



EXPLORERS

Turtle talk with Sea Turtles

AN INTRODUCTION TO SEA TURTLES

By Cushla Dromgool-Regan & Danielle Crowley
Camden.Education



www.explorers.ie

The Explorers Education Programme is Funded by the Marine Institute



*Foras na Mara
Marine Institute*

Explorers Education Programme

The Explorers Education Programme team engages with primary schools, teachers, and children, creating marine leaders and ocean champions. We love to create activities, resources, and support for teachers, children and the education network to help deliver ocean literacy to primary schools.

We aim to inspire children and educators to learn about our marine and maritime identity and heritage, and to make informed and responsible decisions regarding the ocean and its resources.

We also love to communicate with everyone about the ocean in a meaningful way to increase the awareness and understanding of our marine biodiversity and the environment; as well promote the opportunities and social benefits of our ocean wealth.

Check out our website and social media for lots of fun facts and information about our amazing ocean!

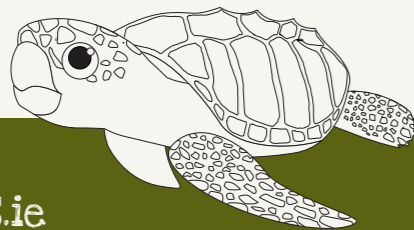
Keep Exploring!

Photographs

Trish Mace: Turtle sculpture - page 8 • Alamy Photos: Turtle sculpture - page iii; Kemp's ridley sea turtle - page 2 & 31; Turtle plastron - page 16 • JustSnorkel Today, Flickr: Leatherback flipper - page 17 • Galway Atlantaquaria: Loggerhead sea turtle - page 22 • All other photographs are from iStock by Getty images.

Maps

National Biodiversity Data Centre (Sources: Esri, GEBCO, National Geographic, Garmin, HERE, Geonames.org, and other contributors): Maps of Ireland showing turtle distribution - page 21 & 22.



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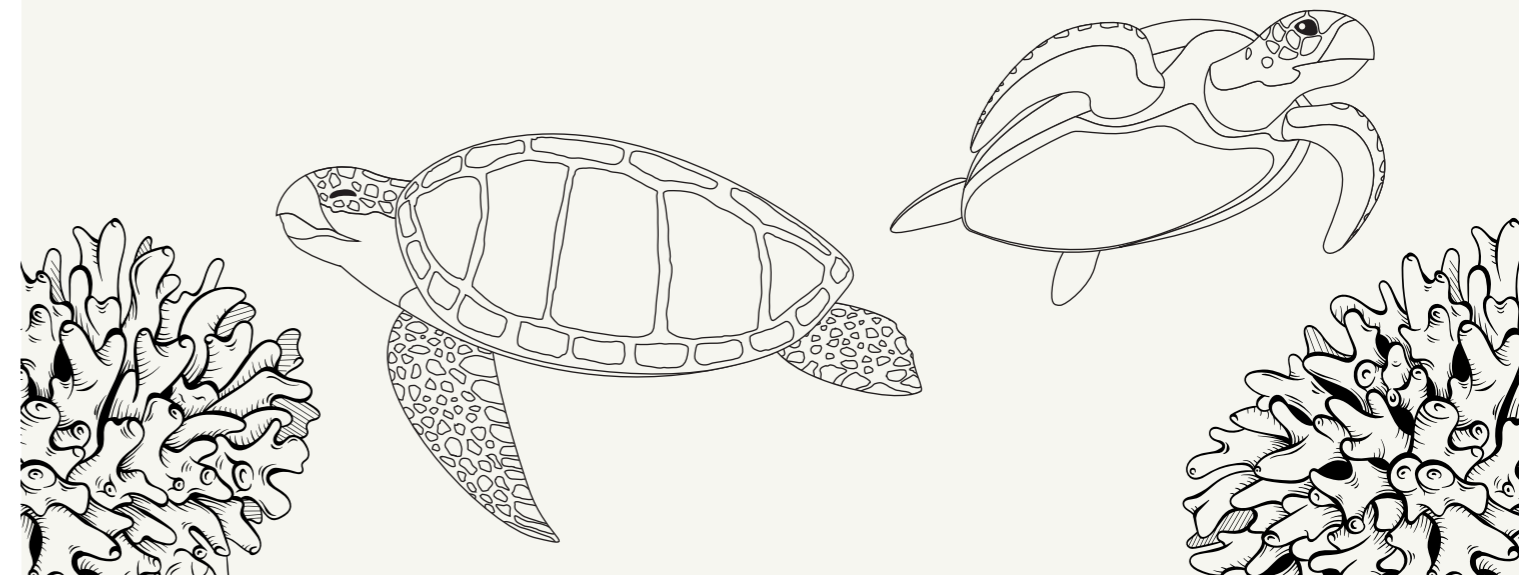
Contributions by **Eimear Manning, Camden.Education**
and **David McCann, The Sea Collective**

Edited by **Gillian Mills, Camden.Education**

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Authors: Cushla Dromgool-Regan & Danielle Crowley, Camden.Education

Contributions: Eimear Manning, Camden.Education and David McCann, The Sea Collective

Editor: Gillian Mills, Camden.Education

Designers: Fiona Regan at Kraken Design for the creative elements & branding, PCG Media Group and Design West working on the design with Cushla.

Concept Development & Inspiration

We are confident to say that everyone loves turtles and only wish we could speak their language, 'turtle talk'. Although we can't 'talk' with turtles, we are extremely lucky to have Explorers teams and friends who have studied these species around the world. The teams have been a major influence in sharing their stories and inspiring us to create this book for teachers and children.

Thank You

We would like to thank Eimear Manning for her contribution to the education resources. She did a great job exploring and gathering content about each of the sea turtle species that have been recorded in Irish waters. Check out our Explorers Sea Turtle Species presentation for more.

We want to thank the Explorers Education outreach team for their feedback on the content development – especially for sharing their favourite facts and ideas for the *Turtle Talk with Sea Turtle* workbook. This includes Dr Nóirín Burke, Rory McAvinney, Padraic Creedon, Natasha Howard, Paul Tuohy, Atalya Peritz, Shazia Waheed, Sorsha Kennedy, William McElhinney, Edmond Aylward, Dr Maria Vittoria Marra, Mona McCrea, David and Catherine McCann.

We would also like to thank Aoibheann Gillespie-Mules for her expertise and guidance with the turtle content. Her stories and knowledge of diving to observe turtles and rescuing them has been an amazing source of inspiration. I also want to thank Natalia Stolarska for highlighting the dangers of ocean plastics and micro-plastics that turtles and all sea creatures now face. This is a stark reminder of the need to find alternatives to plastics and to stop them from entering the ocean water system!

We are also extremely lucky to have another turtle enthusiast working with the Explorers team, David McCann, who is passionate about sharing his knowledge of the ocean – including his experiences in turtle conservation. For ten years he ran a turtle hatchery programme, rehabilitation centre and population study using photo ID. A big thanks to David for reviewing our turtle resources and providing us with invaluable information for the team to use in the classroom.

Thanks to David Wall at the National Biodiversity Data centre for collating the turtle figures for us. It is a great resource to have and we encourage everyone to share their biodiversity findings on this website: <https://biodiversityireland.ie/>

School Trial of Content:

Finally, a big thank you to Dr Maria Vittoria Marra for reviewing the resources and to Mona McCrea for trialling them with St Mary's National School, Garristown, Co Dublin. We are delighted that the teachers and children loved the Explorers turtle talk content and that it has helped with their mission to become ocean champions caring for our ocean.

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INTRODUCTION

Turtles are magnificent animals and have been around for a very long time!

Sea turtles are among the oldest creatures on earth. The 'modern' sea turtles have remained essentially unchanged for **110 MILLION YEARS**. The species today came from a common ancestor which gave rise to four families of marine turtles. Two of these families, Toxochelyidae and Protostegidae, are now extinct.

These turtles were enormous. The largest fossil discovered is the Archelon, measuring 4.6 metres from head to tail. Scientists believe the Archelon became extinct during the late Cretaceous period. The Archelon lived in an area in North America called South Dakota, which was covered by the sea about 80.5 million years ago.

Seven Sea Turtles

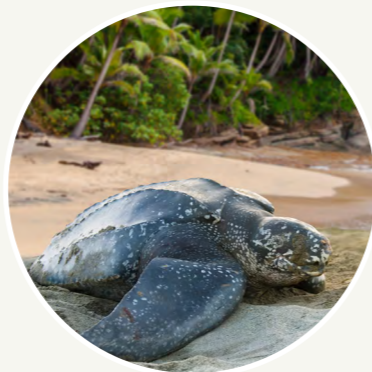
The remaining two families include seven sea turtle species. The Cheloniidae, hard-shelled: green turtle, loggerhead, hawksbill, Kemp's ridley, Olive ridley, and the flatback.

The Dermochelidae, which are the leathery-shelled turtles, now only includes the leatherback.

Sea Turtles can be found in different ocean basins around the world – except the really cold polar waters of the Arctic and Southern Ocean. The distribution range of each turtle species can vary depending on their species, age, and whether they are male or female and if they are nesting.

Did you know...

Some leatherback sea turtles have been found foraging in colder parts of the sub-Arctic waters. The other turtle species much prefer the tropical and temperate waters of the Pacific, Atlantic and Indian Ocean basins.



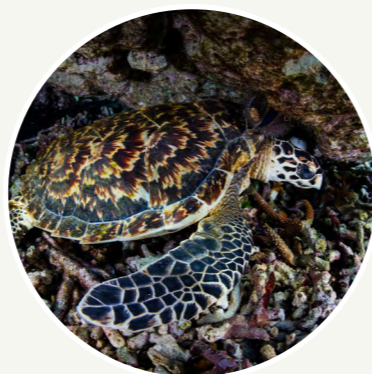
Leatherback



Green turtle



Loggerhead



Hawksbill

Turtles threatened by extinction!

Natural selection can cause animals to become extinct by weeding out weak or less fit animals over long periods of time. Catastrophic events can also cause the extinction of species. These have included: extreme climate changes, rising or falling sea levels, as well as one-off events such as a huge volcanic eruption or an asteroid hitting Earth. Unfortunately, humans are causing another mass extinction of many species, by the way we use the land, water, and causing climate change.

Among many of the species under threat, six of the seven sea turtle species are threatened with extinction. They are listed as either 'Vulnerable', 'Endangered' or 'Critically Endangered' on the International Union for the Conservation of Nature (IUCN) Red List. The flatback sea turtle is listed as 'Data Deficient'.

Turtle conservation – What can we do?

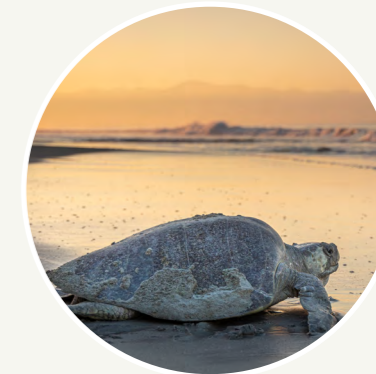
Many people and organisations are helping to promote the conservation of animals and the habitats in which they live. However, a lot more action is required by individuals to help in these efforts. We all have a powerful role to play in changing our behaviour and caring for our environment.

