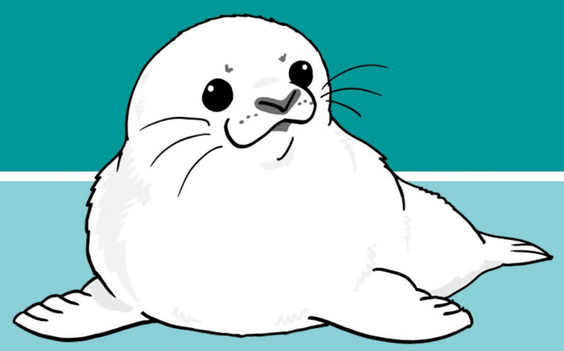
A diverse range of extraordinary animals make their home across Earth's oceans. While they vary greatly in lifestyle, size, and shape, they are all...

MAGNIFICENT MARINE MAMMALS

Discover the incredible features, behaviours, and challenges faced by some of the world's most iconic, awe-inspiring, and endangered wildlife.

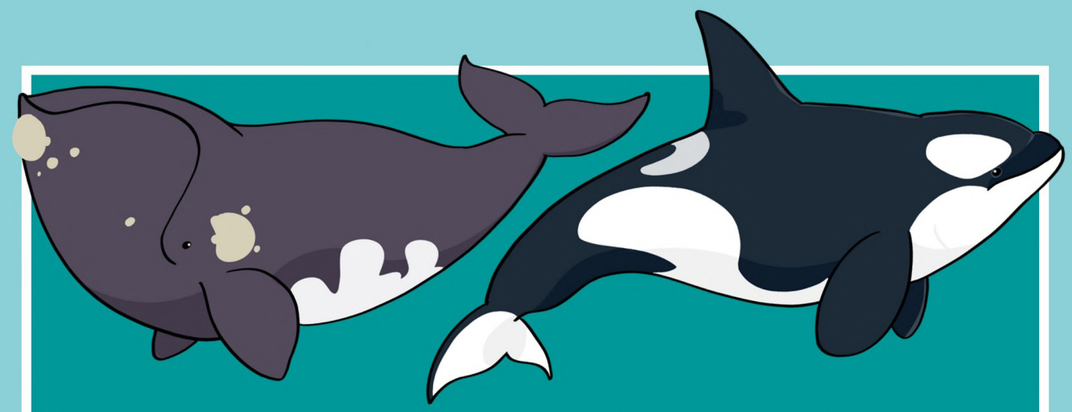


Written & Illustrated by Colin Marshall, copyright 2026

Mammal Society

LIVING WORLD EDUCATION

BRITISH DIVERS MARINE LIFE RESCUE



MAGNIFICENT MARINE MAMMALS



Mammal Society

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Written and illustrated by Colin Marshall, Living World Education 2026
www.livingworldeducation.com

With thanks to our Editor, Rowena Millar

Produced with the support of Matt Larsen-Daw, Mammal Society

www.mammalsociety.org

www.bdmlr.org.uk

FOREWORD

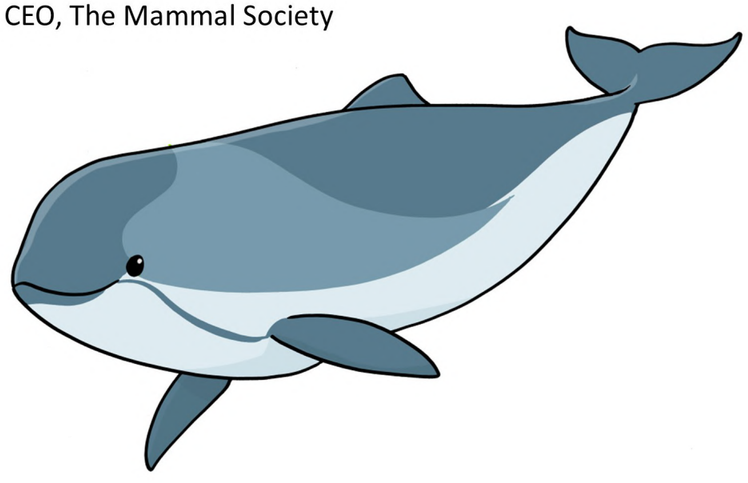
It can feel hard to believe that habitats as inhospitable to humans as the deep ocean and the icy waters of the Arctic can be home to animals that are more closely related to us than so many animals that share our life on land.

Only about 5% of the world's vast expanse of oceans have been visited and explored by humans, and there are new discoveries made almost every time scientists visit previously uncharted waters or seabed habitat. Marine mammals therefore inhabit a world that is alien to us, and they are so well adapted to the challenges and opportunities of their ocean world that it may feel that they have nothing in common with land-plodding humans and our fellow terrestrial (land-dwelling) mammal cousins.

This wonderful book reveals some of the mind-boggling physical features and abilities that make marine mammals so fascinating, but also brings to light the ways in which they are closer to their land-dwelling cousins than might at first seem to be the case. From caring mothers and playful siblings, to ingenious hunters and skilful communicators, the marine mammal species described in this accessible book are relatable and charismatic as they are distant from our everyday lives.

This book is especially important as it can help us understand these marvellous mammals and the challenges they are facing because of human impact on their vast but fragile habitat. Only by getting to know these animals, their importance, and the things that need to change to protect them from the challenges they face, can we learn how to play our part in ensuring they thrive into our shared future.

Matt Larsen-Daw, CEO, The Mammal Society



MEET THE MARINE MAMMALS

8-9. MYSTICETI "the moustached whales"

10-11. ODONTICETI "the toothed whales"

12-13. DELPHINIDEA "the dolphins"

14-15. PINNIPEDS "the paddle feet"

