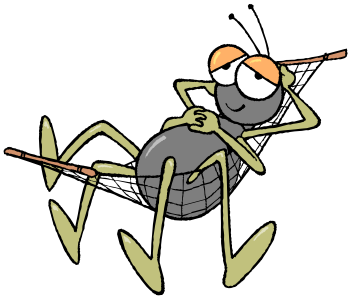

# Nature's Web

Issue No. 56 Winter 2019

## Inside This Issue...



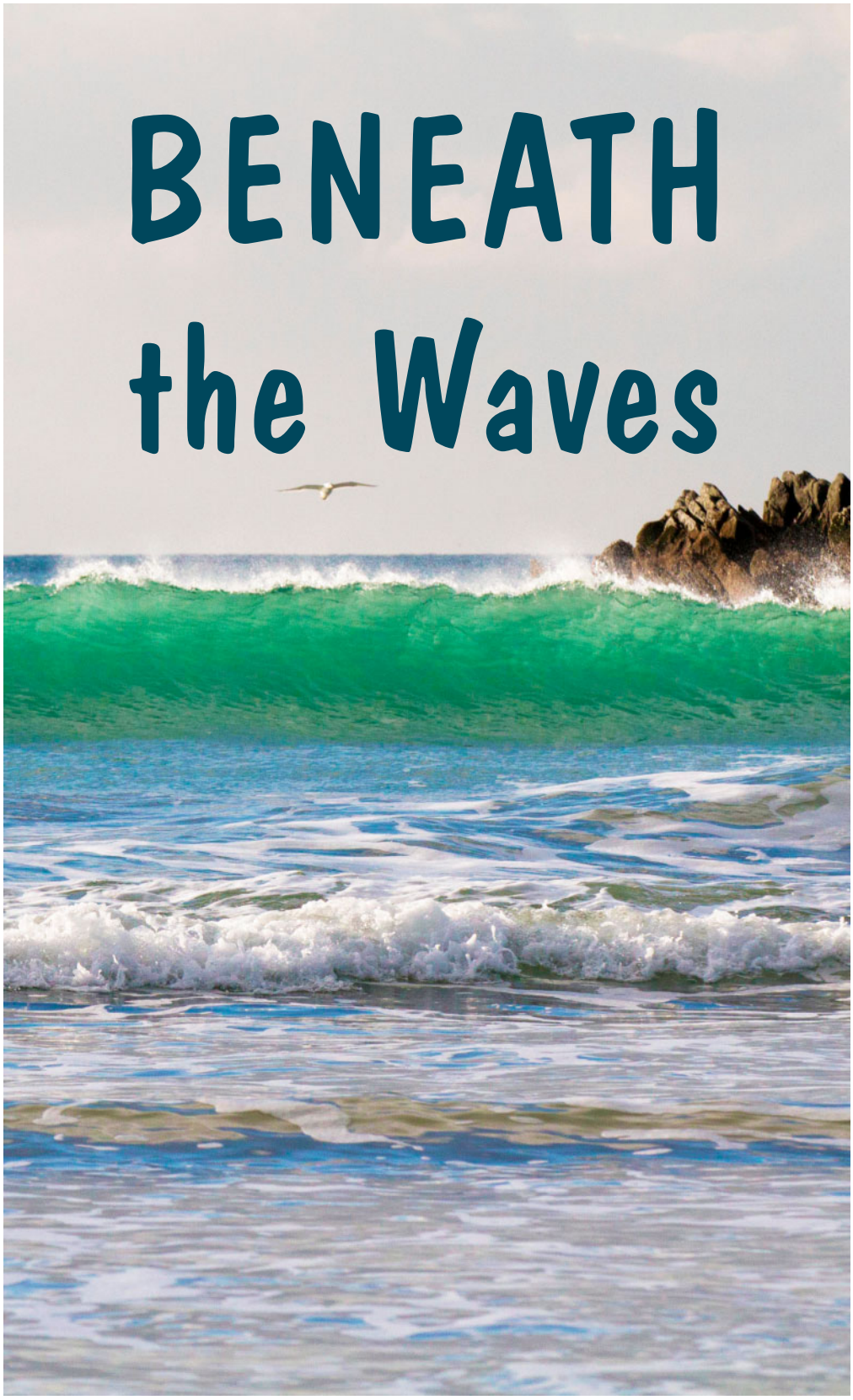


Image courtesy of Robbie Murphy

# Editor's Page

## Looking at the waters around Sherkin from a different angle


**RV Mallet (right) and RV Geo (left) in Baltimore Harbour.**

In Co Cork this summer, the research boats the *RV Mallet*, *RV Geo, RV Lir and RV Keary* could often be seen in and around Baltimore and the islands of Roaringwater Bay. These boats are carrying out a survey, run by the Geological Survey of Ireland and the Marine Institute, to map the seabed of Roaringwater Bay. The survey is part of a much, much bigger survey which you can read all about on pages 4, 5 and 7.

We were lucky enough to visit the *RV Mallet* when it was tied up in Baltimore, where it was based for the summer, and it was fascinating to see some of the seabed scans, particularly of places we would have passed over many times in a boat.

There is still more work to be done in the area so we look forward to seeing the boats doing their work around the islands again next year.

**As Gaeilge!** We are delighted to have teamed up with An Gúm, who are translating Nature's Web into Irish. Issues are now available, as gaeilge, at:
http://www.gaeilge.ie/maidir-le-foras-na-gaeilge/an-gum/lion-dulra/

## Hake with Mushroom Sauce

*Photo courtesy of www.bordbia.ie*

### What you need:

- 4 hake fillets about 175g each, skinned and boned
- A little salt and freshly ground black pepper
- 1 tablesp. chopped parsley
- 2 tablesp. butter
- ½ onion, finely chopped
- 250g mushrooms, sliced
- Juice of half a lemon
- 2 tablesp. flour
- 200ml milk
- 50ml cream
- 4 tablesp. breadcrumbs
- 1 heaped tablesp. grated cheese

### What to do:

Preheat the oven to Gas Mark 4, 180°C (350°F). Season the hake with a little salt and pepper and place in a single layer in a buttered baking dish. Sprinkle the parsley over the dish. Heat the butter in a saucepan over a medium heat and sauté the onion for a couple of minutes. Turn down the heat if it begins to brown. Add in the mushrooms and lemon juice and cook for five minutes, stirring occasionally. Stir in the flour and allow to cook for a minute or two then blend in the milk and cream. Increase the heat and simmer the sauce for a couple of minutes, stirring all the time. Season to taste. Pour the sauce over the fish, then sprinkle on the breadcrumbs, grated cheese and paprika. Bake in the preheated oven for 18-20 minutes.

***Brought to you by Bord Bia*** **www.bordbia.ie**

## Welcome to the Winter Edition of Nature's Web!

Dear Reader,

Welcome to the Winter 2019 issue of Nature's Web. In this issue, Eoin Mac Craith, a Marine Geologist with Geological Survey of Ireland, tells us all about the survey he is working on, mapping the seabed in Irish waters. We learn why the survey is being carried out, the fleet of boats used and what life is like at sea. We look at baleen whales, in particular the Minke Whale, which is commonly seen in Irish waters. Black John—the Bogus Pirate explains how sails work and he also shows us how to draw an octopus. Now that winter is here the weather is more changeable, so we learn from Met Éireann how weather forecasts are produced. We also see how to make a sock snowman! Check out nature news from around the world on page 12 and enjoy a giggle with jokes on page 13.

We would love to hear your views and comments and suggestions for future articles. Have a good read!