Sea turtles are among the species that scientists call charismatic megafauna. Other charismatic animals include whales, pandas and tigers. These animals are often used as flagship species and are used to help promote conservation efforts.

Other 'unusual' efforts to create 'conversations about conservation' include the de-extinction of animals – such as the woolly mammoth, the Tasmanian tiger and the dodo bird. It might seem like science fiction, but scientists say that the 'idea' of de-extinction raises awareness about humans causing species extinction.



Kemp's ridley



Olive ridley



Flatback



Turtle Talk

Maybe we should be learning more about the animals and their habitats, to help them before they become extinct! Join us on our turtle journey of exploring the turtle species. Hopefully you will be able to gain the ability to 'turtle talk', and to share stories about how we can help protect our turtle friends.

SCIENTIFIC ORDER & FAMILIES

There are currently 352 species of living turtles and tortoises. This includes 345 freshwater or terrestrial species and seven marine species.

In fact, all tortoises are turtles – but not all turtles are tortoises! Confused?

Turtles, tortoises and terrapins belong to the class of animals called **REPTILES**. Their scientific order is called **TESTUDINES**. These are reptiles with shells that develop out of the ribs.

How do you tell the difference between a tortoise and a turtle?

The most important thing to remember is that **TORTOISES** are exclusively land creatures. They live in a variety of habitats including deserts to wet tropical forests. Some tortoises like to bathe in water, but they are not keen swimmers.

Tortoises have different body features to their marine relatives – such as chunky feet and a more rounded dome shaped shell – all the better for walking on land. A tortoise can also hide its head and neck inside its shell for protection. It seems a bit unfair – but sea turtles can't do this. Sea turtles however have more water-dynamic shells and flippers that help them to swim in water.

All sea turtles are found in the super-family CHELONIOIDEA.

This super-family is then split into two turtle families:

DERMOCHELYIDAE and CHELONIIDAE

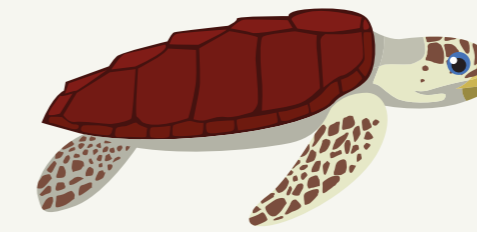
The **DERMOCHELYIDAE** FAMILY includes one **SPECIES**



Leatherback Sea Turtle
Turtar droimleathair
Dermochelys coriacea

140-180+ cm | 300-640 kg | 50+ years

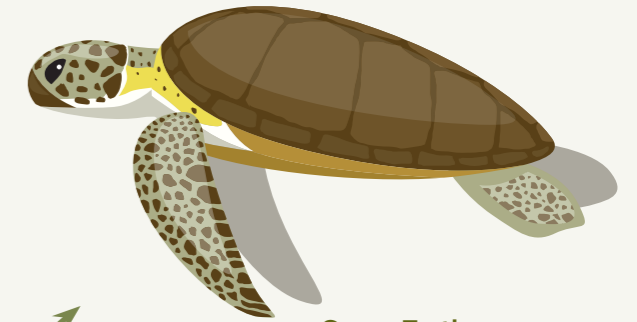
IUCN Status: Globally Vulnerable | Pacific & Southwest populations Critically Endangered



Loggerhead Sea Turtle
Turtar ceannramhar
Caretta caretta

70-110 cm | 200 kg | 70+ years

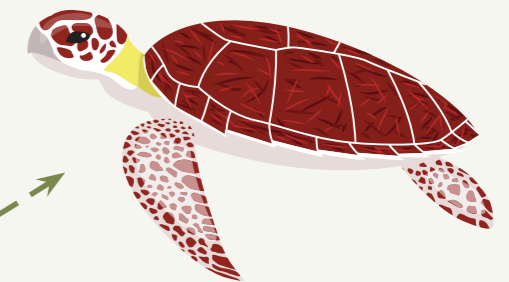
IUCN Status: Vulnerable



Green Turtle
Turtar glas
Chelonia mydas

80-120 cm | 300 kg | 70+ years

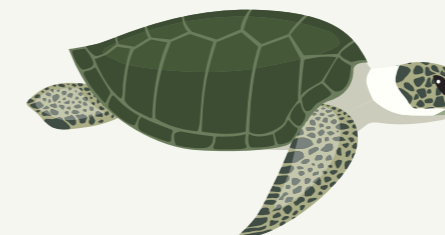
IUCN Status: Endangered



Hawksbill Sea Turtle
Turtar frithghobach
Eretmochelys imbricata

75-90 cm | 150 kg | 50+ years

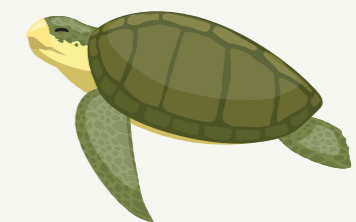
IUCN Status: Critically Endangered



Olive ridley Sea Turtle
Turtar Olive ridley
Lepidochelys olivacea

60-70 cm | 70 kg | 30-50 years

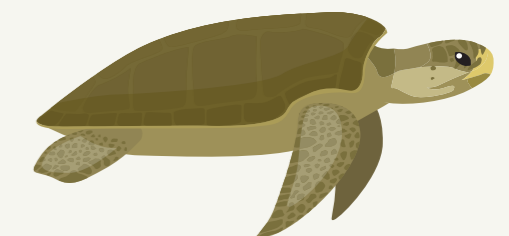
IUCN Status: Vulnerable



Kemp's ridley Sea Turtle
Turtar Kemp's ridley
Lepidochelys kempii

60-70 cm | 45 kg | 30+ years

IUCN Status: Critically Endangered



Flatback Sea Turtle
Turtar rédhroma
Natator depressus

80-95 cm | 100 kg | 50+ years

IUCN Status: Data Deficient

The **CHELONIIDAE** FAMILY includes six **SPECIES**



Average Irish Human
Homo sapiens
178cm | 70kg | 81 years

TURTLE TALES, MYTHS & LEGENDS

There are lots of stories, myths and legends that involve sea turtles.

In fact, stories about turtles are often used to tell how Earth was created.

Sea turtles in these stories symbolise:

WISDOM, HEALING, PROTECTION, DIVINE-BEING

That certainly makes this animal rather special!



The story of Turtle Island is an indigenous legend from North and Central America where the turtle represents:

LIFE & EARTH

Turtle Island begins where the world was once flooded and there was only sky and water. Soil was carried from the depths of the sea by a muskrat and was piled on the back of an enormous turtle, eventually forming the land known as Turtle Island.

Similar stories come from India where Hindu mythology also tells of the world being supported by four elephants standing on a turtle's back.

This idea appears in the *Discworld* novels by Terry Pratchett, where the turtle and elephants swim through the stars.

The sea turtle also represents **PROTECTION AND PERSEVERANCE!**

In Hawai'ian mythology, sea turtles Honu-po'o-kea and Honu-'ea gave birth to a turtle called Kauila. Kauila provided fresh clean water to the islands of Hawaii, and transformed into a young girl to become the **PROTECTOR** of young children at the beach.



Turtles also feature in adventure stories and are important characters that provide us with **INSPIRATION.**

You may have encountered the mock turtle in *Alice in Wonderland* who explains he was once a real turtle that lived in the sea. He tells the story of when he went to school and was taught by an old master called Tortoise ...

"Why did you call him Tortoise if he wasn't one?" asked Alice.

The mock turtle exclaimed: "Because he taught us!"

Nowadays, turtles are a symbol of **CONSERVATION.** They symbolise efforts to reduce plastic pollution and protect our seas.

More recent stories have been made into TV programmes, films and interactive gaming Apps. These often include turtles with **SUPER-POWERS** and **FRIENDSHIP.**

In the Pokémon Go App, the character Tirtouga is as solid as a rock and cannot be defeated in one single blow.

Pixar's film *Finding Nemo* includes the character Crush who is a surfing turtle. Crush helps Marlin and Dory get to Sydney to rescue Nemo.





SEA TURTLE SURVIVAL

Sea turtles are important to marine biodiversity. Leatherbacks help keep jellyfish numbers down. Turtles that feed in tropical oceans keep coral reefs healthy by controlling sponge numbers and keep seagrass beds healthy by grazing. These habitats are very important for other species.

Unfortunately, numbers of sea turtles have declined due to human activity, which includes ocean pollution and climate change.



Did you know...

Scientists have worked out that the volume of plastic entering the ocean annually could nearly triple in the next 20 years. By 2050, this could lead to more plastic in the ocean than fish!

Plastics & Pollution

The invasion of plastic making its way into the ocean is increasing every year. In recent years, it is estimated that roughly 33 billion pounds of plastic, which is equivalent of two garbage trucks filled with plastic, makes its way into the oceans every minute! Most of this plastic comes from land sources and rivers where countries have poor waste management.

Sea turtles that feed on jellyfish, especially leatherback and green turtles, are prone to mistaking plastic bags for jellyfish and swallowing them.

Other items also get eaten by sea turtles, such as ropes, food wrappers, straws and even lollipop sticks! These things cause irreparable physical damage to the turtles when eaten and sadly even death!

MICROPLASTICS in the ocean are also hazardous for many species, including sea turtles.

Microplastics are tiny plastics that are formed when larger particles break down over time. Daily activities, such as washing our clothes that are made from synthetic material can also result in billions of microplastics entering the ocean. Unfortunately, a lot of our clothes are made of synthetics, such as sports wear, shirts, socks, rain coats, and acrylic jumpers, to name a few.

Remember the 5Rs

REFUSE or **REDUCE** plastic when possible.
REPURPOSE or upcycle waste items. Create an art piece to promote saving turtles. This might include a sculpture, plant pots or Christmas decorations from plastics.
 Always **REUSE** and **RECYCLE** as much as possible!
 Try calculating your plastic consumption and plan to reduce it today!