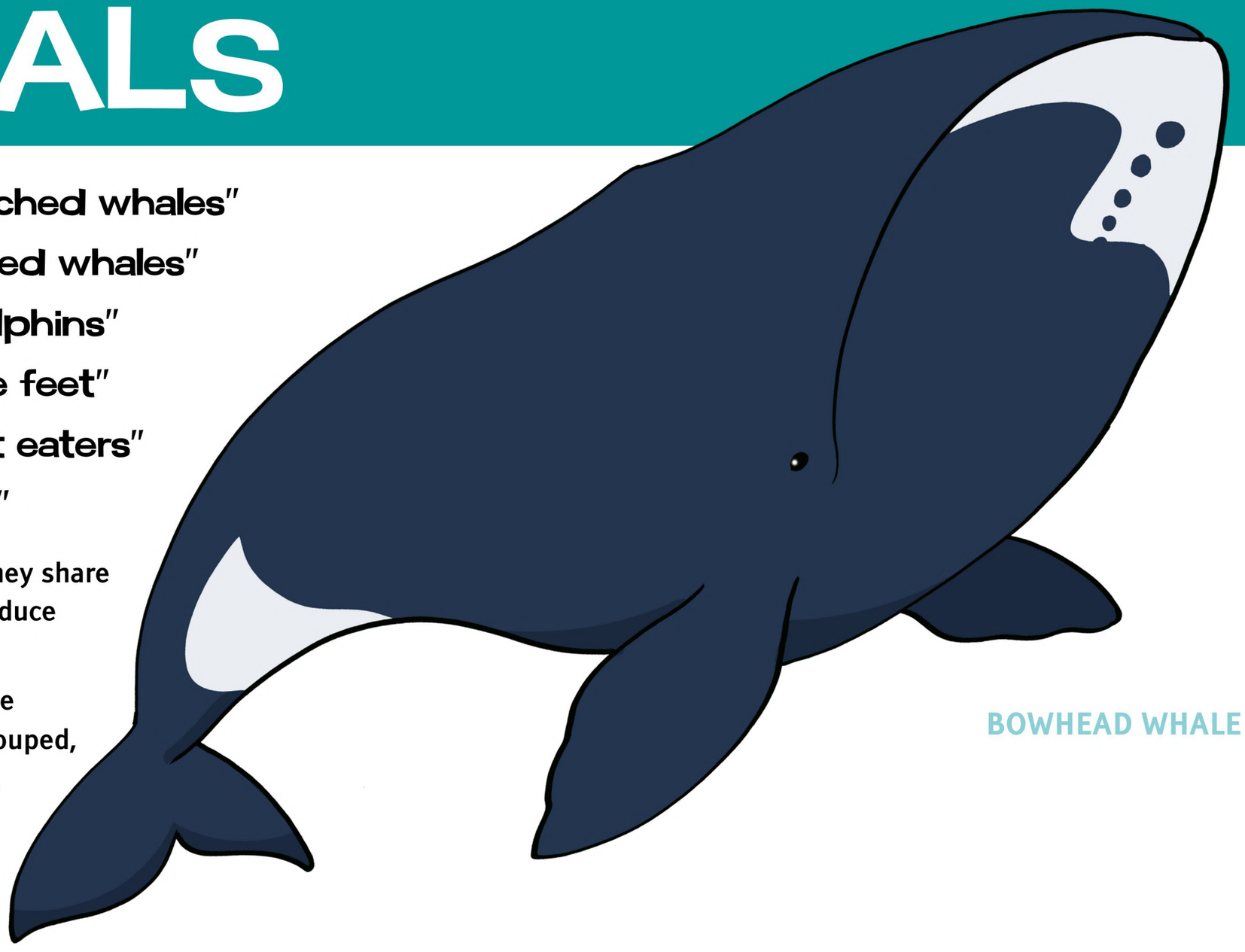
16-17. CARNIVORA "the meat eaters"

18-19. SIRENIA "the sea cows"

Mammals are grouped together because they share certain features. For example, females produce milk with which to feed their young.

Some of those mammals that live in marine habitats are so closely related, they are grouped, or classified, together (see the list above).

Despite evolving according to their own particular lifestyles or habitats, related species may share similar features.



BOWHEAD WHALE

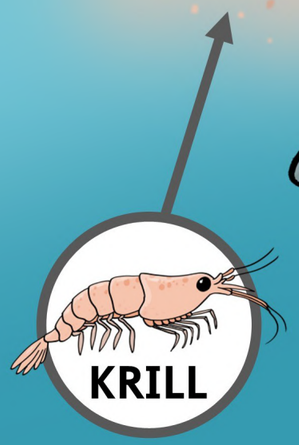
MYSTICETI

"the moustached whales"

Bristly baleen structures help these whales to filter feed. Their name is a blend of the Greek *mystax*, meaning "moustache," and the Latin *cetus*, meaning "whale."

Despite their huge sizes, these whales feed predominantly on very small aquatic creatures.

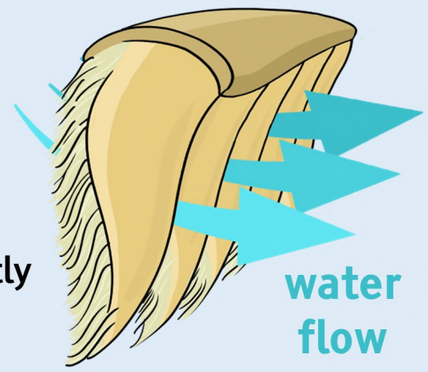
SEI WHALE



Their tiny prey are filtered from their environment using rows of sieve-like structures called baleen plates.

After a huge mouthful, whales force seawater through the comb-like baleen. These stiff, bristly plates are made from keratin, the same protein that makes our hair.

BALEEN



Grey whales take in large volumes of the seabed sediment, sieving out the invertebrates within and leaving behind long "feeding pits".