Susan

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Michael Ludwig

# Ship Ahoy!

"Avast there, Mateys! Have you ever wondered how a sailing ship harnesses the wind to move through the water? Then gather round and I'll tell you!"

*By John Joyce*



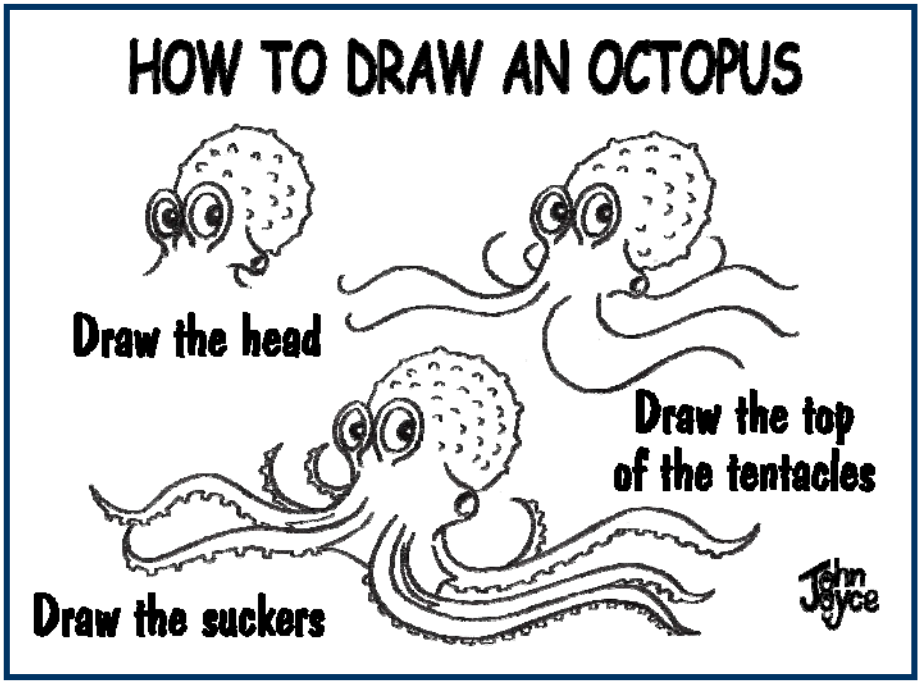

A sail works, just like the wing of a bird or an aircraft, by creating a curved surface. Because the surface is curved, it takes air longer to flow over the outside of the sail, than the inside. This makes the air pressure on the outside of the sail (or the top of a bird or aircraft's wing) less than on the other side. This difference in air pressure literally 'sucks' the sail or wing towards it, pulling the boat forward through the water, or the bird or aircraft up into the sky.

Oldest evidence of sailing boats dates back over 7,000 years to around 5,500 BC with the discovery of painted discs in modern Kuwait, showing sailing boats with simple squares of papyrus attached to a mast. The Egyptians, Greeks and Romans all used sailing boats, which evolved into the fast tea clippers, of which *The Cutty Sark* is one of the most famous.

*Cutty Sark* was built in Scotland in 1869 and worked as a tea clipper between England and China until the opening of the Suez Canal shortened the travel time of steamships, which came to dominate the trade routes. The *Cutty Sark* can still be visited at Greenwich London, where she is on permanent display. In her day, she logged a maximum speed of 17.5 knots (32 km/h) and was recorded as having travelled a staggering 363 miles (672 km) in one 24 hour period at sea. She was named *Cutty Sark* after the nickname of a witch in Robert Burn's 1791 *Tam O'Shanter*.

The fastest recorded speed for a sailing boat – and the first sailing boat to ever sail faster than 60 knots – belongs to the *Vestas Sailrocket 2*, skippered by Australian Paul Larsen who recorded a staggering 65 knots (121 km/hour) in 2012.

The oldest working sailing ship in the world is the iron-hulled *Star of India*, built in 1863 and still sailing. She has been awarded the title of 'California Historical Landmark' and United States 'National Historic Landmark'. Her home port is at the Maritime Museum of San Diego, California, USA.




Follow Black John the Bogus Pirate and his crew on Facebook at https://www.facebook.com/BlackJohntheBogusPirate/

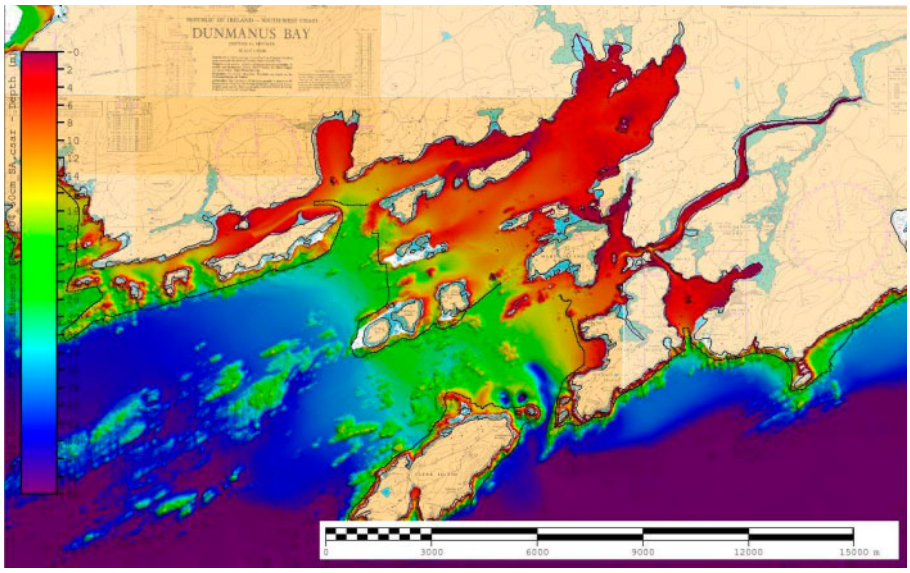
# Mapping the Seabed

By Eoin Mac Craith

Ireland has a twenty year programme to map the physical, chemical and biological features of Ireland's seabed. This programme is called INFOMAR (Integrated Mapping for the Sustainable Development of Ireland's Marine Resource) and it is funded by the Department of Communications, Climate Action and Environment (DCCAE), and managed by Geological Survey Ireland and the Marine Institute.

Geological Survey Ireland is responsible for mapping the seabed from the water's edge out to 30 nautical miles offshore. Beyond that are the deeper waters of the continental shelf, the mapping of which is the Marine Institute's responsibility.

The programme is divided into two phases – Phase 1 ran from 2006 to 2016 and involved mapping 26 bays and three large areas off the coast. Phase 2 followed on from that and its target is to finish mapping all of Ireland's seabed by 2026.




Images courtesy of Geological Survey of Ireland

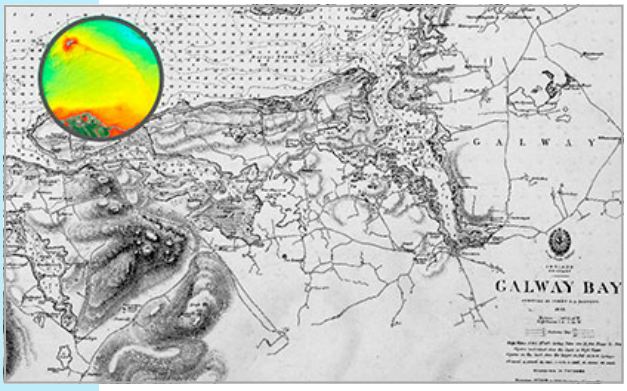
## Navigation

In 2019, as part of the overall effort to map the seabed, Geological Survey Ireland undertook a seabed survey along the Cork coastline from Kinsale to Dunmanus Bay, including Roaringwater Bay. This coastal work was done by INFOMAR's inshore fleet, having completed seabed mapping between Carnsore Point, Co. Wexford and Kinsale, Co. Cork in 2018. In that sense the survey vessels are working their way systematically around the Irish coast, filling in the unmapped stretches of inshore seabed between the bays that have already been mapped in Phase 1.