Ghost Nets

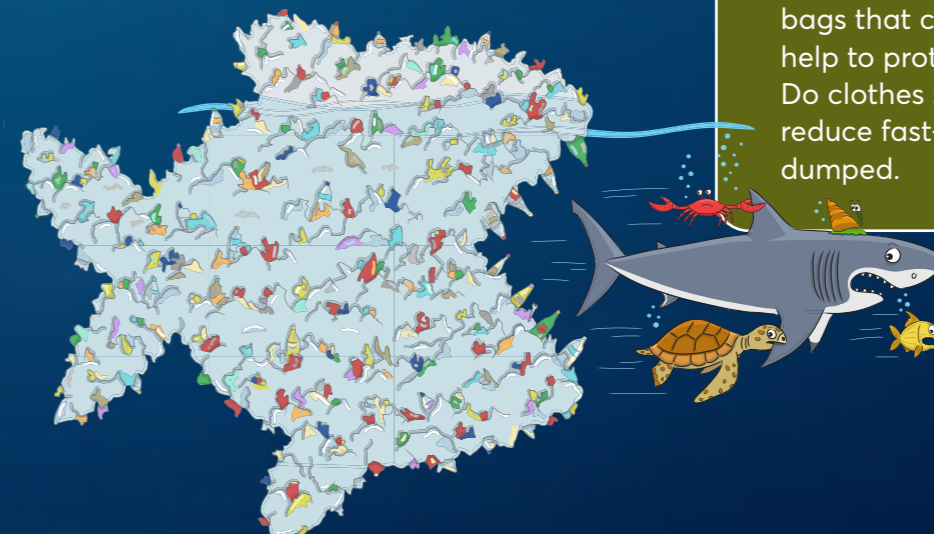
Fishing equipment is often made of plastic, and lost gear adds to the problem of plastic pollution in the ocean. Fishing nets that are accidentally lost or deliberately discarded at sea are called ghost nets. It takes these nets an estimated 20-40 years to break down. During this time, a lot of marine life, including turtles get caught in these nets.



In different countries, fishers are encouraged to collect lost nets they find at sea. In Ireland, fishers participate in the 'Clean Oceans Initiative' which involves tackling the issue of waste, ghost nets and illegal dumping. There are also programmes in developing nations where fishers get paid for old, damaged nets. They bring them to collection centres to be recycled or up-cycled.

Reduce Microplastics

Avoid products like soaps and face products with exfoliating microbeads in them.
 Choose your clothes 'wisely'. It is very hard to avoid clothing that includes synthetic materials. Therefore, try washing your clothes less often, air dry them, and wash them using special bags that catch the microfibers and help to protect your clothing.
 Do clothes swaps or repurpose them to reduce fast-fashion and clothes being dumped.



Climate Change

Climate change causes many problems for biodiversity, including sea turtles. Increasing frequency and intensity of storms damage their nests and feeding grounds. Rising temperatures affect the health of their habitats and rising sea levels could submerge their nesting beaches.



Did you know...

Lots of children around the world are leading campaigns to inspire others to save endangered animals. They have written books, created songs and music videos, and have become Youth Ambassadors.



Create New Habits at Home & School

Create a personal and class plan with your friends of what you want to do to stop climate change! Here are some ideas to get you started...

Reduce your carbon footprint by turning off the lights and electrics when not in use. Close the doors and windows to keep the heat in.

Wear weather appropriate clothes – put your socks on if you are cold!

Learn as much as you can about turtles and share your 'turtle stories' with others. Create turtle art in class and on the seashore with a message to help save the sea turtles around the world.

Over Harvesting & Poaching

In some places around the world sea turtles are still harvested for their meat, shells and eggs. In some places this is done illegally and is called poaching.

Hawksbill turtles in particular are highly prized for their beautiful shells that are used to make tortoiseshell jewellery and ornaments.

Disturbance & Habitat Loss

Habitat loss is a major problem for many turtle nesting beaches. This is caused by large coastal developments to walls, fences, boardwalks being built where turtles nests. Even sun loungers being left on beaches can block turtles as they try to move from and to the water's edge.

OVEREXCITED TOURISTS can disturb nesting females or turtles in the water. Even trying to help a hatchling's migration to the water by giving it a 'helping hand' can hinder its ability to survive later in the water.

LIGHT POLLUTION can also be a problem for baby turtles. They use the light of the moon to navigate to the sea when they hatch. But if there are lights on the beach, they can get confused and wander inland instead.

Tackling light pollution can benefit many animals, and can involve turning off the lights during the hatching period, or using lights that animals can't see, like red light.

Helping Stranded Turtles

If you find a turtle on a beach in Ireland, it is far from its home and it will definitely need help. Don't touch it, pick it up or stress the turtle. Keep noise and movement to a minimum. Keep pets and other animals away. Call a vet, your nearest aquarium for advice on what to do.

DON'T buy tortoiseshell souvenirs or ornaments made from turtle shells!



Turtle Hospitals

Sick or injured sea turtles can sometimes be treated in turtle hospitals. Mainly found in countries where turtles are native, scientists and volunteers work together to nurse turtles back to health. People can also volunteer on citizen science projects like population studies using non-invasive photo ID, beach & reef cleans and outreach projects that educate tourists and the public about turtles.

If you are travelling to a sea turtle hot spot, be a kind tourist and don't disturb the turtles in the water, on the beach or their nests.



SUPER SEA TURTLE SCIENCE & RESEARCH

Sea turtles are a part of a special group called **KEYSTONE SPECIES**, along with sharks and whales. This means that these species have a very important role in keeping their habitats healthy.

All kinds of scientists are keen to learn more about turtles to understand their biology population trends and their distribution: where they are located, as well as human threats and their conservation status.

PALEONTOLOGISTS study fossils to learn about the past life on Earth. Learning what happened to extinct sea turtles could help us to predict what may happen to living sea turtles as a result of climate change.

ENVIRONMENTAL SCIENTISTS who work with turtles are called **HERPETOLOGISTS**. They study amphibians and reptiles, such as frogs, snakes, lizards and turtles. This involves learning about turtles in their natural habitats – trying to discover their many secrets including their genetics.

VOLUNTEER & CITIZEN SCIENTISTS also help with learning about sea turtles. Citizens can report sightings at sea and where turtles are stranded on shorelines. This helps with gathering information about migration patterns, feeding and breeding grounds.

Citizens from all around the world also take part in turtle science and conservation projects. This can involve clearing plastics in the ocean to taking non-intrusive photos of turtles at sea to help identify and record them.

TURTLE ECONOMICS & TOURISM

Sea turtle tourism is very popular and can bring a lot of money to remote coastal areas that are home to sea turtles. However, for sea turtle tourism and conservation to work, everyone needs to be involved to benefit - along with the turtles!

Did you know...

Indigenous people have invaluable knowledge about their local flora and fauna that has been built up and passed on over many generations. This is called **TRADITIONAL ECOLOGICAL KNOWLEDGE**.



Scientists are using **NEW COMPUTER TECHNOLOGY** to learn more about turtle lifespan and migratory patterns at sea.

UNDERWATER CAMERAS attached to their backs provide video footage from the turtle's perspective. Footage shows them foraging for food, swimming, diving, and interacting with other turtles. Getting perspectives like this is great for learning "turtle talk"!

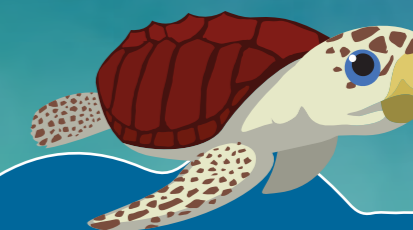
Researchers can also track sea turtle movements and habits using **ACOUSTIC & SATELLITE TAGS**. The transmitter is attached to the animal's carapace (shell) and sends data that is received by a satellite when the host sea turtle returns to the surface to breathe. The satellite then sends the data to a computer.

These data tells scientists important information, such as where and when the animals move; the timing and depth of dives; water temperature; and how long the sea turtle spends beneath the surface between breaths.

NESTING RESEARCH involves scientists monitoring the population of nesting female sea turtles on a beach. They record the number of nests and eggs being laid and the hatching success rate. This conservation work helps protect turtles and their survival rate.

PHOTOS & APPS TO HELP SCIENTISTS

The SEE Shell App is the first mobile app to use artificial intelligence to combat the illegal wildlife trade and is used to identify hawksbill shells being illegally used. It determines if tortoiseshell jewellery and trinkets are fake or real.



Did you know...

Yoshi the loggerhead sea turtle was tracked for 1003 days at sea after her release off the coast of Cape Town, South Africa, in 2017. She travelled over 40,011 kilometres where she found a new home in Australian waters in 2020.

TURTLE TOTS & LIFE CYCLE

The sea turtle's life cycle is similar among all species – with some small differences. All species migrate long distances to reproduce – apart from the flatback sea turtle.

1. Nesting

Starting at the nesting beach, female sea turtles crawl out from the sea to find a suitable location above the high tide line. Depending on the species, they nest every 2-4 years.

The female digs a nest called a 'body pit' above the hightide zone on the beach. She does this by first using her front flippers and then rotates to use her back flippers to create the hole - just like using two shovels. Depending on the species, sea turtles can lay an average of 100-150 eggs per nest. The female covers the pit with sand to camouflage where the eggs are incubating.

The sea turtles may lay 3-5 separate clutches. Between each clutch laid the female heads back to sea for about two weeks. After the female has finished laying all of her eggs, she heads back to the sea, where she can spend up to a year or longer, before returning for the next nesting season.

Did you know...
A group of sea turtles is called a flotilla – which is the same as a group of ships.

6. Adult Turtle - life at sea

Sea turtles can live a long time. Some species can live up to 60 years. Leatherbacks can live 90 years of age. Most sea turtles take decades to mature. This can range between 10-30 years.

Adult turtles will spend all their lives at sea. Only the females return to land to nest. At places such as Hawaii (and sometimes Australia and the Galápagos Islands), green sea turtles bask on shore sunbathing!

2. Eggs

Sea turtle eggs are round, have a soft shell and look like ping-pong balls! They however vary in size depending on the species. The hawksbill's eggs are the smallest measuring 3.8 cm in diameter. The Leatherback's eggs are the largest and measure up to 5.5 cm in diameter. The eggs incubate for about two months. The temperature of the nest will determine if there is an equal split of females and males. If the nest is warmer than normal, more females will hatch than males. If it is colder, more males will hatch. If its too hot or cold, none will hatch at all!

3. Hatchlings

Sea turtle hatchlings break open their shell using a temporary egg-tooth, a 'caruncle', which falls off soon after hatching. Digging out of the nest is a group effort that can take several days. Hatchlings usually emerge from their nest at night when temperatures are cooler. Once they decide to burst out, they erupt from the nest cavity as a group.

The newly-hatched turtles orientate themselves to the brightest horizon, which historically was the moonlight over the water, and then dash toward the sea. They must make a mad dash before they are eaten by predators.