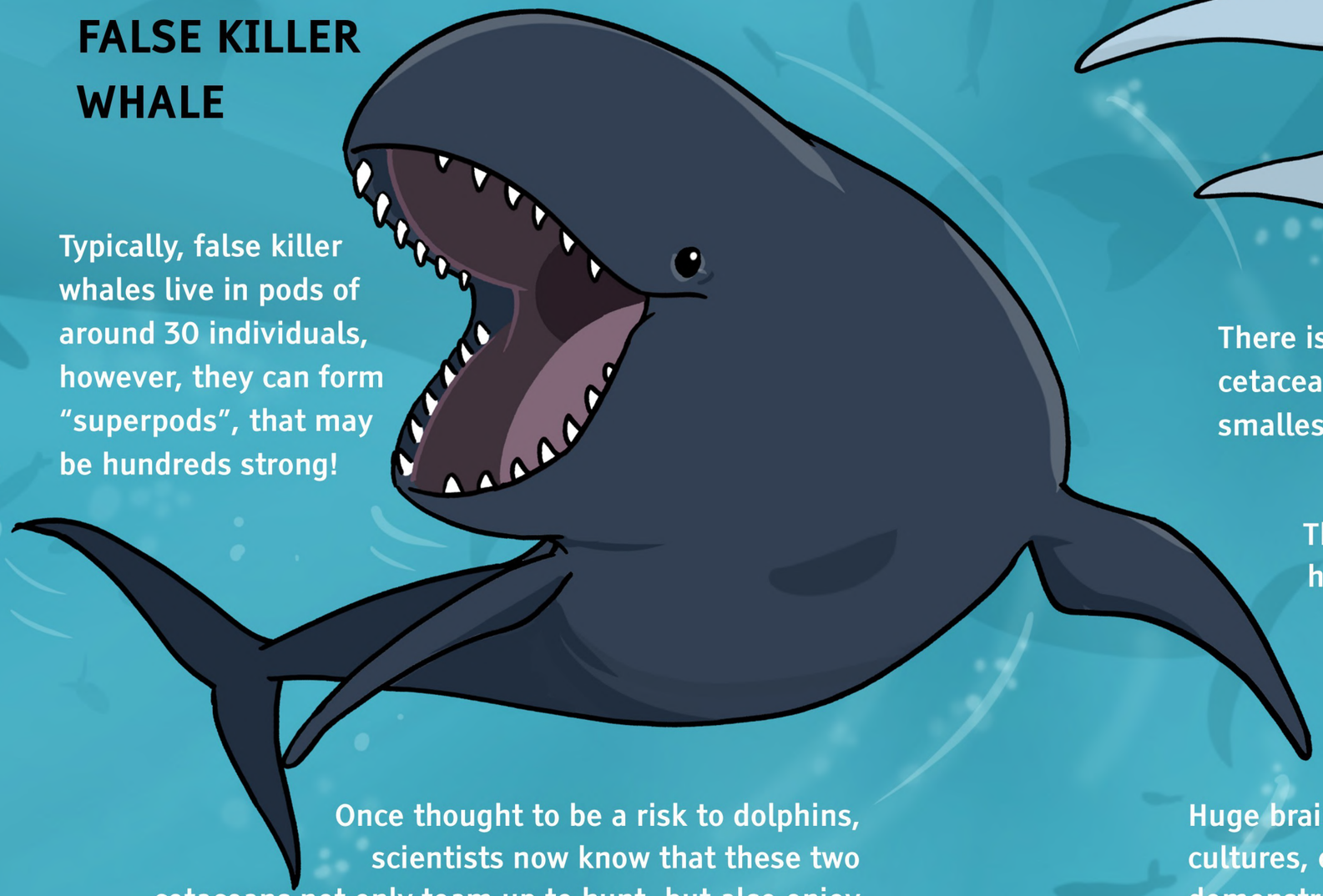


GREY WHALE

ODONTOCETI
"the toothed cetaceans"

This group of active predators includes those whales with teeth, as well as the porpoises and dolphins.

FALSE KILLER WHALE



Typically, false killer whales live in pods of around 30 individuals, however, they can form "superpods", that may be hundreds strong!

Once thought to be a risk to dolphins, scientists now know that these two cetaceans not only team up to hunt, but also enjoy socialising together, with relationships lasting for years!

BOTTLENOSE DOLPHIN



There is a broad range of species in this suborder of cetaceans, from the huge, 24m sperm whale to the smallest dolphins and porpoises at a mere 1.5m.

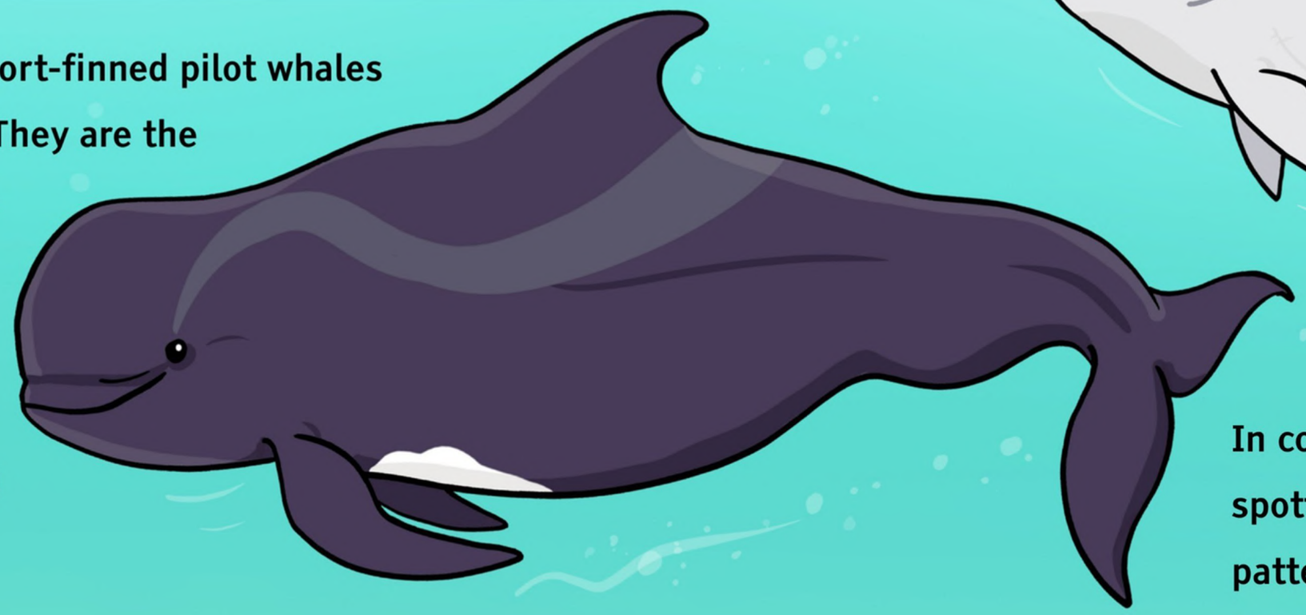
The Odontoceti all possess teeth that they use to hunt all manner of prey, depending on their size. Whilst many will feed on bony fish, the diets of these toothed cetaceans may include sharks, squid, and even other marine mammals!

Huge brains enable complex family systems with distinct cultures, empathy and even play behaviours, demonstrating the intelligence of these animals.

DIVERSE DOLPHINS

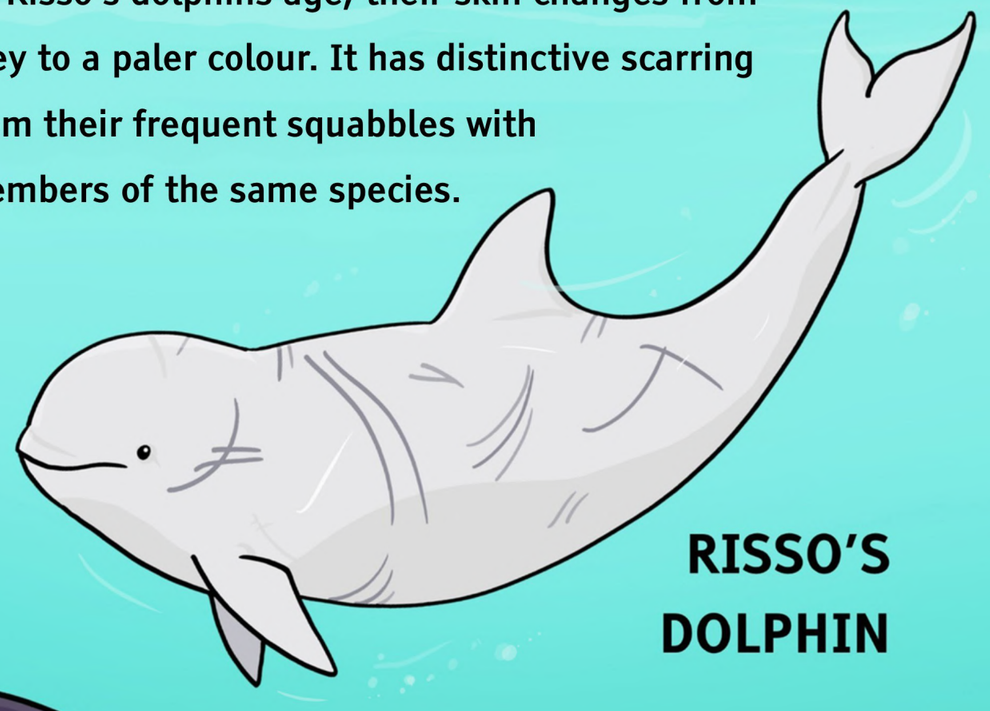
Dolphins vary in shape, size and appearance, but all share great intelligence and incredible aquatic agility.