One of the most important uses of INFOMAR seabed data is that it gets incorporated into updates for shipping maps, or navigation charts. The United Kingdom Hydrographic Office (UKHO) has responsibility for producing nautical charts of Irish waters, but has an agreement that they do it free of charge because the Irish government supplies them with INFOMAR's data so that they can update the older charts. Because the data are used in this way, accuracy is of the utmost importance and great care is taken with the quality of the data collection aboard the INFOMAR vessels. For general chart updates this process can take some time, as before the data can be made publicly available there can be months of processing following the original survey – false seabed signals caused by shoals of fish and seaweed must be manually removed under the watchful eye of an experienced data processor before a finalised seabed map can be published. This is slow and meticulous work. However, when more urgent hazards are detected, such as a shallow, uncharted rock in an area used by marine traffic, this is reported on immediately to the UKHO so that they can issue a chart update as quickly as possible.

## Why does the seabed need to be mapped?

While charts of Ireland's seabed do exist, they often date from the 19th century. They were an incredible achievement for the technology of that time, but now fall short of what is needed to responsibly make use of and protect the marine realm around Ireland. We need detailed maps of the seafloor for everything from safety of navigation and habitat protection to responsible planning in terms of construction work and renewable energy. Ireland is actually now among the world leaders in seabed mapping.




***Left: A spyglass on an historical map revealing scanned images of the seabed. There are* various types of maps to explore on www.infomar.ie/maps**

## The Fleet

INFOMAR's inshore vessels are designed for this particular kind of work, with four of them making up Geological Survey Ireland's fleet – the *R.V. Keary, R.V. Mallet, R.V. Lir* and *R.V. Geo*. The latter two are RIBs (Rigid Inflatable Boats) with a shallow draft and so are particularly suited to working in areas such as Roaringwater Bay. As a shallow bay, it took many weeks of mapping effort by both vessels to complete, not to mention the challenge of working around mussel and oyster farms, and other obstacles. By making use of periods of high tide, the *R.V. Geo,* being the smallest of all the boats, can actually carry out seabed mapping into intertidal areas (beaches and mudflats that dry out at low tide and are flooded at high tide), effectively reaching shallower than the zero metre mark on the nautical charts. This can be quite hazardous work, with the crew having to take great care not to run aground on sand bars or strike uncharted rocks. How much can be completed in a day depends on a lot of factors, as the elements often conspire to hinder a survey boat's progress – currents, waves and wind have a major effect, sometimes halting operations altogether.

Coastal and shallow water mapping actually takes longer than deep water mapping. It might seem like the opposite should be the case but the reason for this is that the sonar that is used to create these 3D maps actually behaves a bit like a flashlight – the closer it is to its target, the smaller its area of effect. Imagine mowing the lawn, with the lawnmower shrinking in size as you reach the edge of the garden – it takes more and more effort to complete each subsequent pass.

## Life on the Boat

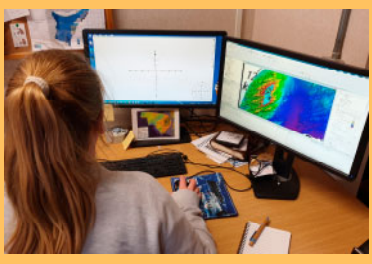
For the crew on the boats, life is a mixture of scientific work and looking after the boats themselves. Because they are small, with a crew of only two on the *R.V. Geo* and three on the *R.V. Keary* for example, the people on board have to know how to safely crew the boat at sea while also collecting good quality seabed data. There is always a skipper, which is the captain of the boat and a surveyor, who uses the survey equipment to do the mapping and also an activity called watchkeeping – in this case looking out for obstacles and hazards at sea when the skipper is busy with other work. On the *R.V. Keary* and the *R.V. Mallet*, there is also a third crew member called a data processor. While the data will be examined carefully back at base, this person also needs to examine it at sea soon after it is collected, to make sure there are no problems with the equipment and that the survey is being carried out correctly. Typically the crew work for two weeks at a time, with breaks in between.


Images courtesy of Geological Survey of Ireland

***Top:*** **Catching a stray net whilst out surveying.** ***Above*****: The fleet that surveys up to 30 nautical miles out to sea.** ***Right*****: Inside *RV Geo.* *Below:* Processing data back at the office.**