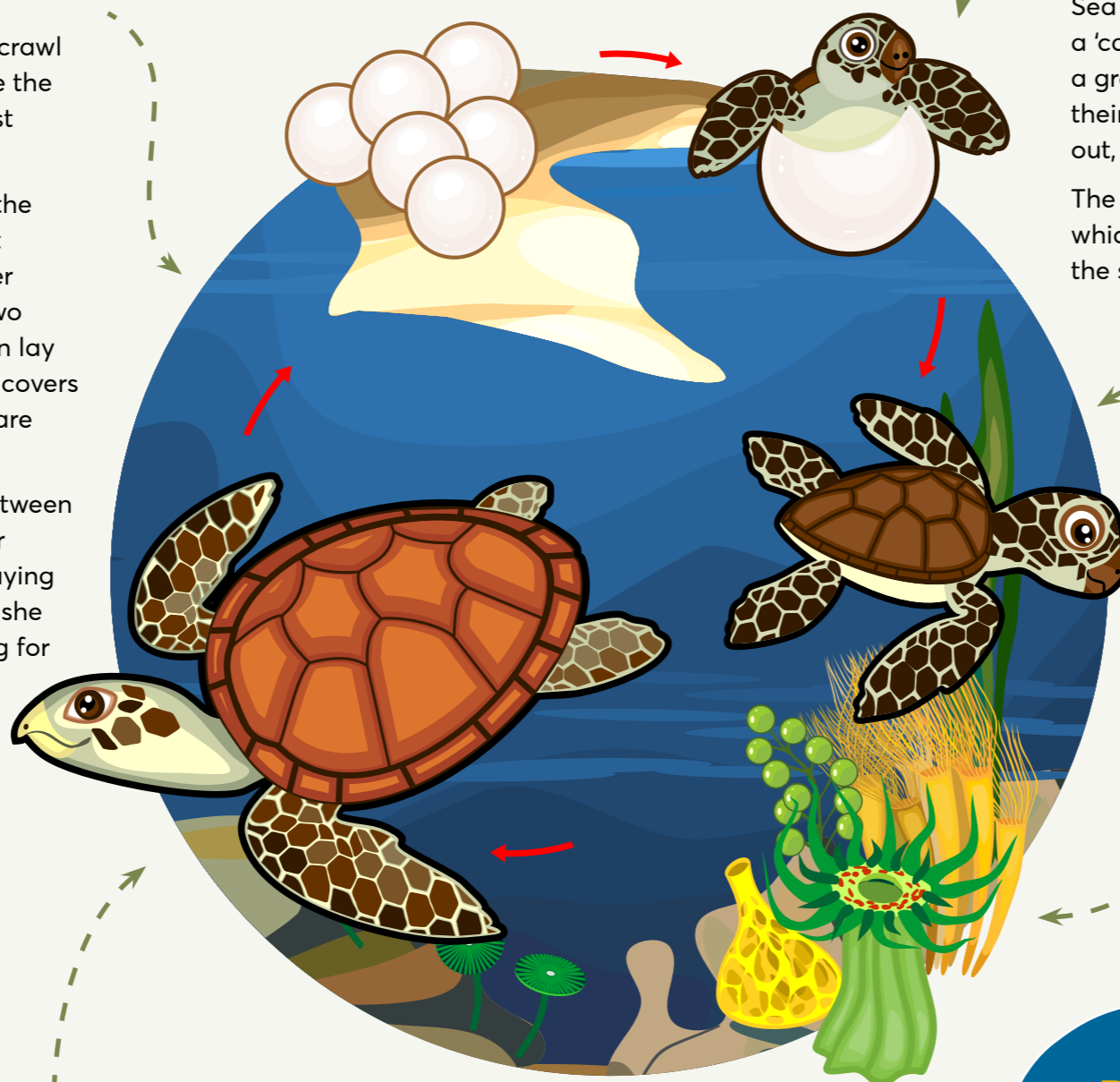
4. Juveniles - in the open ocean

Once the baby turtles make it to the water they swim frantically to the open sea. As they are not seen for many years after this, no one is sure what happens to them while they are juveniles. Because this period is such a mystery, it is called 'the lost years'!

5. Juveniles - foraging

At the end of the 'lost years', sea turtles return to coastal waters in their home region, where they continue to grow until they reach adulthood.

Did you know...
It is often said that only 1 egg in every 1,000 will lead to an adult sea turtle. Hatchlings seek out floating masses of seaweed out at sea to live in until they grow larger and are no longer an easy meal for predators, such as large fish and birds.



TURTLES SPECIAL FEATURES

Sea turtles come in all sizes and their body shape makes them **HYDRODYNAMIC** in the water. This means they can swim with little resistance. Check out some of the special features of turtles.

Hard Shell

Sea turtles are famous for their streamlined shell. The upper part of the shell is called the **CARAPACE**. The turtle's solid shell is formed where the ribs and vertebrae grow into the outer skin layers and connect together like tectonic plates. Small nerves run throughout their shells which means they are sensitive to the touch.

Flippers & Claws

Sea turtles have four flippers. They use the two front flippers for swimming with powerful wing-like beats. The two hind flippers are used for steering, like rudders on a boat.

On land, females use their flippers to create a body pit for nesting.

In all species, apart from the leatherback, the front flippers have one to two claws. The males' claws are longer and curved.

Head & Limbs

A sea turtle's head and limbs are fixed outside the shell and cannot be retracted into the shell, like their land-dwelling relatives. Thankfully they have a thick, bony skull to protect them.

Beaks, Jaws & Barbs

Sea turtles do not have teeth. Instead, they have beaks that are a different shape, depending on the species. Their beaks and jaws have evolved based on what they like to eat.

Leatherbacks, loggerheads, and green sea turtles all have backward facing barbs inside their mouths and throats to trap food from escaping.

Tail

Both male and female turtles have tails. A sea turtle will develop a tail when it becomes an adult. Males have longer tails that may extend past the back flipper.

Scutes

The sea turtle's shell is covered in scales, or plates known as **SCUTES**. When the turtle grows, new scutes grow causing the older scutes to shed. This is similar to a snake shedding its skin. The number and layout of the scutes can be used to identify the species.

Plastron

The underside of the sea turtle's shell is called the plastron. The shape is mainly flat for females. The males is concave, which means it is curved inward.

Eyes & Salt Glands

Sea turtles can see above and below the water. Sometimes it may look like a sea turtle is crying. They're not sad, but are getting rid of excess salt!

Living in the sea means they ingest a lot of saltwater. To deal with this they have salt excretory glands beside their eyes to remove the salt.

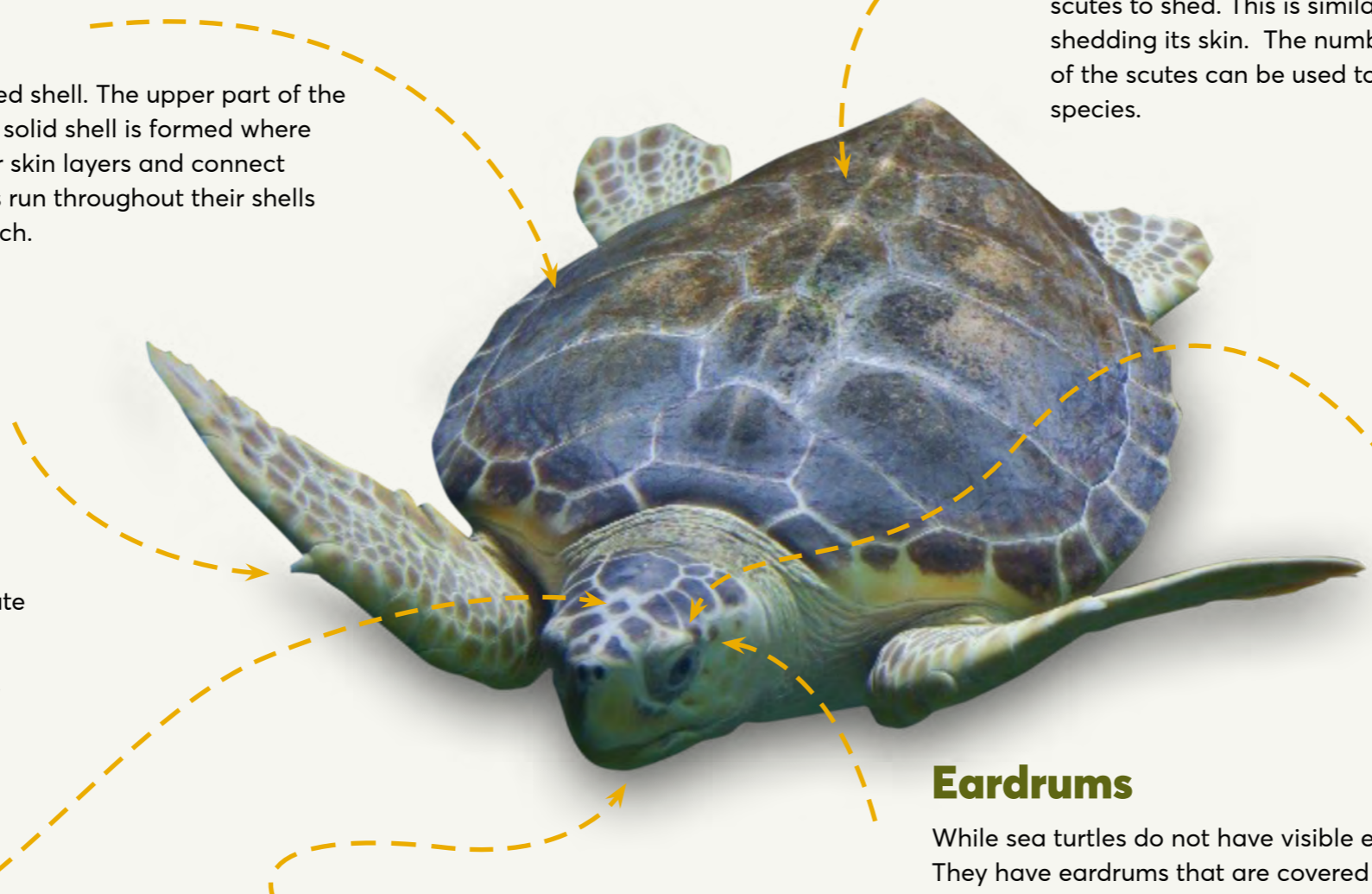
Eardrums

While sea turtles do not have visible ears, they can hear! They have eardrums that are covered by skin and have a single bone in the middle ear that conducts vibrations to the inner ear. This means they can hear low frequency sounds underwater.

Sea turtles have 'super smell' senses, which is their most acute sense. They detect scents in the water by drawing water in through the nostrils and expelling it through the mouth.

Rubbery Skin & Keels

The leatherback sea turtle gets its name from its softer flexible bone plates that are covered in thick **LEATHERY SKIN** instead of scutes. The seven long ridges along their backs are called **KEELS**. This makes the leatherback very easy to identify.



Facial Features

A sea turtle's facial scales are as unique as our fingerprints. This means scientists can identify individual turtles by looking at their face. Apps have been developed to do this where photos are taken by scientists as well as any divers observing turtles under water. Each scale is mapped out showing the different shape of the scales on the face.



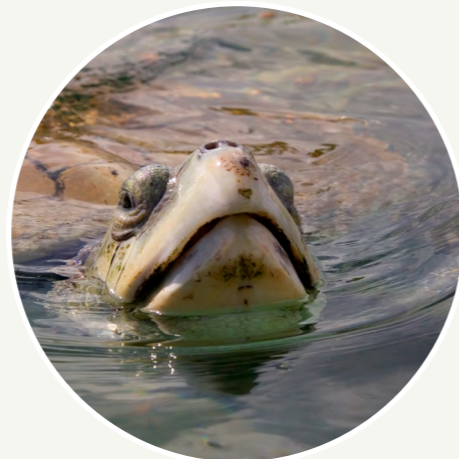
Nose & Lungs

Sea turtles, being reptiles, have lungs instead of gills. This means they need to come to the sea surface to breathe air. Scientists have found that sea turtles can hold their breath for hours at a time under the water when resting.