Despite their name, short-finned pilot whales are actually dolphins. They are the second largest species of dolphin, behind the mighty orca.



SHORT-FINNED PILOT WHALE

As Risso's dolphins age, their skin changes from grey to a paler colour. It has distinctive scarring from their frequent squabbles with members of the same species.



RISSO'S DOLPHIN



As the most numerous cetacean in the ocean, the common dolphin really is common, with a population of six million!

COMMON DOLPHIN

In contrast to Risso's dolphins, spotted dolphins develop spotty patterns as they grow, becoming increasingly dark over time.



ATLANTIC SPOTTED DOLPHIN

PINNIPEDS
"the paddle feet"

This group consists of the seals, sea lions and walrus whose *"paddle feet"* enable them to move easily between feeding in their watery world and the safety of the land.

GREY SEAL



Pinnipeds like the grey seal tend to be more cumbersome on land, "galumphing" their bodies over the beach.

LEOPARD SEAL



With hind limbs evolved to function as a steering tail and forelimbs that are broad, propulsive paddles, pinnipeds have incredible underwater manoeuvrability.

CALIFORNIA SEA LION

The ability to move on to land allows females to select a safer environment for them to rear their young. However, fighting males can injure pups.

Pinniped mothers produce very rich milk that allows the young pups to quickly gain weight.



Even though the mother will demonstrate tremendous care for her pup, she must continue to return to the water to replenish her own nutrients.

This leaves the young vulnerable and they must develop independence quickly, with the mother soon returning to her ocean life, leaving the young to fend for themselves.

CARNIVORA
"the meat eaters"

Some mammals may have the features of land-dwellers, although they are truly at home in their marine habitats.



POLAR BEAR

The polar bear covers huge distances in search of prey. Whilst they may stride across the vast frozen seas with sharp claws to grip, their broad feet double as highly effective paddles in water. Given their close association with the sea, polar bears are classed as a marine mammal, with their Latin name, *Ursus maritimus*, translating as "Sea Bear".

Despite having legs and capable of moving around on solid ground, the sea otter may never need to venture on to land, spending their entire lives in the ocean.

These webbed-footed hunters dive under the surface to forage for a range of aquatic animals.



SEA OTTER

Sharp canine teeth can seize hold of prey, and tear open the shells to access the meat within.

SIRENIA
"the sea cows"

Only four species make up the order Sirenia, which derive their name from the sirens of ancient Greek legends.
It is hard to imagine how these "sea cows" could have been confused with mythical mermaids...

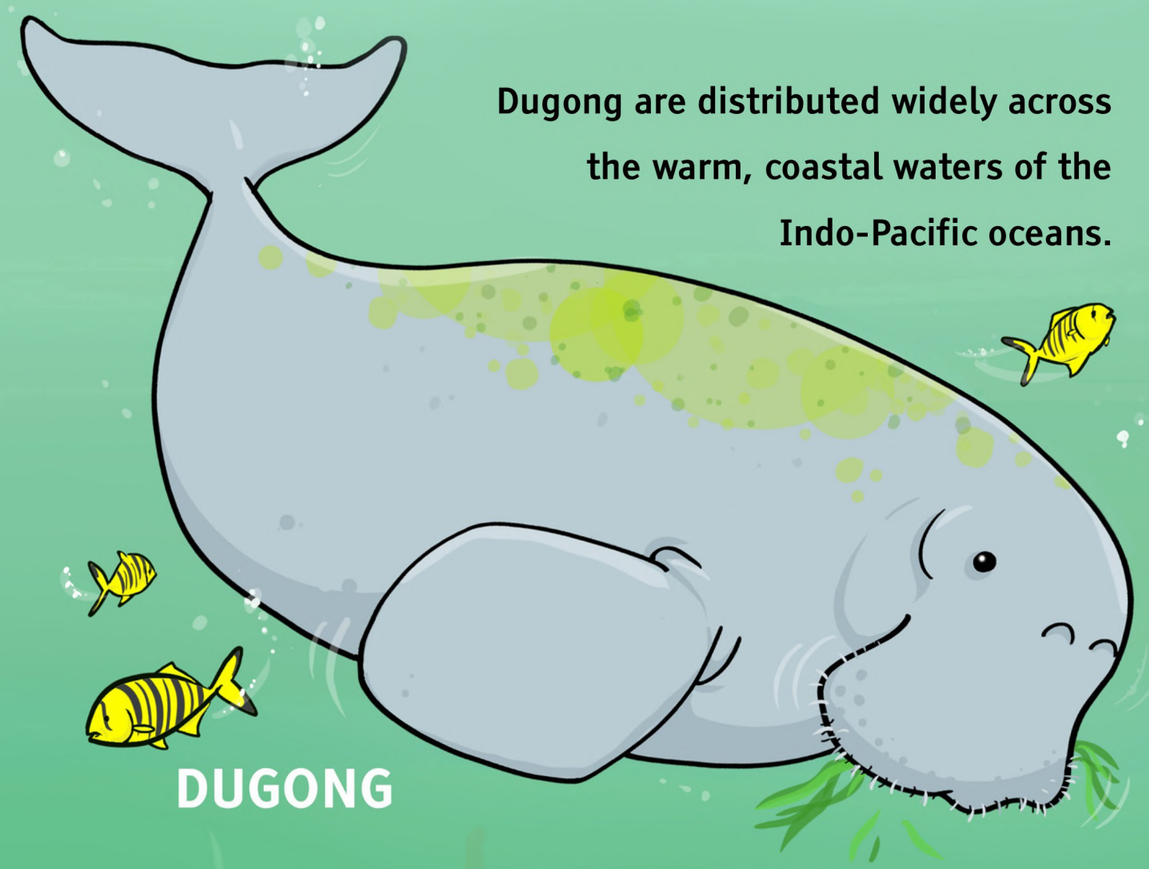


Found in the shallow coastal waters of the West Indies and along the neighbouring coasts of South America and Florida, the stout-bodied manatees are slow swimmers with a rounded, paddle-like tail.

The sirenia are fully aquatic herbivorous mammals, known as "sea cows" because of their grazing habit.

Dugong are vulnerable to becoming entangled in fishing equipment and are sensitive to disruption in their habitats. With years between giving birth to a single calf, the population of dugong has declined to the point where they are considered vulnerable to extinction.

Dugong are distributed widely across the warm, coastal waters of the Indo-Pacific oceans.



Clear shallow waters allow light to penetrate through and it is common for sea cows to have patches of algal growth on their backs.