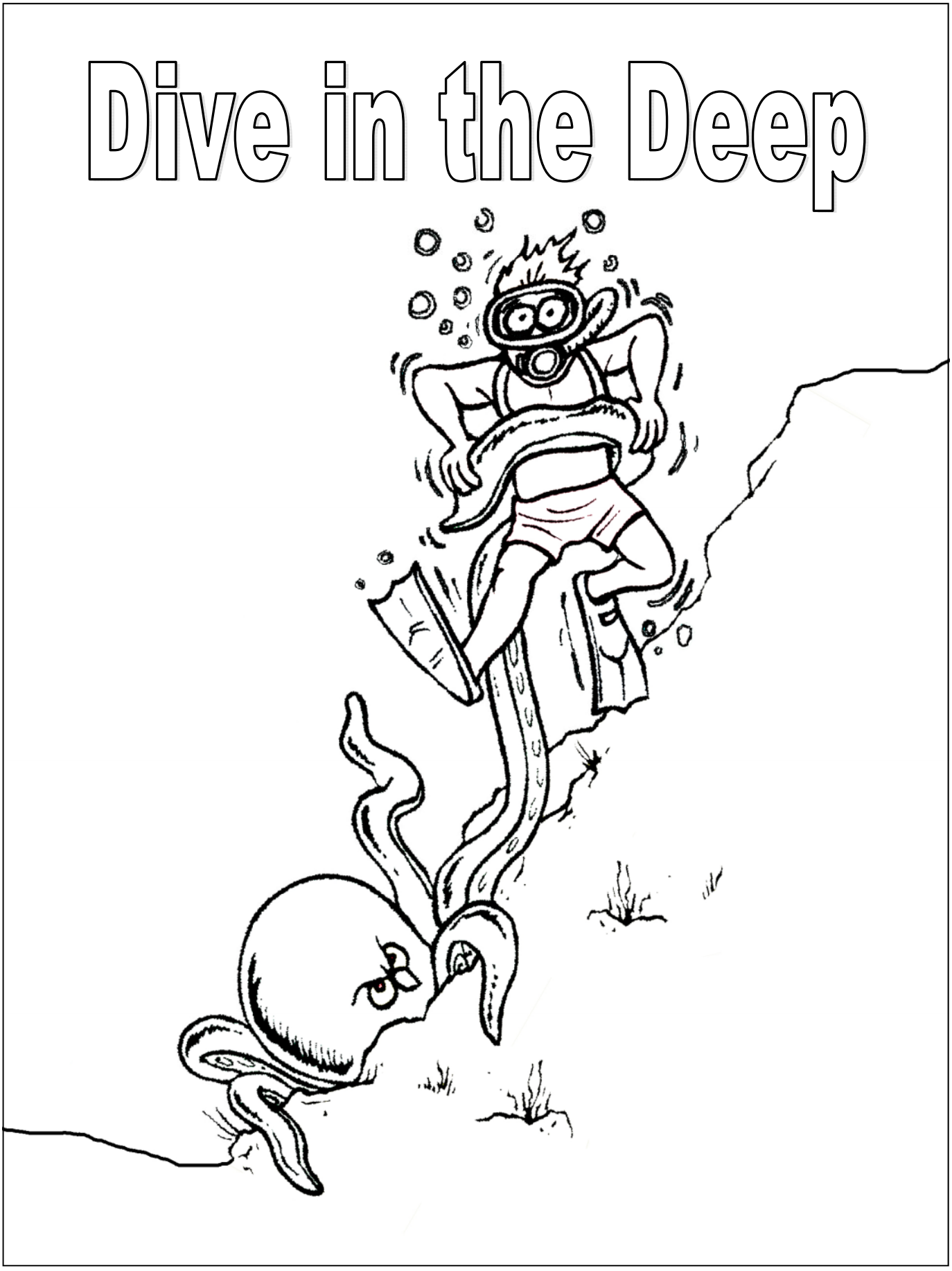
## Scanning Equipment

The survey boats' primary mapping instrument is known as a Multibeam echosounder, usually attached below the hull – this emits sonar pulses in a fan-shape below the vessel, which are reflected back from the seabed. The computer measures how long the sound has taken to return and can then convert that to water depth. This can happen tens of times per second, therefore giving a lot of detail about the seabed in a short space of time.



The data actually appears on the surveyor's screen as the vessel moves along its track, like a strip left by a paint brush – in effect it looks like the vessel is "painting" in the seafloor. Though at this unprocessed stage, this real-time image allows the crew to spot interesting features, hazards or shipwrecks while at sea that may warrant further inspection.

# *Colour In*



# All in a Day's Work

## Eoin Mac Craith – Marine Geologist, Geological Survey Ireland

**My name is Eoin Mac Craith and I work as a marine geologist with the INFOMAR national seabed mapping programme.**

**www.infomar.ie**

Eoin Mac Craith

Images courtesy of Geological Survey of Ireland

### Where do you work?

I work at Geological Survey Ireland, in Dublin. I'm assigned to the INFOMAR programme, which is also run in partnership with the Marine Institute in Galway. The aim of the programme is to map all of Ireland's seabed by the year 2026 – we are well on the way, with much of the deep water already mapped and a lot of Ireland's bays and estuaries surveyed as well in great detail.

### Have you always been interested in what you do?

Yes, I have always had an interest in the seafloor. I grew up beside the sea in Spiddal, Co. Galway and spent a lot of time on the shore or in the water. I was also interested in what lay beneath the sea as I looked offshore and often wondered what the depth of the water was between the islands. I read books as a child that showed drawings of the seabed, with underwater volcanoes, canyons and bizarre deep sea creatures. It is a mysterious world and we now have the technology to see it clearly like never before.

### What training did you do to get where you are today?

After finishing school I studied geology and oceanography – joining the two together helped me find work with survey companies making maps of the ocean floor. It was this experience, in the North Sea, Central Asia and the Middle East, that gave me the training and experience to be able to join Ireland's national marine mapping programme.

### What is a day in your work life like?

While I spend the Winter months in the office analysing and reporting on our findings, the Spring to Autumn months are busy with fieldwork out at sea. A typical day involves the survey fleet casting off from a harbour such as Baltimore in the morning, with the larger vessels going out to deeper water and the smaller boats working in the shallows along cliffs and beaches. The boats use sonar to measure the water depth in a very detailed way and as the day progresses, together they build up a 3D map of the seabed. They work in a systematic way, moving along parallel lines much like a lawnmower. On board the different boats, the team keeps an eye on the data coming in, making sure the equipment is working properly and watching out for interesting discoveries such as unknown shipwrecks or unusual rock formations.

### What is your main aim?

The mapping is done for a variety of reasons, but the most important one is safety of navigation. While charts do exist of Ireland's seabed, many of them date from the 19th century and did not reveal all of the dangerous rocks around our coast – they were created using a length of rope with a weight on the end and while amazing achievements, they could not capture all the detail. With modern sonar we can find all these hazards and help to protect ships at sea. The maps can also be used for studying fish habitats, discovering shipwrecks, understanding ancient sea level change and ensuring responsible construction at sea. An important thing is that all the data we collect is available for free for anyone to download – that's something I love about the work, the fact that it is done on everyone's behalf.

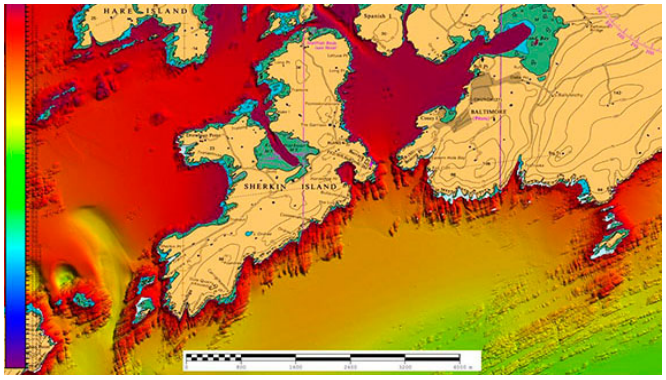
### Where does work take you?

With the Geological Survey boats we travel all around the coast of Ireland, from the very edge of the water to 30 nautical miles out to sea. Beyond that limit the Marine Institute vessels take over and map the deeper waters of Ireland's continental shelf.

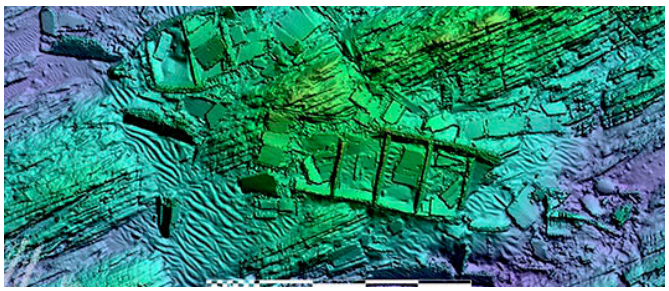
### What is the best thing about your job?

Each day is different, with interesting challenges and discoveries. One day we could be making a careful survey of a shipwreck from the Second World War and then another we could be mapping a system of underwater sand ripples that looks like the Sahara desert. As well as carrying out scientific work, we also work as crew on the ships so we get to be involved in a wide array of activities. It's a dream job for anyone who likes boats and being out at sea.


**RV Mallet, one of the fleet on which Eoin Mac Craith works.**




**The seabed around Sherkin Island, West Cork.**



**The wreck of the Kowloon Bridge, lying off the Stags Rocks, near Baltimore, Co Cork.**

# Minke Whale

Image courtesy of Robbie Murphy

**Scientific Name:** *Balaenoptera acutorostrata*

**Irish Name:** Droimeiteach beag

The Minke whale is often found alone or in small groups of less than ten. Between April and October, it is commonly seen around Irish coasts, particularly in west and south coasts, where it has been sighted from cliff tops, diving for food. The presence of a Minke whale is often marked by a loud whoosh as it breathes out. Its blow, the water it expels through its blowhole, is rarely seen but reaches about 3 m high.

Whale species are divided into two groups: Toothed Whales and Baleen Whales (see page 10). The Minke whale the smallest of the baleen whales seen in Irish waters. It has a sharply pointed snout and small dorsal fin. The Minke whale has a long ridge on is head, like the fin whale, and white bands on its flippers. The body is dark grey to black in colour with a pale grey to white underside.

The Minke whale can travel through the water at about 30 km per hour. Unlike some other whales, they do not raise their fluke out of the water when diving.