Cold-blood

Hard-shell sea turtles are **ECTOTHERMIC**, or cold-blooded. This means their body temperature is determined by the surrounding environment. If the water gets too cold, they become slow and sluggish. Turtles therefore prefer warmer waters and don't live in Irish waters - it's just too chilly for them!



Leatherback – Blubber and Special Blood Vessels

Leatherback sea turtles are cold-blooded reptiles but can keep their body temperature warmer than other turtles with a thick layer of fat and a sophisticated system of blood vessels. This is called the 'counter-current exchange', which means the blood temperature from the body heats up the cold areas of each flipper – preventing the turtle's body temperature from getting colder than normal. This special feature means they can migrate to feed in more temperate waters such as Ireland, where they can cope in the cold waters.



Magnetism & Migration

Sea turtle species are found in tropical and subtropical regions around the world. Some **MIGRATE** long distances across ocean basins and other turtles stay in the waters near to where they were born.

Sea turtles have the incredible ability of detecting the Earth's electromagnetic fields and using them to guide their migrations. Hatchlings are born with this ability that becomes more detailed as they mature!

Researchers believe that sea turtles use **MAGNETITE** in their heads as an internal compass. This helps them navigate to their favoured feeding and breeding grounds. Some turtles such as leatherbacks and

loggerheads travel huge distances and then return to their home.

Scientists have discovered that salmon use microscopic crystals of magnetite in their tissue as both a map and compass. This helps them navigate via the Earth's magnetic field.

Scientists have been studying the magnetic abilities of loggerheads for over 20 years. Experiments have shown that baby turtles can work out their position using the magnetic field as a compass to get their bearing.



By tagging sea turtles, scientists have been able to learn more about turtle migration and how they seem to know where they are going - using their turtle magnetism.

The map shows the journeys taken by two leatherback turtles tagged off the south coast of Ireland.

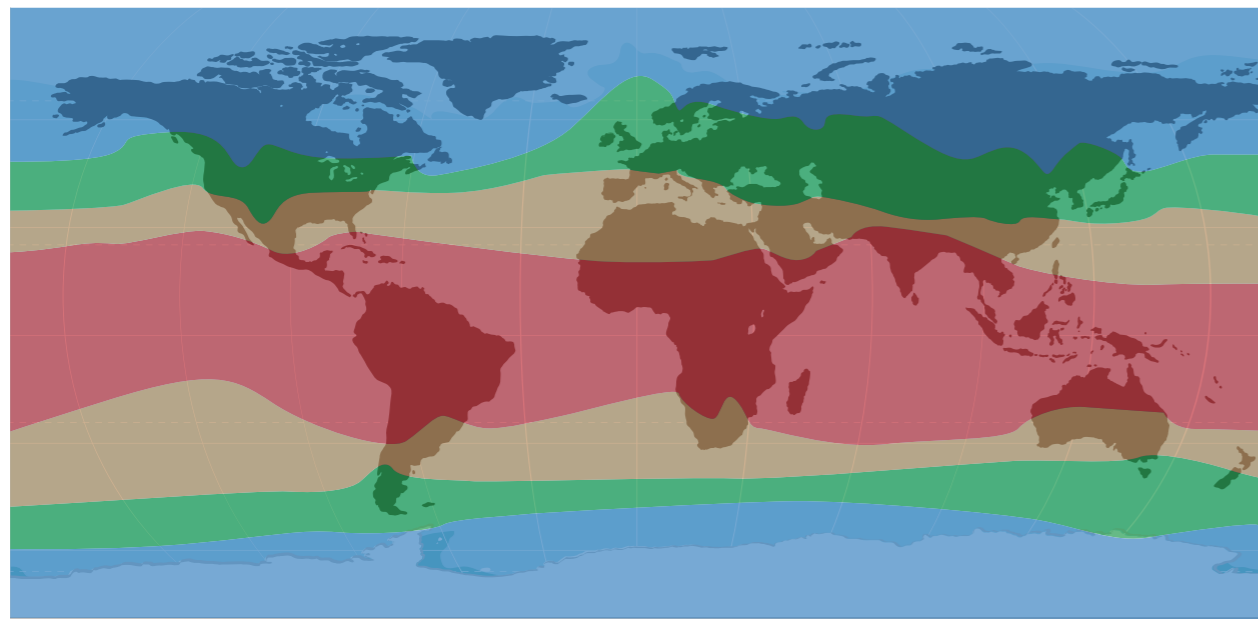
T1 (blue) was a female who travelled south to Madeira and the Canaries before turning and going to Newfoundland, Canada.

T2 (orange) was a male who spent some time in the Bay of Biscay, France, before heading to Cape Verde, where he did the deepest dive ever recorded by a reptile: 1,280 metres! He then went to French Guiana and Surinam in South America.

CLIMATE ZONES, CURRENTS & TURTLE TRAVELS

The world is divided into zones based on the climate. The ocean nearest the equator is known as the tropical and subtropical zones and is very warm. In the northern and southern hemisphere, the temperature of the ocean then changes in the areas either side of the subtropical zones. These areas are called the temperate zones. They are moderate in temperature. The ocean that is near the Arctic and Antarctica (Southern Ocean) is known as the polar zones, and are very cold.

The seven sea turtles species can be found nesting and migrating in different oceans around the world. Each of the seven turtle species nest and have their hatchlings on beaches that are located in warm **TROPICAL** or **SUBTROPICAL** zones.



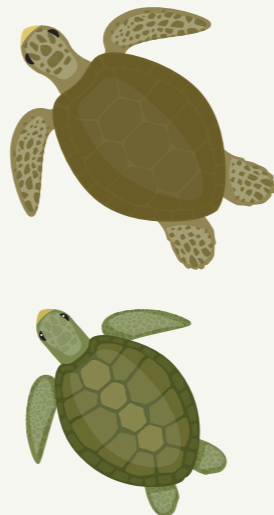
● Polar Zone ● Temperate Zone ● Subtropics ● Tropics

Some turtle hatchlings swim from tropical and subtropical areas to forage in the temperate zones. Sea turtles are not found in the polar zones.

Turtles that Stay Close to Home

FLATBACK sea turtles, which are only found in the tropical parts of north Australia, don't migrate far beyond the coastal waters of the Australian continental shelf.

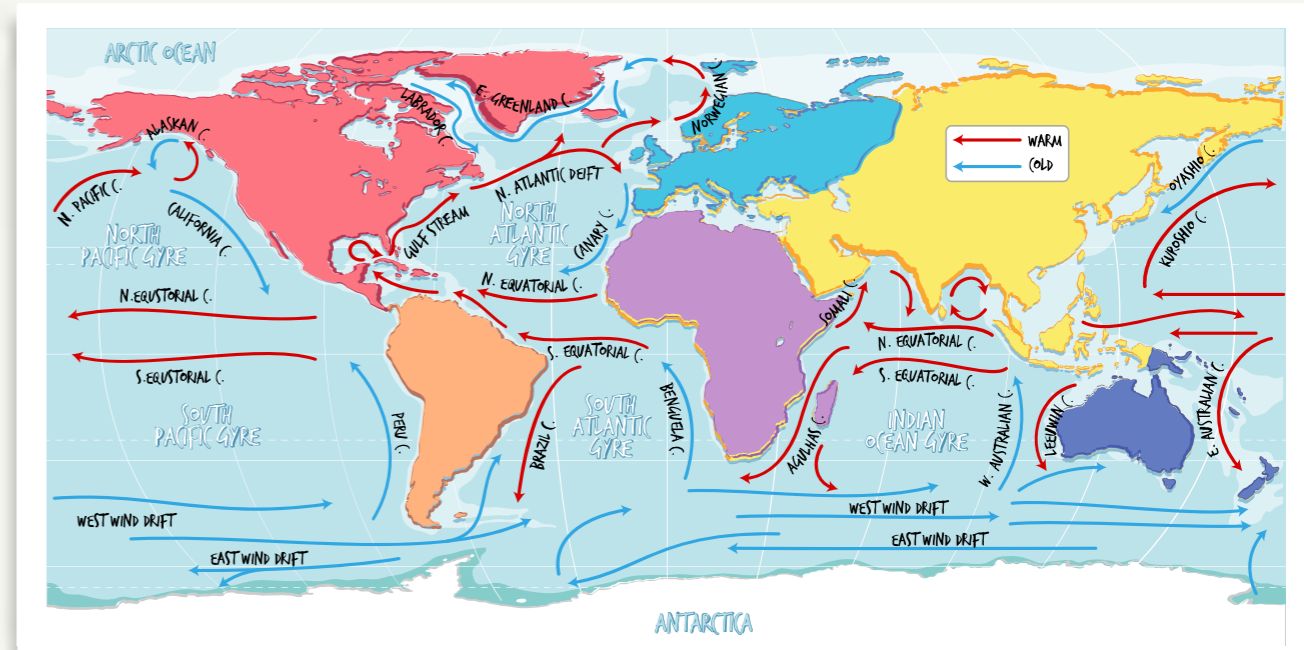
KEMP'S RIDLEY sea turtles nest mainly in Mexico and south Texas. The females migrate for food around Florida and the north-central Gulf of Mexico. Some have been recorded as far north as Canada and Ireland!



Turtles use ocean currents to travel

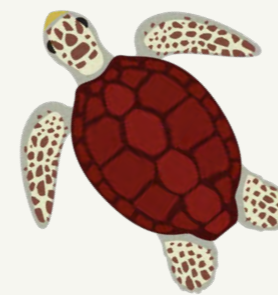
Check out the map below to discover the five ocean gyres and major ocean currents that are constantly moving, like a big conveyor belt in big circles.

Although, many of the turtle species are fast and agile swimmers, they use ocean currents to help them travel from one region to another in search of food and also to return to their nesting grounds. For example, some species would use the Gulf Stream, the North Atlantic Drift, and the Canary Current to travel to different parts of the North Atlantic. The movement of the currents in each of the ocean basins, helps the turtles cover large distances without using a lot of energy.



Turtles that Travel Long Distances for Foraging

Sea turtle species such as leatherback and loggerhead, which hatch in **TROPICAL** zones, migrate long distances to forage in **TEMPERATE** zones.



LOGGERHEAD sea turtles are found migrating in the Atlantic, Pacific and Indian Oceans, as well as in the Mediterranean Sea to forage for food, before returning to live in their 'home' waters as adults. Loggerheads that nest in Florida have been recorded migrating in the Atlantic waters towards north America and Canada. They have also been recorded travelling across the Atlantic, entering the Gulf Stream to forage in European waters.



LEATHERBACK sea turtles occupy waters in both the Pacific and the Atlantic. The species that nest in Indonesia, Papua New Guinea and the Solomon Islands migrate across the Pacific Ocean to the west coast of north America to find food, whereas those that hatch on the Pacific coasts of Mexico migrate to the south and eastern tropical parts of the Pacific Ocean.