AMAZING ADAPTATIONS

22-23. ECHOLOCATION

24-25. BLUBBER

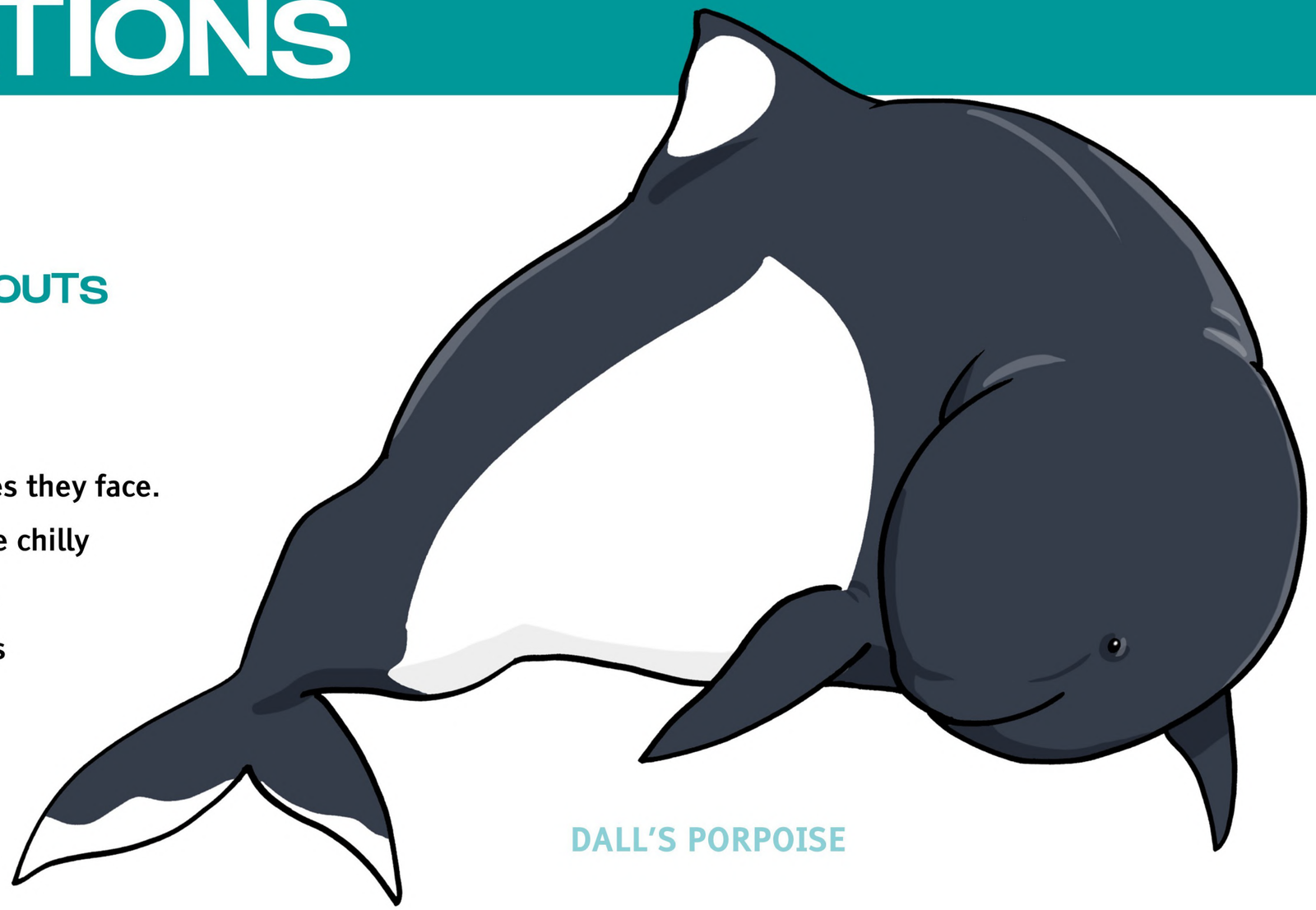
26-27. SENSATIONAL SNOUTS

28-29. TUSKS

30-31. WEARING WHITE

Animals adapt in response to challenges they face. These features may be for surviving the chilly waters they inhabit or where they have developed specialised physical features that prove advantageous.

Marine mammals display some truly remarkable variety, from super senses and cunning camouflage to simply showing off!

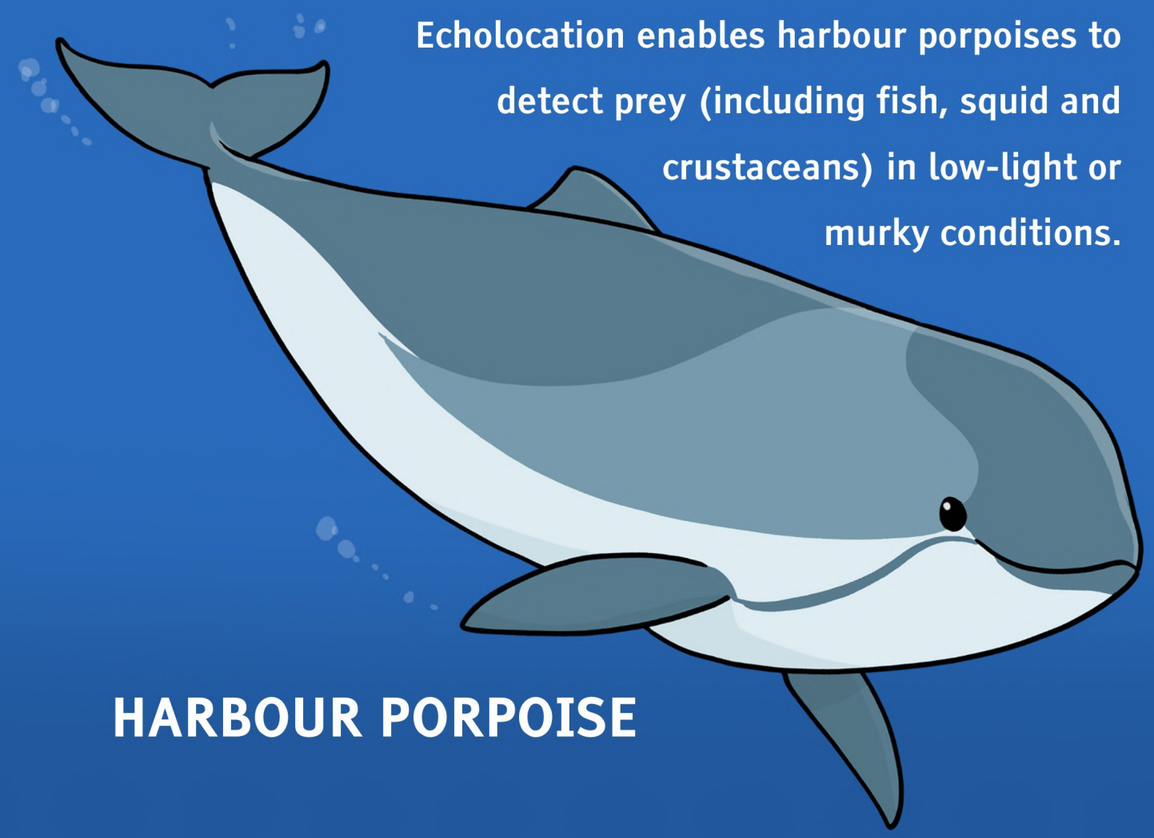


DALL'S PORPOISE

ECHOLOCATION

Toothed cetaceans have an amazing ability to create sound and listen to how it reflects off objects. This helps them detect their prey and understand their environments.