There are three separate populations of Minke whale in the world: North Atlantic, North Pacific and Southern Hemisphere.

## Family

A male whale is known as a bull, a female is a cow and a young whale is called a calf.

The female carries its young for 10 months and gives birth around December/ January. She may have one calf every 2 years. A calf weighs about 450 kg when born and measures 2-3 m in length.

## FACT FILE

**Length:** 7-10 m. Females are generally bigger than males.

**Weight:** 5-10 tonnes

**Dive Time:** 6-12 minutes and can stay under for up to 20 minutes.

**Diet:** Small fish, squid and krill.

**Distribution:** They are found in most seas around the world.

**Worldwide population size:** 500,000—1,000,000.

**Threats and Conservation:** The Minke whales in the North Atlantic are not endangered but some populations have been reduce in some areas. The two main predators to Minke whale are killer whales and humans. Humans are a threat through whaling activities, pollution , habitat destruction and impact from vessels.

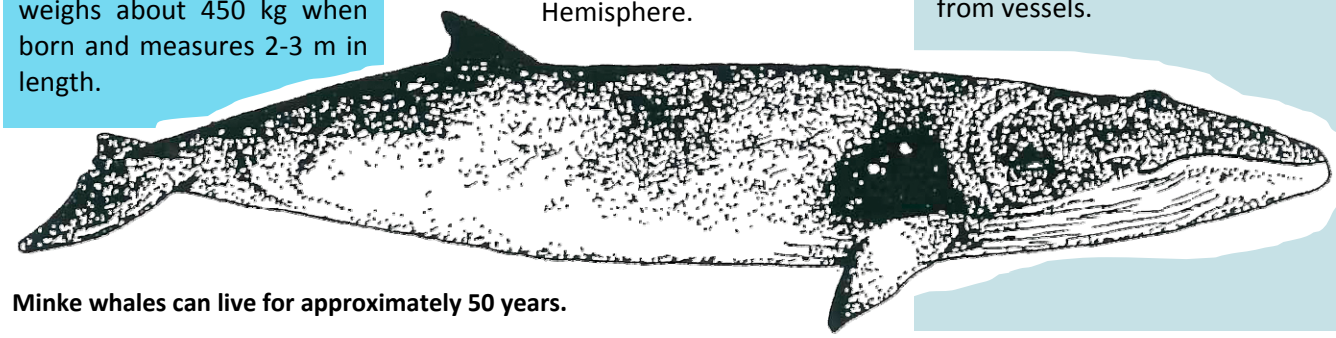
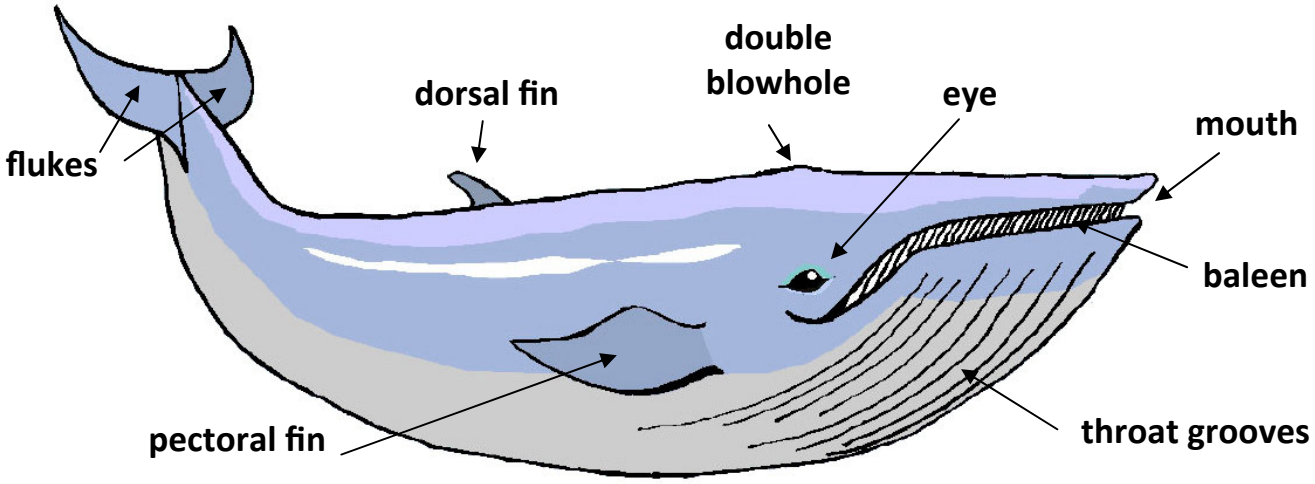


Image courtesy of SIMS/Greg Whittle

**Minke whales can live for approximately 50 years.**

# Parts of a Baleen Whale

Whales are divided into two main groups: Toothed Whales and Baleen Whales. As the name suggests, Toothed whales have teeth, while Baleen Whales do not. The Baleen whale has a series of plates in its mouth that hang down from the gums in the upper jaw. These baleen plates are made of keratin, a material similar to that of fingernails, and they act as giant sieves. The whale takes in a gulp of seawater containing krill, small shrimp-like animals that live in seawater. The tongue of the whale then swells up like a balloon and pushes the water out through the baleen plates, trapping the krill between the plates so they can be eaten. A whale can eat up to a tonne of krill in one feeding session.
Some baleen whales have a series folds or grooves on their throats and chest which can be stretched. These increase the size of the mouth so that a larger gulp of seawater and krill can be taken in.




## Can you match the descriptions below with the different parts of a baleen whale:

1. Made up of muscles and fibrous tissue, these move up and down to propel the animal through the water.
2. Plates inside the whale's mouth that hang like a curtain from the upper jaw. They act like a giant sieve, filtering food from the water.
3. Folds of skin and blubber that can expand when feeding, increasing the amount of water the whale's mouth can hold.
4. Holes through which the whale breathes air.
5. On the whale's back, helping to move it through the water more efficiently.
6. The whale uses these to see.
7. These are large and paddle-shaped and are located on either side of the whale's body. They help with movement and defence.
8. The whale opens this wide to draw in water and food.

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*Answers on page 13*

# Met Éireann

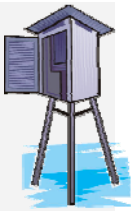
# What is Weather?

The weather describes the state of the atmosphere above and around us at a given time. When we talk about weather, we are referring to the short-term state of the atmosphere. We use terms such as 'cloudiness', 'precipitation', 'temperature' and 'wind' when we are telling the forecast for the next few days ahead. Have a look outside the window and see what the weather is like now.

## How is the weather forecast produced?

**Meteorologists are people who forecast the weather. They are similar to detectives because they use all the available clues or information in order to piece the weather story together. These clues are available to Irish Meteorologists from a wide range of sources. As follows:**

### Weather Stations



There are a number of official Met Éireann stations all around the country. These are positioned along the coast and further inland. They are widely distributed so as to give a representative picture of the weather all around the country. These official sites used be manned weather station but over the years they have been replaced with automatic weather stations – Valentia Observations and the main airports, though automatic, are still manned. These weather stations record temperature, wind direction, wind speed and rainfall, soil temperatures etc.., similar to what would have been in the old manned stations. The data is transmitted in real time to the Met Éireann Headquarters in Dublin, where it is quality controlled. There are a number of volunteer climatological stations where similar data is recorded at 9am (GMT) each morning.

### Radar

There are two radars in Ireland, one in Dublin and the other in Shannon. They work by sending out a particular light beam and measuring the time taken for it to return. This beam is reflected by precipitation. Radar picture signals can pinpoint where precipitation (rain, hail, sleet or snow) is falling.