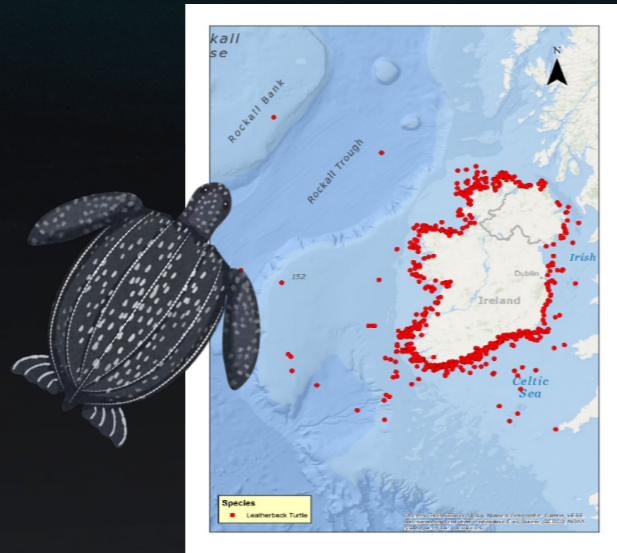
Those that hatched on tropical beaches in Florida and the Caribbean in the Atlantic have been tagged foraging in waters off Canada and Ireland in temperate waters.

SEA TURTLES IN IRISH WATERS

Five species of sea turtles have been recorded in Irish waters: leatherback, loggerhead, Kemp's ridley, hawksbill, and the green turtle.

LEATHERBACK sea turtles have been recorded all around Ireland, in the Atlantic, as well as the Irish and Celtic Seas. 1,071 leatherbacks were recorded between 1938 and 2022. The most recent sighting was off Cahore, Co Wexford, by a fisherman.

Scientists have established that leatherbacks are long-distance seasonal migrants to Irish waters, just like bluefin tuna and humpback whales. They migrate to temperate waters for feeding and then return to waters near to where they are from to find a mate and for nesting.



The smallest sea turtle in the world is the **KEMP'S RIDLEY** and over a period of nearly one-hundred years (1921 to 2016) they have found their way into Irish waters. The Kemp's ridley has been found along the west coast of Ireland from Cork to Donegal. A couple were even found as far north as Inishowen, the northernmost part of the island of Ireland.

One **HAWKSBILL** was caught off Cork Harbour in 1983 and one **GREEN TURTLE** was located in west Cork off Cape Clear island in 2007.

For many of these turtles it is likely that they were caught in the North Atlantic drift, landing them in Irish waters by accident.

Total Turtles 1,303

1,071 Leatherback turtles

110 Loggerhead turtles


15 Kemp's ridley

1 Hawksbill turtle

1 Green turtle

105 Unidentified

**Numbers of turtles recorded provided by the National Biodiversity Ireland & Sea Turtle Rescue Ireland, February 2023*

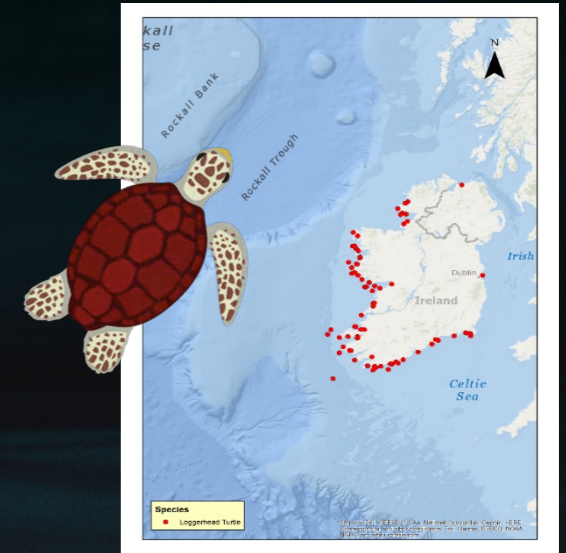


Did you know...
Although jellyfish are found in Irish waters all year round, they are mostly abundant from July to September – this is the perfect time for a jellyfish and sea squirt feast for turtles.

LOGGERHEAD sea turtles are the second most recorded turtles species in Irish waters. 110 loggerheads have been recorded over 150 years.

They have been found mainly recorded along the west Atlantic coast and in the Celtic sea on the south coast.

Scientists believe that loggerhead turtles that travel the North Atlantic gyre for feeding, get caught in the North Atlantic drift. They end up in colder waters in the temperate zones, such as Ireland accidentally.



Turtle Records

Annual recordings of leatherback turtles have been made over many years, establishing this species as a seasonal visitor. They have been mostly recorded during the summer months from July to September foraging for food.

Of all the loggerheads recorded over the years, they have been mostly found during the winter months, with the most recorded in January. The other species that have been less frequently recorded have been mainly found throughout the winter and autumn months.

For these sea turtle species, Ireland's temperate waters are too cold for them. When found washed ashore, they have been found in a very tired and lifeless state.

In 2014 a loggerhead turtle was found in Co Clare and was taken to Galway Atlantaquaria for rehabilitation. Her carers named her Leona. After an appeal for assistance to get Leona home, Aer Lingus came to her aid, offering a seat on one of their commercial flights to the warmer climate of Gran Canaria. This amazing turtle and her story of the distance she had travelled, surviving the odds, highlights the importance of caring for our ocean and the animals that live there.




Did you know...
Turtles found in EU waters, which includes Ireland's marine territory, are strictly protected under the EU Habitats Directive! This aims to help the conservation of rare and threatened species.

Let's check out some of the sea turtle that have found their way into Irish waters...

EXPLORERS

Leatherback Sea Turtle Turtar droimleathair

Quick Facts

Scientific name: *Dermochelys coriacea*
Size: 140-180+ cm
Weight: females 300-640 kg | males 900 kg
Colour: (Carapace) blue to black (Plastron) pink to black
Lifespan: Estimated at 50 years or more
Ocean: Atlantic, Pacific, and Indian Oceans
IUCN Status: Globally Vulnerable / Pacific & Southwest populations Critically Endangered



Where will you find me?

Leatherbacks live in the Atlantic, Pacific, and Indian Oceans. They nest on tropical and subtropical beaches.

Leatherback sea turtles undertake the longest migrations between breeding and feeding areas compared to other sea turtles. On average they travel nearly 6,000 km each way. Male leatherbacks are known to undertake mighty migrations of over 16,000 kilometres in a year, into temperate waters. Leatherbacks are also able to dive deeper than other marine reptiles. Most scientific observations have found the dive duration of the leatherback is around 40 minutes. The deepest recorded dive of a leatherback was 1,280 metres, and it remained at that depth for 85 minutes!

What do I look like?

Leatherbacks are the only species of sea turtle that don't have a hard shell and scales. They get their name from their tough, rubbery skin that feels much like leather. Leatherback sea turtles are known as the leathery turtle, lute turtle, or luth.

The leatherback is mainly blue to black and has seven ridges down its back with white markings down each ridge that look like lines of spots. The turtle's underside is pink to black in colour. Leatherbacks can also grow much faster and larger than hard-shelled turtles.

In fact, they are the largest turtle species in the world and are nearly as large as a door and weigh four times the weight of an adult human!

What do I eat?

Leatherback sea turtles are **GELATINIVORES**. They have delicate, scissor-like jaws. This means they only eat soft-bodied invertebrates such as jellyfish and sea squirts.

What likes to eat me?

Orcas, also known as killer whales, have been known to prey on adult leatherback sea turtles.

Baby leatherbacks have many more predators both on land and in the water, such as crabs, racoons, cats and dogs, as well as sharks, fish and seabirds.

What are my nesting habits?

Female leatherbacks return to the region they are from every 2 to 4 years in order to nest. Females nest at night and dig large body pits in sandy beaches to lay their eggs. They nest several times during a nesting season taking a break of 8 to 12 days at a time. Each of the clutches can include up to 100 eggs.

After the female lays her eggs and fills the nest back in with sand so that it is undetectable by predators, the eggs will incubate for approximately 2 months. Hatchlings will then emerge from their nests and make their way towards the ocean.



What are my threats?

The IUCN status of the leatherback sea turtle is listed globally as Vulnerable. The Atlantic populations have recently been declining. However, due to the limited data, there is a lack of knowledge about these recent trends. In the USA, Pacific and Southwest leatherback populations are listed as Critically Endangered and most at risk for extinction.

The leatherback's main threats: bycatch in fishing gear, climate change, direct harvest of turtles and eggs, loss and degradation of nesting and foraging habitat, ocean pollution & marine debris, vessel strikes.

Did you know...

Leatherbacks also have a pineal eye known as a 'third eye' or their pink spot. Scientists believe that the pink patch on top of their head is used to sense seasonal changes in sunlight – providing a warning to leave cold waters before the winter season!

Did you know...

The largest leatherback turtle ever recorded was a male washed ashore at Harlech in Wales in 1988. It weighed 916 kg. It measured 2.91 metres in overall length and 2.54 metres across the span of its front flippers.

EXPLORERS

Green Turtle

Turtar glas

Quick Facts

Scientific name: *Chelonia mydas*
Size: 80-120 cm
Weight: 300 kg
Colour: (Carapace) light or dark brown carapace and yellowish-white plastron
Lifespan: 70 years +
Ocean: Atlantic, Pacific, Indian Oceans.
IUCN Status: Endangered



Where will you find me?

Green turtles are found in both tropical and subtropical waters of the Atlantic, Pacific and Indian Oceans. They are also found in the Mediterranean Sea.

In fact, green turtles nest in over 80 countries. They also live in the coastal areas of over 140 countries, where they stay around reefs, rocky areas, and bays. They stay close to seagrass beds where they spend a significant amount of time foraging.

What do I look like?

Green turtles are the largest hard-shell sea turtles. They have a light or dark brown shell on top (carapace) and yellowish-white underbelly (plastron). Green turtles in the East Pacific appear much darker with a dark-grey to black carapace. The shell of the green turtle has five central scutes running down the middle and four costal (lateral) scutes on each side. The green turtle has a relatively small head to its body size. Its distinct feature includes a serrated beak on the lower jaw, which is perfect for chewing on sea grass. They also have a pair of large scutes between their eyes.

What do I eat?

Green turtles are **HERBIVORES**. They have finely serrated jaws and love to eat a plant-based diet such as algae, seaweed and sea grasses. They will also occasionally eat jellyfish if the opportunity arises.

What likes to eat me?

Adult green turtles have few predators. Only large sharks have the sharp teeth and strong jaws needed to break through their shell.

However, newly hatched green sea turtles risk being eaten by a wide range of predators including seabirds and crabs. Raccoons particularly like their eggs.

What are my nesting habits?

Female green turtles don't mature until they are between 25-35 years old. At this stage they return to nest on a beach in the general location of where they hatched. They then only nest about every 2 to 5 years. In some areas it can be as long as 7 years before they return.