Echolocation enables harbour porpoises to detect prey (including fish, squid and crustaceans) in low-light or murky conditions.



HARBOUR PORPOISE

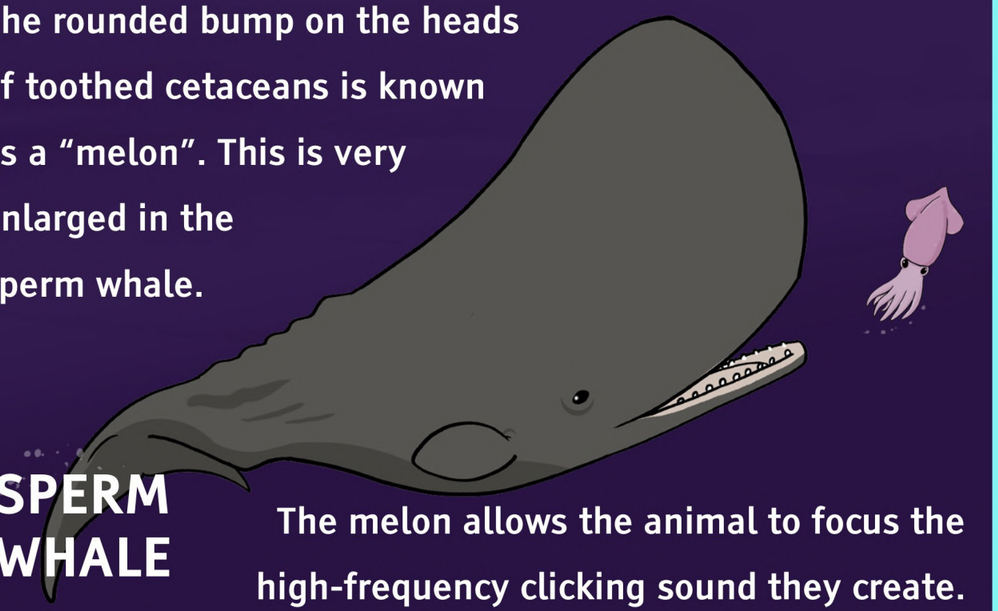
NOISE POLLUTION





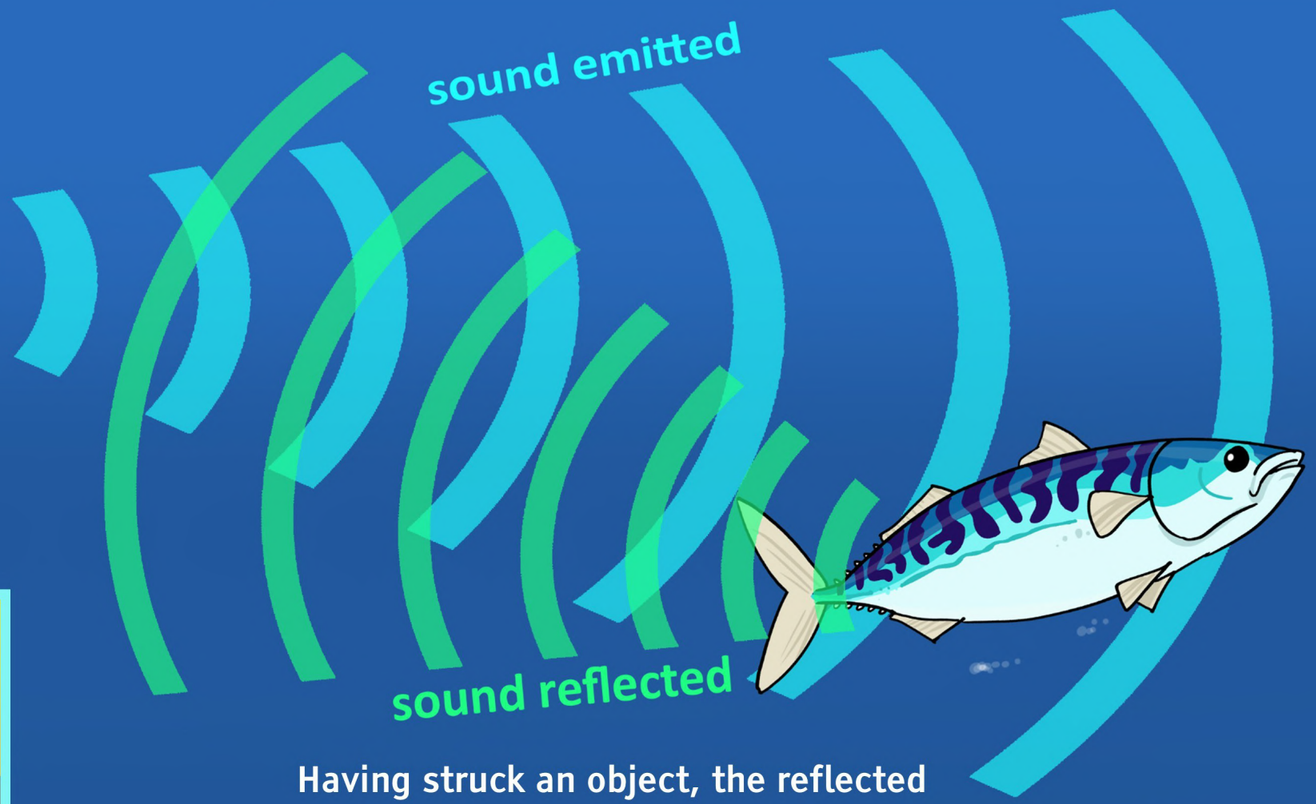
Human-made sounds (ship sonar, drilling) in the ocean interfere with the ability of marine mammals to hear.

The rounded bump on the heads of toothed cetaceans is known as a “melon”. This is very enlarged in the sperm whale.



SPERM WHALE

The melon allows the animal to focus the high-frequency clicking sound they create.



Having struck an object, the reflected sound, or **echo**, bounces back to the porpoise, and it is channelled towards the ear through its lower jaw.

BLUBBER

This thick layer of fatty tissue under the skin of marine mammals can cover most of their bodies, helping retain body heat even in chilly polar waters.

An additional advantage is that blubber helps to provide buoyancy and helps give a streamlined body shape.

In the early 1800s whaling ships launched smaller whaling boats that rowed in pursuit of the whales, using spear-like harpoons.



1800s whaling ship and boat

Whalers named them "right whales" as they were the *right whale* to target.