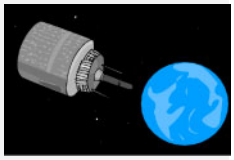
### Marine Observations

The sea is an important source of weather information. Weather buoys float in the water and reports all types of weather and oceanic phenomena. Information like wind speed, wind direction, pressure, temperature, significant wave height and wave period is gathered by the weather buoys. There are 6 of these buoys located around Ireland. This information is sent automatically to Met Éireann Headquarters. There are also many ships on the seas, which send similar observations.

### Weather Balloons

Every 6 hours a special weather balloon is released from Valentia Observatory in County Kerry. It carries various weather instruments, and travels high into the sky recording the state of the atmosphere at different levels.

### Satellites



Satellites are launched into space to retrieve up-to-date pictures of the weather systems occurring in the atmosphere below. There are two types of weather satellites. A visible satellite image measures the light reflected by the ground and clouds. The image is similar to a photo of the ground below. An infra-red satellite measures the temperature of the ground and clouds. The advantage of this type of satellite is that it may be used in darkness as well as during daylight hours.

### Rainfall Stations

In Ireland, data is collected from over 450 voluntary rainfall stations all around the country. Members of the public kindly take the time to record how much rain falls on a daily basis. This information is recorded at 9 am (GMT) each morning. At the end of each month, this information is passed to Met Éireann. Some enthusiasts also call or text in a message when they record excessive amounts. This can really help the forecaster because sometimes heavy rainfall can be a localized effect and may otherwise pass by unrecorded.

### The Forecaster

All of the information listed above is used by the forecaster when determining the weather. The forecaster draws up weather charts, to better understand the current weather situation. The next stage is to establish how the weather will develop. To do this, the forecaster looks at the movement and development of various weather systems. There are several computer models available to the forecasters, which offer guidance. Finally the forecast is communicated to the end user…you! The forecast can come to you via many media; T.V., radio, newspaper and the internet.

**Information courtesy of Met Éireann.** See the *School Resources* section: https://www.met.ie/education/school-resources

# Making a Sock Snowman

Images courtesy of Susan Murphy Wickens

Make your very own sock snowman from an old white sock.

## YOU WILL NEED:

- An old white sock
- A selection of odd socks
- String
- Eyes and/or buttons
- Ribbon or pipe cleaner
- Glue

1. Find an old white sock and a some odd socks.
2. Roll two of the odd socks into two separate balls.
3. Place one balled sock inside yet another odd sock and roll to creates an even bigger ball.
4. You should now have a large ball and a smaller ball.
5. Put the larger ball into the white sock and then the smaller ball. Push both to the bottom of the sock.
6. Tie a knot at the top of the sock, close to the small ball.
7. Tightly tie string around the sock, between the two balls.
8. Roll down the top of the sock, above the knot, to create a hat.
9. Glue on eyes and buttons for the nose and belly. Tie a ribbon or pipe cleaner around its neck. Then you have your snowman!

1

2

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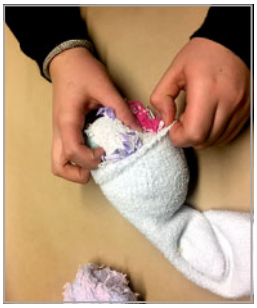

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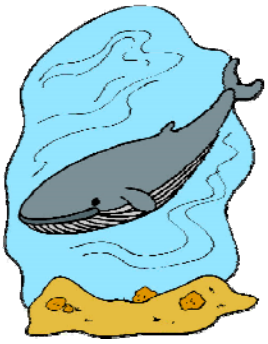
# The World Around Us

"Foreign Correspondent" Michael Ludwig reports on some interesting goings on in the natural world.

## A Deep Sea Feast



When a whale dies and sinks in the deep sea, the whale carcass, or whale fall, provides a sudden, concentrated food source for organisms. During a 2019 expedition, researchers discovered a whale fall 3238 m below the surface near Davidson Seamount in Monterey Bay National Marine Sanctuary—a marine protected area off the coast of central California. They were live-streaming at the time and captured stunning footage of a wide variety of creatures feasting on the whale carcass. This footage shows an important aspect of a whale's lifecycle.

Different stages in the decomposition of a whale carcass support different marine biological communities. Scavengers, such as sharks and hagfish, can feed on its soft flesh for up to two years. Then worms, crustaceans and molluscs can feed on leftover blubber and burrow into the rich sediment underneath the whale carcass for a couple of years.

In its final stage, organic compounds inside the whale's skeleton begin to breakdown, encouraging bacteria to grow. This in turn provides support for colonies of worms, sponges and other organisms – all adding to the ocean's food chain.

## CoolClon!


The town of Clonakilty in West Cork has been recognised as a "cool community" by the Cool Planet Group, an Irish foundation promoting meaningful climate actions.

Supported by Clonakilty Chamber of Commerce, the town has introduced a number of successful initiatives, to help the environment. It has installed 10 charge points for electric vehicles, provided 3 water points where people can refill their water bottles and has introduced a "keep cup" for coffee and tea drinkers. There are many other initiatives being undertaken by the town—it even has its very own "minimal waste shop", dedicated to minimizing the use of plastics and wasteful packaging. The one initiative that will have the biggest effect on the environment is the number of businesses who have committed to updating their refrigeration systems to more efficient ones. This will greatly reduce the carbon emissions from these system.

## Wildlife learning

A math teacher visiting the Arkansas State University's library captured a photo of an unusual visitor browsing the bookshelves -- a wet raccoon. Codie Clark was at the Ellis Library to give a maths lesson when he spotted the raccoon on the third floor of the building. Clark's photo shows the wet raccoon standing between shelves full of books.

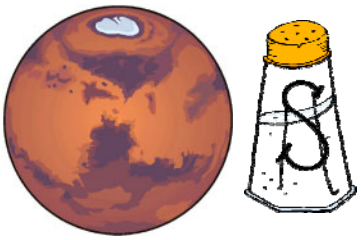
The school's associate vice chancellor, Bill Smith, said there were actually multiple raccoons, and they had been spotted inside the library before.

"It's my understanding that there were probably two or three raccoons. Our facility management folks were alerted by the library staff and they came out last night and humanely trapped them," He said the raccoons, which were released well away from campus, likely ventured inside to escape the rain.

"In this case, they weren't just looking for higher ground, they were looking for some higher learning as well," Smith said.

## Salty Mars

An international team of scientists including Marion Nachon, at Texas A&M University, recently reported in *Nature Geoscience* that Mars once had salt lakes that were similar to those on Earth and has gone through wet and dry periods. The team examined Mars' geological terrains from Gale Crater, an immense 95-mile-wide rocky basin that is being explored with the NASA *Curiosity* rover since 2012 as part of the MSL (Mars Science Laboratory) mission. The results show that the lake that was present in Gale Crater over 3 billion years ago underwent drying episodes likely linked to the global drying of Mars. Nachon says that Mars probably became dryer over time, and the planet lost its planetary magnetic field, which left the atmosphere exposed to being stripped by solar wind and radiation over millions of years. The salt ponds on Mars are believed to be similar to some found on Earth, especially those in a region called the Altiplano, which is near the Bolivia-Peru border.