When nesting, they can lay an average of 110 eggs per nest. They will nest every 2 weeks over a couple of months, producing up to 7 nests before they return to their foraging grounds.

What are my threats?

Did you know...

The green turtle's diet of seagrass and algae gives their fat a green colour - which is where it gets their name from.



Did you know...

Green turtles in Hawaii go to 'cleaning stations', where fish groom the turtles by eating algae and parasites off their shells and skin. Turtles in Australia rub against their favourite sponge or rock to clean themselves.

The IUCN status of the green turtle is listed as Endangered.

Green turtles nest and forage in many different places around the world. It is therefore very important for countries to work together and collaborate on projects to protect and help with the green turtles recovery.

The green turtle's main threats: bycatch in fishing gear, climate change, direct harvest of turtles and eggs, disease, loss and degradation of nesting and foraging habitat, ocean pollution & marine debris, vessel strikes.

EXPLORERS

Loggerhead Sea Turtle Turtar ceannramhar

Quick Facts

Scientific name: *Caretta caretta*
Size: 70-110 cm
Weight: 200 kg
Colour: (Carapace) reddish-brown (Plastron) pale yellow
Lifespan: 70+ years (estimate)
Ocean: Atlantic, Pacific, and Indian Oceans; Mediterranean Sea
IUCN Status: Vulnerable



Where will you find me?

Loggerhead sea turtles are found in subtropical and temperate regions around the world. They nest throughout the Caribbean, both sides of the Atlantic Ocean, in the eastern Mediterranean Sea, throughout the Indian Ocean, as well as in the North and South Pacific.

Scientists who have tracked loggerheads have discovered that they will migrate up to 12,000 kilometres.

What do I look like?

Loggerhead sea turtles get their name from their large heads. The size of their head allows them to have a powerful jaw that can crush hard-shelled prey.

Adult loggerheads tend to be reddish-brown with a pale yellow underbelly. Hatchlings are mostly dark brown with white tips to their flippers.



What do I eat?

Loggerhead adults are **CARNIVORES**. This means they are meat eaters. They love crunchy crabs, mollusks, and whelks. The hatchlings are however **OMNIVORES**. This means they eat both meat and plants.

What likes to eat me?

Adult loggerhead turtles are very large in size, so are rarely preyed upon.

Hatchlings and young loggerheads have many more predators, such as crabs, fish, and moray eels.

What are my nesting habits?

Female loggerheads reach maturity at about 35 years old. They return to the region they were born every 2 to 4 years to nest.

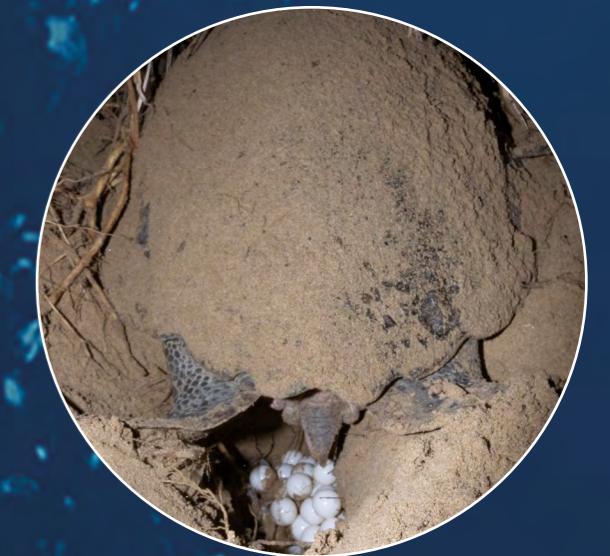
Loggerheads dig their nests at night, and will lay 1-7 nests per nesting season.

Nests are laid at intervals of 12-16 days. Each nest will hold around 110 eggs, and each egg will take approximately two months to incubate.

What are my threats?

The IUCN status of the loggerhead turtle is listed as Vulnerable.

The loggerhead turtle's main threats: bycatch in fishing gear, climate change, direct harvest of turtles and eggs, loss & degradation of nesting habitat, ocean pollution & marine debris, predation of eggs and hatchlings, and vessel strikes.



Did you know...

South Florida in the USA and Oman in the Middle East hosts the only two loggerhead nesting beaches that have more than 10,000 females nesting per year!

EXPLORERS

Hawksbill Sea Turtle Turtar frithghobach

Quick Facts

Scientific name: *Eretmochelys imbricata*

Size: 75-90 cm

Weight: 150 kg

Colour: Carapace) mottled amber (Plastron) white to yellow

Lifespan: 50-60 years (estimated)

Ocean: Atlantic, Pacific, and Indian Oceans

IUCN Status: Critically Endangered



Where will you find me?

Hawksbill sea turtles live in tropical and subtropical waters in the Atlantic, Pacific, and Indian Oceans. Hawksbill turtles mainly stay close to coastal areas where they can forage on sponges in coral reef habitats and estuaries, as well as shelter under rock formations. They can however migrate long distances between foraging areas.

As hatchlings they first head out to the open sea where they settle in floating seaweeds and algal mats for as long as five years. When they reach adulthood they return to areas that provide a good source of food and rocky shelter.

What do I look like?

Hawksbill sea turtles get their name from their beak, which is thin and looks like the beak of a hawk. Their beak is perfect for finding food in hard-to-reach areas, such as the crevices in rocks and corals.

Hawksbills have mottled coloured shells that are mostly amber, but can also have shades of brown, red, orange, and yellow. Their carapace has a serrated edge towards the tail.



Did you know...

Juveniles hawksbill top shells have serrated edges, which often get worn down when they reach adulthood.

What do I eat?

Hawksbill sea turtles are **OMNIVORES**. They like to eat a range of other marine animals such as molluscs, crustaceans, sea urchins, small fish and jellyfish. They are also described as **SPONGIVORES**, as they really love to eat sponges. In fact, they are the only species of sea turtle that can live on a sponge-based diet. They do also eat soft corals and anemones.

What likes to eat me?

The hard shell of the hawksbill sea turtle means they don't have too many predators. However, the juveniles are vulnerable to predation by sharks, crocodiles, large-toothed fish, and octopuses.

What are my nesting habits?

Female hawksbill sea turtles will return to their nesting grounds every 1 to 5 years to lay their eggs. Females will usually create between 3 to 5 nests per season, and will lay their eggs at night. Each nest will hold roughly 160 eggs.

Hawksbills nest on small beaches where there is little sand. They therefore nest further up the shore under plants and woody vegetation..

The eggs will incubate for around 60 days in the warm sand. When the new hatchlings break out of their eggs and nest, they make their way by following the direction that looks brightest to them (the sun or moon).

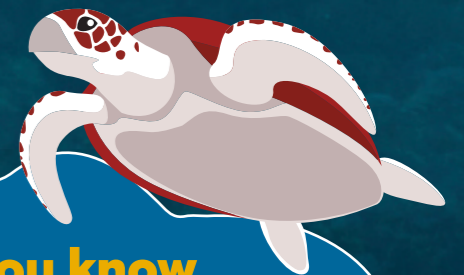


What are my threats?

The IUCN status of the hawksbill sea turtle is listed as Critically Endangered.

The greatest threat to hawksbill sea turtle is the harvesting of their beautiful shell. Known as 'tortoise shell' it is used to make hair ornaments, jewellery, and other trinkets. The Convention on International Trade of Endangered Species (CITES) does not allow any turtle products to be sold on the international market.

The hawksbill turtle's main threats: bycatch in fishing gear, climate change, direct harvest of turtles shells and eggs, loss and degradation of nesting and foraging habitat, ocean pollution & marine debris, predation of eggs and hatchlings, vessel strikes.



Did you know...

Hawksbill turtles gobble up about 544 kilograms of sponges per year. Some of the sponges and small animals that hawksbills consume are toxic. However, luckily their body fat absorbs the toxins without making the turtle ill.

EXPLORERS

Kemp's Ridley Sea Turtle Turtar Kemp's Ridley

Quick Facts

Scientific name: *Lepidochelys kempii*

Size: 60-70 cm

Weight: 45 kg

Colour: (Carapace) green to black (Plastron) white to yellow

Lifespan: 30+ years (estimated)

Ocean: Atlantic Ocean

IUCN Status: Critically Endangered

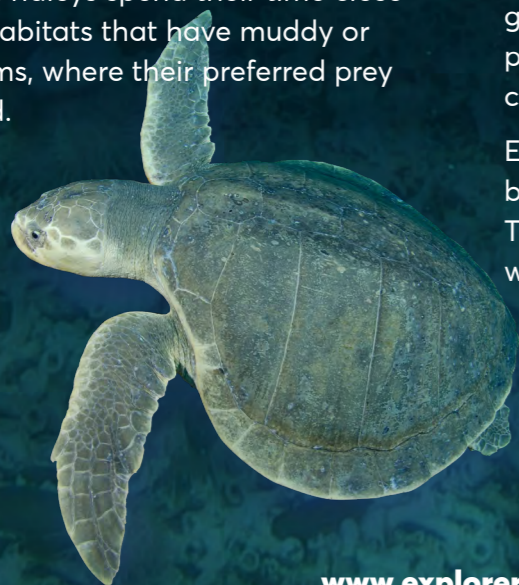


Where will you find me?

Kemp's ridley sea turtles are found mainly along the Gulf of Mexico in the western Atlantic. However, some have been recorded in the Mediterranean Sea.

A few individuals have been recorded as far north-east as Irish waters. They are outside their natural range of habitats. It is most likely they got caught in ocean currents while foraging or traveling in other parts of the Atlantic.

Adult Kemp's ridleys spend their time close to shore, in habitats that have muddy or sandy bottoms, where their preferred prey can be found.



What do I look like?

Kemp's ridleys are the smallest sea turtles in the world, reaching a max length of just 60 centimetres. However, although they are small, they weigh about the same as a 10 year old child. They are named after Richard Kemp, a fisherman from Florida, who discovered the species in 1906.

As adults, the carapace of a Kemp's ridley is often as wide as it is long and they have a triangular-shaped head with a slightly hooked beak. The adults have a greyish-green carapace and a pale, yellowish plastron - but as hatchlings they are darkly coloured on both sides.

Each front flipper has one claw, and each back flipper may have one or two claws. They also have a hooked beak, which helps with catching their prey.

What do I eat?

Kemp's ridley sea turtles are **OMNIVORES** as young turtles. They eat seaweed and small meaty creatures like crabs and snails as they hide in floating Sargassum algae. As they get older they become **CARNIVORES** and just eat meaty dishes like fish, squid and jellyfish. Their favourite food is crabs!

What likes to eat me?

Eggs and hatchlings are vulnerable to predation by feral pigs, coyotes, raccoons, birds, and crabs.

What are my nesting habits?

Kemp's ridleys have one of the most fascinating nesting habits of all turtles. Adult females will gather in large groups on nesting beaches in Mexico. They then come ashore together en masse to lay their nests.

The majority of the nestings are restricted to an area of Mexico called Rancho Nuevo, and unlike other turtle species Kemp's ridleys nest during the day.