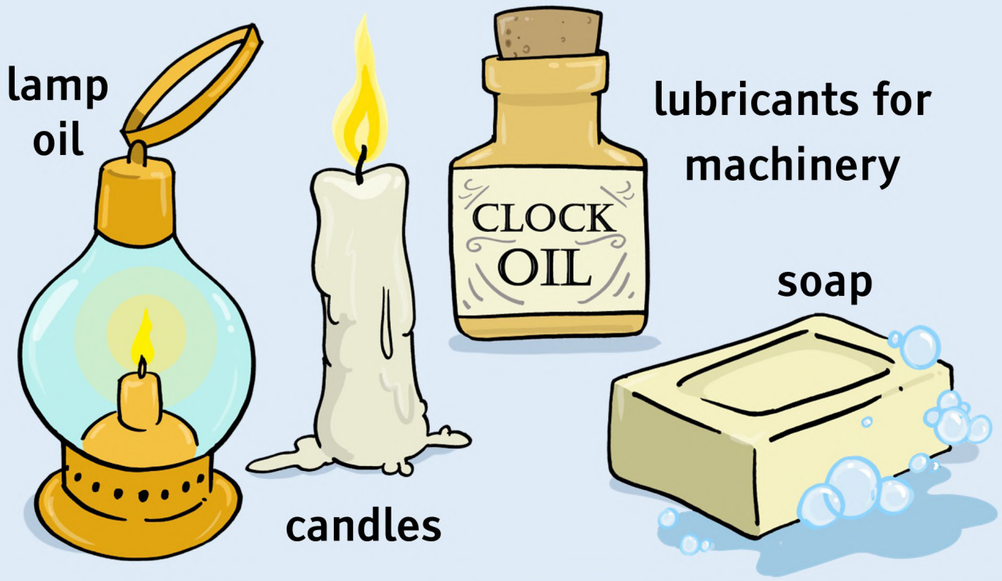
They were straightforward to hunt, floated when deceased, and a significant amount of blubber could be harvested from them.

RIGHT WHALE

LAYER OF BLUBBER

When food is low, or a whale undertakes a long migration, the blubber can be used as an important energy source.

WHALE BLUBBER PRODUCTS IN THE 1800s



SENSATIONAL SNOUTS

Male seals seek to demonstrate their fitness to prospective mates and to scare off any would-be challengers. In some cases, fantastic facial features play an important role...

The trunk-like elongated nose of the male elephant seal indicates maturity and also helps them to amplify territorial roars to ward off other males.

ELEPHANT SEAL

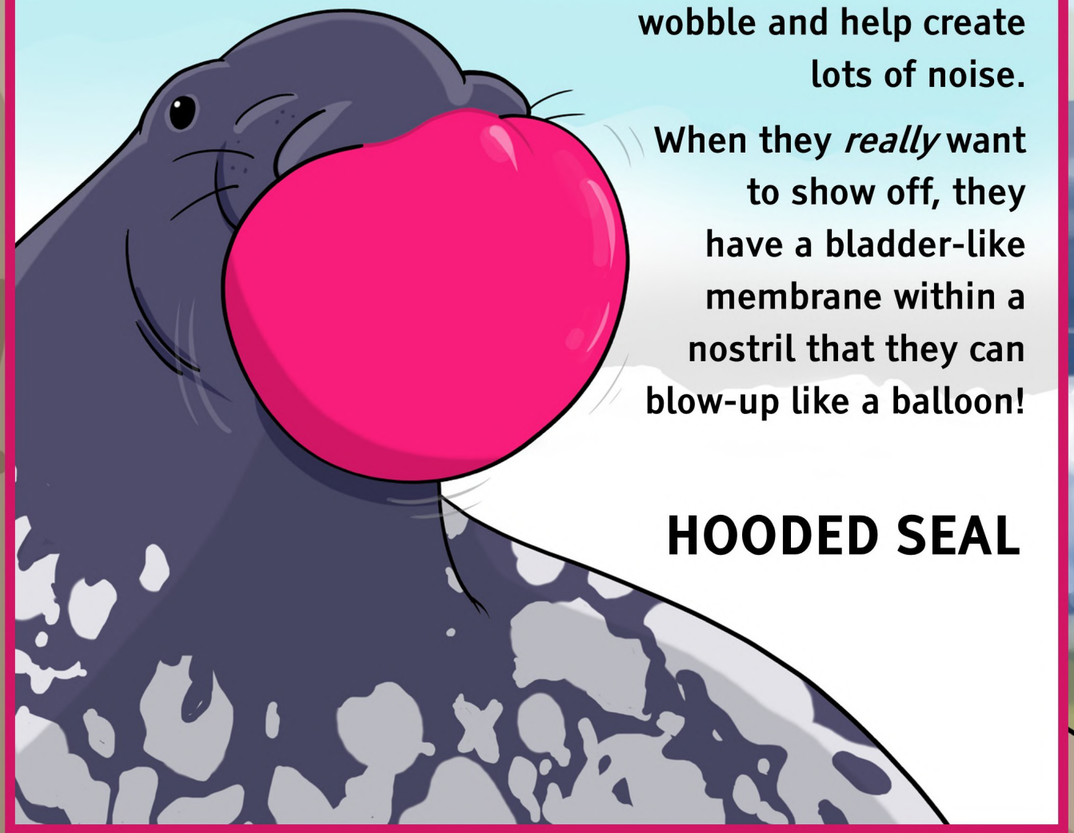
Fights between male elephant seals can result in serious injury, if not death.

Such conflicts use up vital energy and so, a display of size and power with a deep, bellowing roar may avoid the risks associated with a violent altercation.

Hooded seals employ one of the most bizarre methods of displaying to females and deterring any competitors.

Females have a preference for a large nose, with the snouts of male seals being inflatable and able to both wobble and help create lots of noise.

When they *really* want to show off, they have a bladder-like membrane within a nostril that they can blow-up like a balloon!