# Fun Page

## How much did you learn?

*The answers to all these questions can be found in the newsletter...see if you can remember!*

1 How far below the surface were researchers when they spotted a whale fall in the deep sea?

2 What is the snowman on page 11 made from?

3 What did Eoin Mac Craith study after finishing school?

4 Where was the sailing ship, the *Cutty Sark,* built in 1869?

5 Which is the smallest of the fleet mentioned on page 5?

6 Where is the wreck of the Kowloon Bridge situated?

7 In which West Cork village was the *RV Mallet* based during the summer of 2019?

8 What animal recently visited the Arkansas State University library?

9 Ireland has two radars that pinpoint when precipitation is falling. Where are they?

10 How far from the water's edge is the Geological Survey of Ireland responsible for mapping the seabed?

11 Is the Minke Whale a toothed whale or a baleen whale?

12 Which town in Co Cork has been recognised as a "Cool Community" for its work in helping the environment?

13 What type of lakes were recently reported to have existed on Mars?

14 What are baleen plates made from?

15 What flavour is the sauce in the Bord Bia fish recipe?

**ANSWERS TO ABOVE:** (1) 3238 m; (2) Socks; (3) Geology and Oceanography; (4) Scotland; (5) *RV Geo*; (6) Off the Stags Rock, near Baltimore, Co Cork; (7) Baltimore, Co Cork; (8) A Raccoon; (9) Dublin and Shannon; (10) 30 nautical miles offshore; (11) A baleen whale; (12) Clonakilty, Co Cork; (13) Salt lakes; (14) Keratin; (15) Mushroom.

**ANSWERS TO "PARTS OF THE BALEEN WHALE" PAGE 10:** 1. flukes; 2. baleen; 3. throat grooves; 4. double blowhole; 5. dorsal fin; 6. eyes; 7. pectoral fins; 8. mouth.

Image courtesy of Alan D Wilson www.naturespicsonline.com

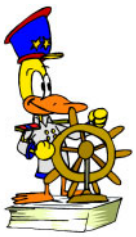
## Think of a Title

Can you think of a caption for this photograph of a Polar Bear, taken at Kaktovik, Barter Island, Alaska?

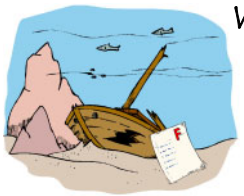
## Nature Jokes

Where do geologists like to relax?
On a rocking chair.

What do you call an old snowman?
Water.



Why didn't the sailors play cards?
Because the captain was standing on the deck.

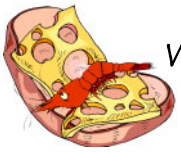


Why are poor school grades like a shipwreck on the sea floor?
Both are below C-Level.

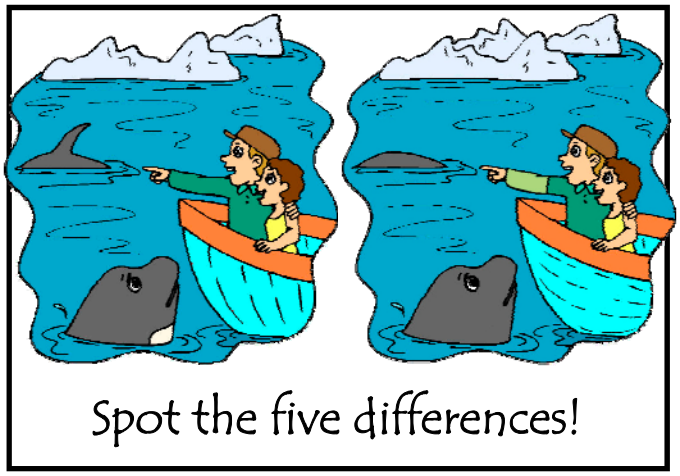
What's cold, white and smells minty?
A polo bear.


Why are pirates called pirates?
Because they Arrrrr!

What do you get if you cross a bee with a lizard?
A blizzard.



What is a whale's favourite food?
A krilled cheese sandwich.



Spot the five differences!

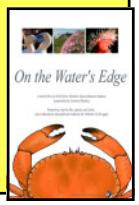
# Learn More


Only €2.10 each including postage or €12.00 (plus €3.00 p&p) for all eight! *32pp each*

Sherkin Island Marine Station has published a range of colouring books, guides and activity books for children. Each 32-page *Colouring & Guide Book* gives you the chance to colour, identify and learn about the wildlife around Ireland. *Safety Sam's Activity Book* is filled with activities to encourage safety for children. *My Nature Diary* contains lined pages to fill in a daily record of sightings and nature news.

## Sea Life DVD: *"On the Water's Edge"*

Produced by Sherkin Island Marine Station, the DVD '*On the Water's Edge*', features a short film on life beside the sea. Presented by Audrey Murphy, it includes 6-10 hours of interactive material for children of all ages. *Only €6.00 plus €1.30 p&p.*

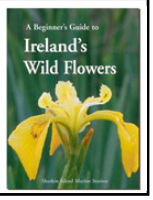



***A Beginner's Guide to Ireland's Seashore*** is a pocket-sized guide, suitable for beginners of all ages. This book will help you to explore the wonders of marine life found on the shores around Ireland. *206pp*

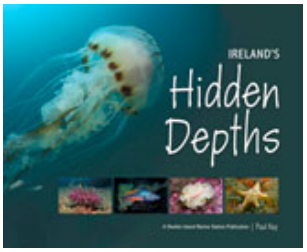
**Only €8.00 inc postage**


***A Beginner's Guide to Ireland's Wild Flowers*** With the help of this pocket-sized guide, beginners of all ages will be introduced to the many common wild flowers found around Ireland. *206pp*

**Only €8.50 inc postage**




***Ireland's Hidden Depths*** is another Sherkin Island Marine Station publication. Ireland's amazing marine life, glorious kelp forests and spectacular undersea scenery are featured in over 200 spectacular photographs by nature photographer Paul Kay. 277 x 227 mm 160 pps
**Only €13.00 including postage**

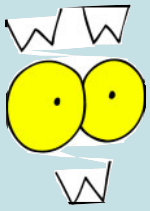




**"An A to Z of Geology"** explores the fascinating world of rocks and geology - a world of volcanoes, tsunamis, earthquakes, diamonds, gold and even dinosaurs! Produced by Sherkin Island Marine Station, in association with the Geological Survey of Ireland.

**Only €5.99 plus €1.00 postage**

**To order books,** visit: **www.sherkinmarine.ie** and pay by Paypal or **send your name and address along with a cheque or postal order made payable to Sherkin Island Marine Station to:** Sherkin Island Marine Station, Sherkin Island, Co.Cork. Ireland.



# Useful Web Addresses

**There are lots of websites to be found on the internet that will give you further information on topics we have covered in this newsletter. Here are a few that may be of interest:**

**Baltimore, Co Cork:** https://www.baltimore.ie/

**Black John Bogus Pirate:** https://elvstromsails.com/technology/aerodynamics https://en.wikipedia.org/wiki/Cutty_Sark#Construction https://sdmaritime.org/visit/the-ships/star-of-india/

**Mapping the Seabed:** https://www.gsi.ie/en-ie/geoscience-topics/marine/Pages/10-Things-to-Know-About-the-Seabed.aspx https://www.infomar.ie/

**Geological Survey of Ireland:** https://www.gsi.ie/en-ie/Pages/default.aspx

**Minke Whale:** https://iwdg.ie/minke-whale/ https://www.fisheries.noaa.gov/species/minke-whale

**Baleen Whales:** https://uk.whales.org/whales-dolphins/what-is-baleen/ https://www.afsc.noaa.gov/nmml/education/cetaceans/baleen1.php

**Weather:** https://www.met.ie/education/school-resources http://www.meteoalarm.eu/

**Whale Fall:** https://oceanservice.noaa.gov/facts/whale-fall.html

**CoolClon:** https://www.clonakilty.ie/ https://www.echolive.ie/corklives/This-Cork-town-is-leading-the-way-on-tackling-climate-change-47c3b2f8-1b3f-454b-ba89-f2ce5e1126e1-ds

