophic damage occurring during a bad storm and large parts of the seawall being washed away or badly damaged.