Scientists are uncertain what triggers arribadas (arrival) when the females meet in large groups offshore.

Females lay 2 to 3 clutches per season, and will return to the same beach every 1 to 3 years to nest. They will lay roughly 100 eggs, which will take 55 days to incubate.



What are my threats?

The IUCN status of the Kemp's Ridley turtle is listed as Critically Endangered.

Kemp's ridleys were once abundant in the Gulf of Mexico with tens of thousands of females nesting at Rancho Nuevo, Mexico.

With nesting females as low as a few hundred in the 1980s, intensive conservation actions were put in place.

Bycatch in commercial and recreational fishing gear continues to be the biggest threat facing Kemp's ridley sea turtles.

The Kemp's ridley turtle's main threats: bycatch in fishing gear, climate change, direct harvest of turtles and eggs, loss and degradation of nesting habitat, ocean pollution & marine debris, predation of eggs and hatchlings, vessel strikes.



Did you know...

Kemp's ridley sea turtles have one of the most unique synchronised nesting habits. This mass gathering of thousands of turtles is called an 'arribada' and means 'arrival' in Spanish.



References

Leatherback Turtle

- Davenport et al 2009 - <https://journals.biologists.com/jeb/article/212/17/2753/18546/Fat-head-an-analysis-of-head-and-neck-insulation> (accessed February 2023)
- Davenport et al 2015 - <https://royalsocietypublishing.org/doi/epdf/10.1098/rsbl.2015.0592> (accessed February 2023)
- Wallace, B. P., & Jones, T. T. (2008). What makes marine turtles go: A review of metabolic rates and their consequences. *Journal of Experimental Marine Biology and Ecology*, 356(1-2), 8-24. <https://doi.org/10.1016/j.jembe.2007.12.023> (accessed February 2023)
- <https://maps.biodiversityireland.ie/Species/128443>, National Biodiversity Data Centre, Ireland, Leathery Turtle (*Dermochelys coriacea*) (accessed February 2023)
- <https://www.fisheries.noaa.gov/species/leatherback-turtle> (accessed January 2023)
- Doyle, T. K. (2007) Leatherback Sea Turtles (*Dermochelys coriacea*) in Irish waters. Irish Wildlife Manuals, No. 32. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland. (accessed January 2023)
- King, Gabriel & Berrow, Simon. (2009). Marine turtles in Irish waters Special Supplement 2009 Irish Naturalists' Journal. *Irish Naturalists' Journal*. 1-30. (accessed January 2023)
- <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0033259> (accessed January 2023)
- <https://www.irishtimes.com/news/tracking-leatherback-s-progress-1.519033> (accessed October 2022)
- Doyle TK, Houghton JD, O'Suilleabháin PF, Hobson VJ, Marnell F, Davenport J, Hays GC (2008) Leatherback turtles satellite-tagged in European waters. *Endang Species Res* 4:23-31. <https://doi.org/10.3354/esr00076> (October 2022)

Green Turtle

- <https://www.fisheries.noaa.gov/species/green-turtle> (accessed September 2021)
- <https://maps.biodiversityireland.ie/Species/128436> National Biodiversity Data Centre, Ireland, Green Turtle (*Chelonia mydas*) (accessed February 2023)

Loggerhead Turtle

- <https://maps.biodiversityireland.ie/Species/128438>, National Biodiversity Data Centre, Ireland, Loggerhead Turtle (*Caretta caretta*) (accessed February 2023)
- <https://www.iucnredlist.org/species/8005/12881238> (accessed February 2023)
- <https://www.iucnredlist.org/species/3897/119333622#geographic-range> (accessed February 2023)
- Miller, J.D., Limpus, C.J., & Godfrey, M.H. (2003). Chapter 8 Nest Site Selection, Oviposition, Eggs, Development, Hatching, and Emergence of Loggerhead Turtles — (accessed February 2023)
- Lohmann KJ. Magnetic orientation by hatchling loggerhead sea turtles (*Caretta caretta*). *J Exp Biol*. 1991 Jan;155:37-49. doi: 10.1242/jeb.155.1.37. PMID: 2016575 <https://pubmed.ncbi.nlm.nih.gov/2016575/> (accessed January 2023)
- <https://earthsky.org/earth/loggerhead-sea-turtles-use-magnetic-field-like-gps/> published April 2018/ (accessed January 2023)
- <https://www.fisheries.noaa.gov/species/loggerhead-turtle> (accessed January 2023)
- <https://www.iucnredlist.org/species/3897/119333622#geographic-range> (accessed February 2023)
- Miller JD, Limpus CJ & Godfrey MH, Chapter 8, Nest Site Selection, Oviposition, Eggs, Development, Hatching, and Emergence of Loggerhead Turtles (accessed January 2023)
- Putman, Endres, Lohmann & Lohmann. 2011. Longitude Perception and Bicoordinate Magnetic Maps in Sea Turtles. <http://dx.doi.org/10.1016/j.cub.2011.01.057> (accessed January 2023)
- <https://oceanweb.sites.oasis.unc.edu/www.unc.edu/depts/oceanweb/turtles/migratoryroute.html> (accessed January 2023)
- Pfaller, J. B. (ed al). (2020). Identifying patterns in foraging-area origins in breeding aggregations of migratory species: Loggerhead turtles in the Northwest Atlantic. *PLOS ONE*, 15(4), e0231325. <https://doi.org/10.1371/journal.pone.0231325> (accessed January 2023)
- <http://www.californiaherps.com/turtles/pages/c.caretta.html> (accessed April 2022)
- <https://conserveturtles.org/information-about-sea-turtles-leatherback-sea-turtle/> (accessed April 2022)

Hawksbill Turtle

- <https://maps.biodiversityireland.ie/Species/128441>, National Biodiversity Data Centre, Ireland, Hawksbill Turtle (*Eretmochelys imbricata*), (accessed February 2023)
- <https://onekindplanet.org/animal/sea-turtle-hawksbill/> (accessed January 2023)
- <https://www.iucnredlist.org/species/8005/12881238> (accessed January 2023)
- <https://www.nwf.org/Educational-Resources/Wildlife-Guide/Reptiles/Sea-Turtles/Hawksbill-Sea-Turtle> (accessed January 2023)
- <https://conserveturtles.org/information-about-sea-turtles-hawksbill-sea-turtle/> (accessed January 2023)
- <https://www.fisheries.noaa.gov/species/hawksbill-turtle> (accessed September 2021)
- <https://www.nationalgeographic.com/animals/reptiles/facts/hawksbill-sea-turtle> (accessed September 2021)

Kemp's Ridley Turtle

- <https://maps.biodiversityireland.ie/Species/128434> National Biodiversity Data Centre, Ireland, Kemp's Ridley (*Lepidochelys kempii*), (accessed February 2023)
- <https://www.iucnredlist.org/species/11533/155057916> (accessed February 2023)
- <https://meridian.allenpress.com/journal-of-herpetology/article/52/3/252/197809/Comparing-Diets-of-Kemp-s-Ridley-Sea-Turtles> (accessed February 2023)
- https://www.researchgate.net/publication/259367516_Diet_analysis_of_Kemp%27s_ridley_sea_turtles_Lepidochelys_kempii_in_Virginia (accessed February 2023)
- https://www.researchgate.net/publication/259367516_Diet_analysis_of_Kemp%27s_ridley_sea_turtles_Lepidochelys_kempii_in_Virginia (accessed January 2023)
- <https://meridian.allenpress.com/journal-of-herpetology/article/52/3/252/197809/Comparing-Diets-of-Kemp-s-Ridley-Sea-Turtles> (accessed December 2022)
- <https://www.fisheries.noaa.gov/species/kemps-ridley-turtle> (accessed September 2021)
- <https://www.nestonline.org/kemps-ridley-lepidochelys-kempii/> (accessed September 2021)

Oliver Ridley turtle

- <https://oliveridleyproject.org/lessons/help-sea-turtles> (accessed January 2023)
- <https://www.fisheries.noaa.gov/species/olive-ridley-turtle> (accessed December 2022)

Other great resources that provide information about sea turtles

- SWOT: <https://www.seaturtlestatus.org/meet-the-turtles> (accessed March 2023)
- NOAA: <https://www.fisheries.noaa.gov/sea-turtles#by-species> (accessed March 2023)
- Mayne, B., Tucker, A. D., Berry, O., & Jarman, S. (2020). Lifespan estimation in marine turtles using genomic promoter CpG density. *PLOS ONE*, 15(7), e0236888. <https://doi.org/10.1371/journal.pone.0236888> (accessed February 2023)
- https://www.boredpanda.com/sea-turtles-anti-barfing-spikes-plastic-bags-problem/?utm_source=google&utm_medium=organic&utm_campaign=organic (accessed February 2203)
- Hirayama, R. Oldest known sea turtle. *Nature* 392, 705–708 (1998). <https://doi.org/10.1038/33669> (accessed February 2023)
- Castillo-Visa, O., Luján, À.H., Galobart, À. et al. A gigantic bizarre marine turtle (Testudines: Chelonioidae) from the Middle Campanian (Late Cretaceous) of South-western Europe. *Sci Rep* 12, 18322 (2022). <https://doi.org/10.1038/s41598-022-22619-w> (accessed February 2023)
- <https://www.iucn-mtsg.org/red-list-assessments> (accessed October 2022)
- Botterell, Z., Penrose, R., Witt, M., & Godley, B. (2020). Long-term insights into marine turtle sightings, strandings and captures around the UK and Ireland (1910–2018). *Journal of the Marine Biological Association of the United Kingdom*, 100(6), 869-877. doi:10.1017/S0025315420000843 (accessed October 2022)
- Direct Evidence of Swimming Demonstrates Active Dispersal in the Sea Turtle "Lost Years" (Putman & Mansfield 2015)
- <https://www.cambridge.org/core/journals/journal-of-the-marine-biological-association-of-the-united-kingdom/article/long-term-insights-into-marine-turtle-sightings-strandings-and-captures-around-the-uk-and-ireland-19102018/6F91AE37C8EAE5C0CB143ABC18CAF03D> (accessed October 2022)
- The Life Cycle of Sea Turtles <https://www.seeturtles.org/sea-turtle-life-cycle> (accessed October 2022)
- <https://www.worldwildlife.org/stories/what-do-sea-turtles-eat-unfortunately-plastic-bags> (accessed December 2022)
- Larisa Bennett (2018) Sea Turtles, <https://ocean.si.edu/ocean-life/reptiles/sea-turtles> (accessed April 2022)
- <https://www.worldatlas.com/articles/how-many-species-of-turtles-are-there.html> (accessed April 2022)
- <https://www.wwf.org.uk/learn/fascinating-facts/marine-turtles> (accessed December 2022)
- <https://outforia.com/types-of-sea-turtles/> (accessed April 2022)
- <https://seamap.env.duke.edu/> (accessed April 2022)
- https://www.nsf.gov/news/news_summ.jsp?cntn_id=124190 (accessed April 2022)



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