**Racoon:** https://www.nwf.org/Educational-Resources/Wildlife-Guide/Mammals/Raccoon https://wdfw.wa.gov/species-habitats/species/procyon-lotor#living

**Salty Mars:** https://www.jpl.nasa.gov/news/news.php?feature=7514

*We cannot be responsible for the content of external websites, so please observe due care when accessing any site on the internet.*

# Wordsearch

## Nature's Web Winter 2019 Wordsearch

**Try out this giant wordsearch containing words found in this issue of the newsletter.**

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| N | V | N | L | R | B | B | N | H | R | S | S | S | Z | G | I | P | C |
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| A | L | Y | K | O | W | G | H | L | Q | K | I | Y | N | Z | D | E | A |
| M | A | P | P | I | N | G | T | H | E | S | E | A | B | E | D | J | P |
| W | H | C | K | T | A | Y | O | F | G | G | F | B | E | F | W | O | S |
| O | W | A | O | O | M | W | I | R | I | I | U | R | U | N | F | B | P |
| N | N | N | L | A | A | Z | E | L | A | H | W | E | K | N | I | M | T |
| S | E | T | R | H | S | J | T | Y | Y | E | D | T | S | G | S | J | Z |
| K | E | S | H | E | R | K | I | N | I | S | L | A | N | D | X | P | K |
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| O | A | X | Q | R | J | R | O | Z | L | N | L | G | Z | S | W | D | E |
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| O | V | L | Q | O | C | F | T | M | D | A | O | A | J | B | T | M | N |
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| O | I | T | E | B | V | G | Y | M | E | I | U | E | L | T | W | Z | H |

(Over,Down,Direction): Baleen Whale (2,12,N); CoolClon (14,17,NW); Eoin Mac Craith (3,13,E); GSI (10,5,NE); Hake (9,1,SE); INFOMAR (7,17,N); Mapping the Seabed (1,4,E); Minke Whale (17,7,W); Octopus (1,18,N); Raccoon (17,16, W); Roaringwater Bay (13,17, N); RV Mallet (4,12,E); Salty Mars (11,1,SW); Sherkin Island (3,9,E); Ship Ahoy (15,11,SW); Sock Snowman (1,12,N); Weather (16,18,N); Whale Fall (12,2,W).

- Baleen Whale
- CoolClon
- Eoin Mac Craith
- GSI
- Hake
- INFOMAR
- Mapping the Seabed
- Minke Whale
- Octopus
- Raccoon
- Roaringwater Bay
- RV Mallet
- Salty Mars
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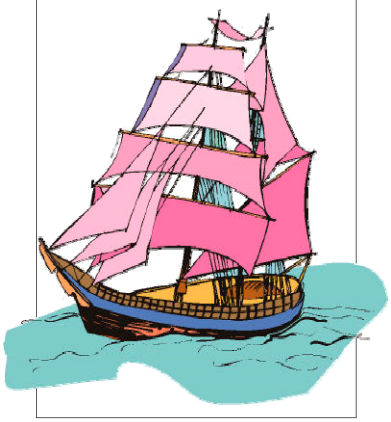
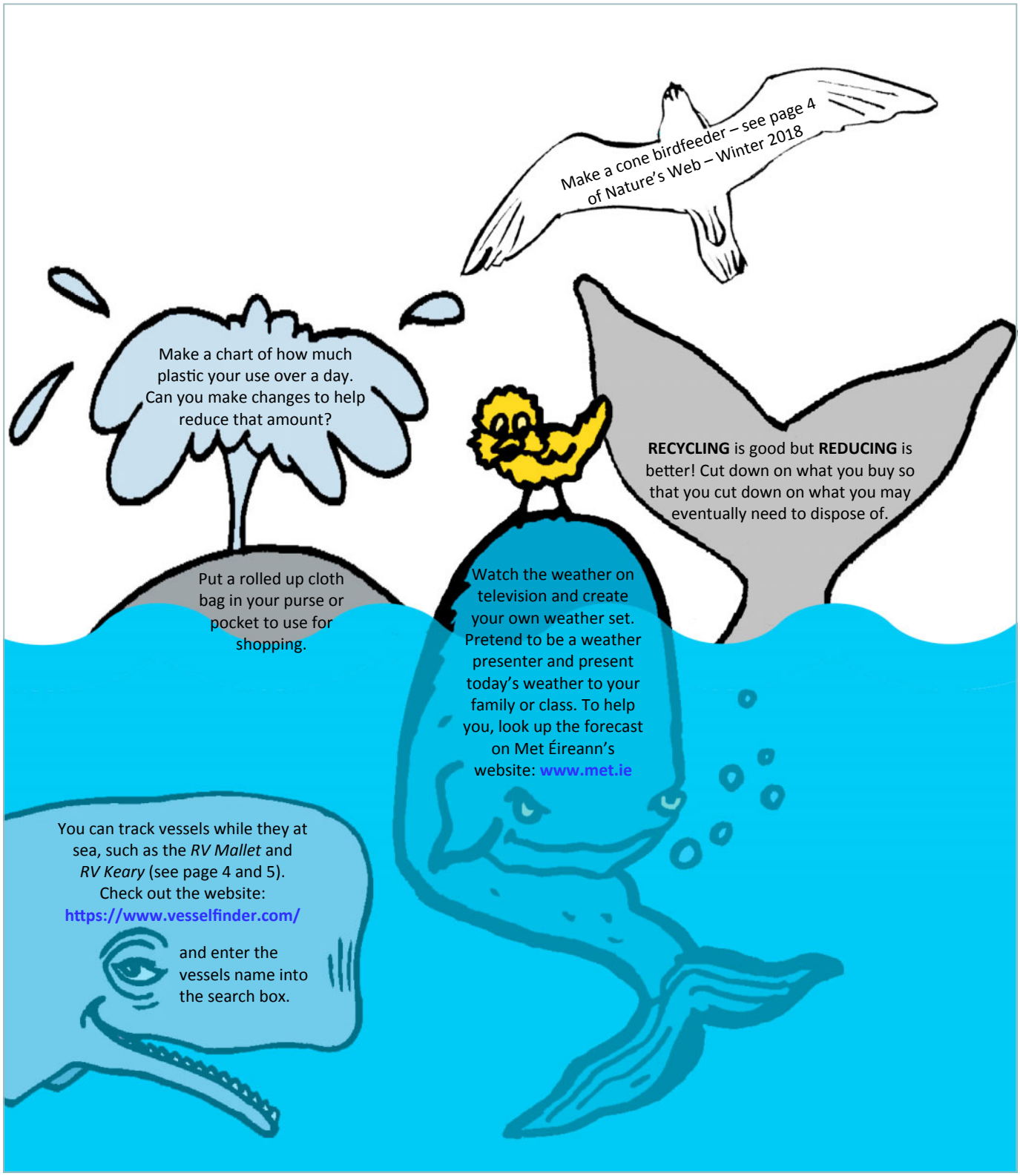
- Ship Ahoy
- Sock Snowman
- Weather
- Whale Fall



# *Nature's Noticeboard*




Sherkin Island Marine Station would like to thank the following for their help with this newsletter, especially Bord Bia, Gerry Griffith, John Joyce, Michael Ludwig, Eoin Mac Craith, Eimear Murphy, Robbie Murphy, Jez Wickens and Alan D. Wilson.

Visit the Sherkin Island Marine Station website at www.sherkinmarine.ie

Environmental Protection Agency

We appreciate support from the EPA toward the newsletter.