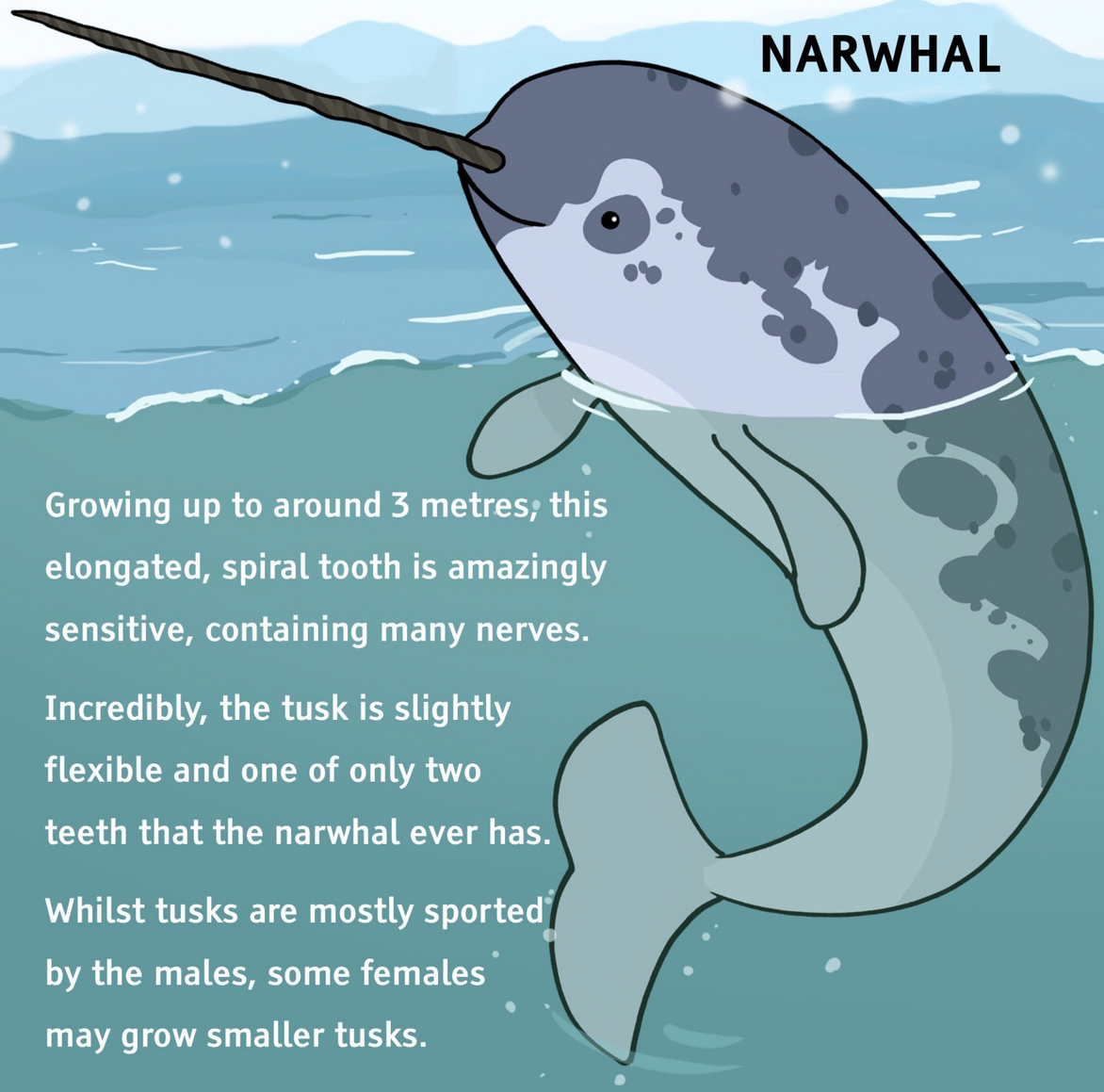


HOODED SEAL

TUSKS

Put simply, tusks are teeth that protrude from the mouth, as seen in these very different species of marine mammals...

NARWHAL

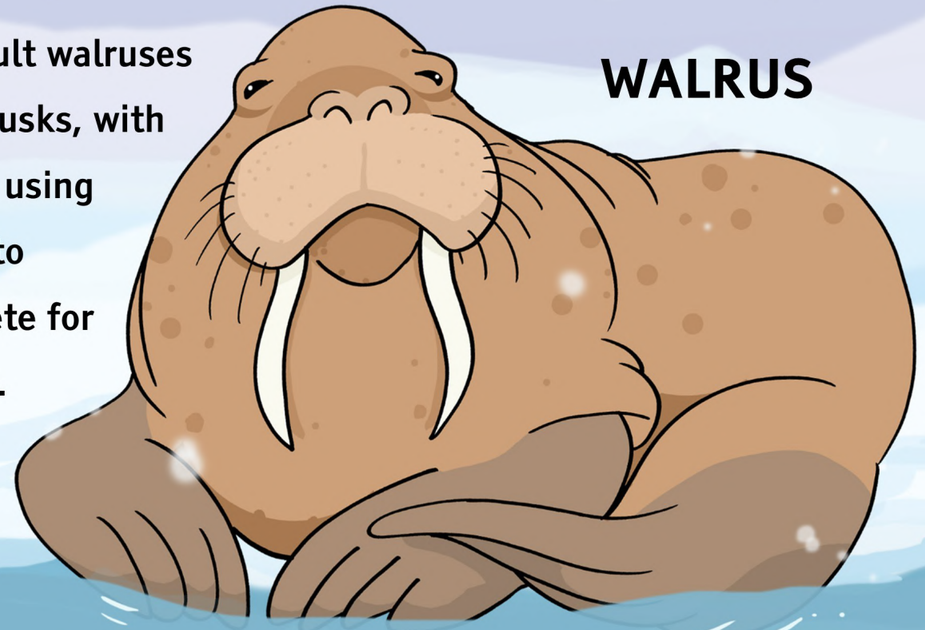


Growing up to around 3 metres, this elongated, spiral tooth is amazingly sensitive, containing many nerves.

Incredibly, the tusk is slightly flexible and one of only two teeth that the narwhal ever has.

Whilst tusks are mostly sported by the males, some females may grow smaller tusks.

WALRUS

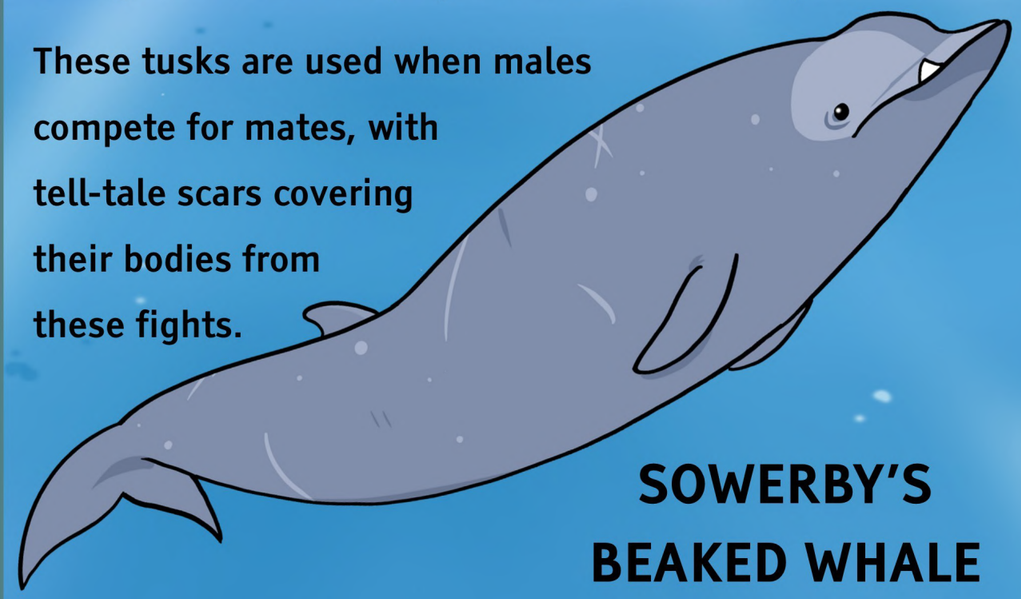


All adult walruses have tusks, with males using them to compete for mates.

Walruses also use their tusks to defend against predators (orcas and polar bears) and to pull themselves out of the water (their scientific name translates as “tooth walker”).

Male Sowerby’s beaked whales have a pair of a huge triangular teeth that project from their lower jaws.

These tusks are used when males compete for mates, with tell-tale scars covering their bodies from these fights.



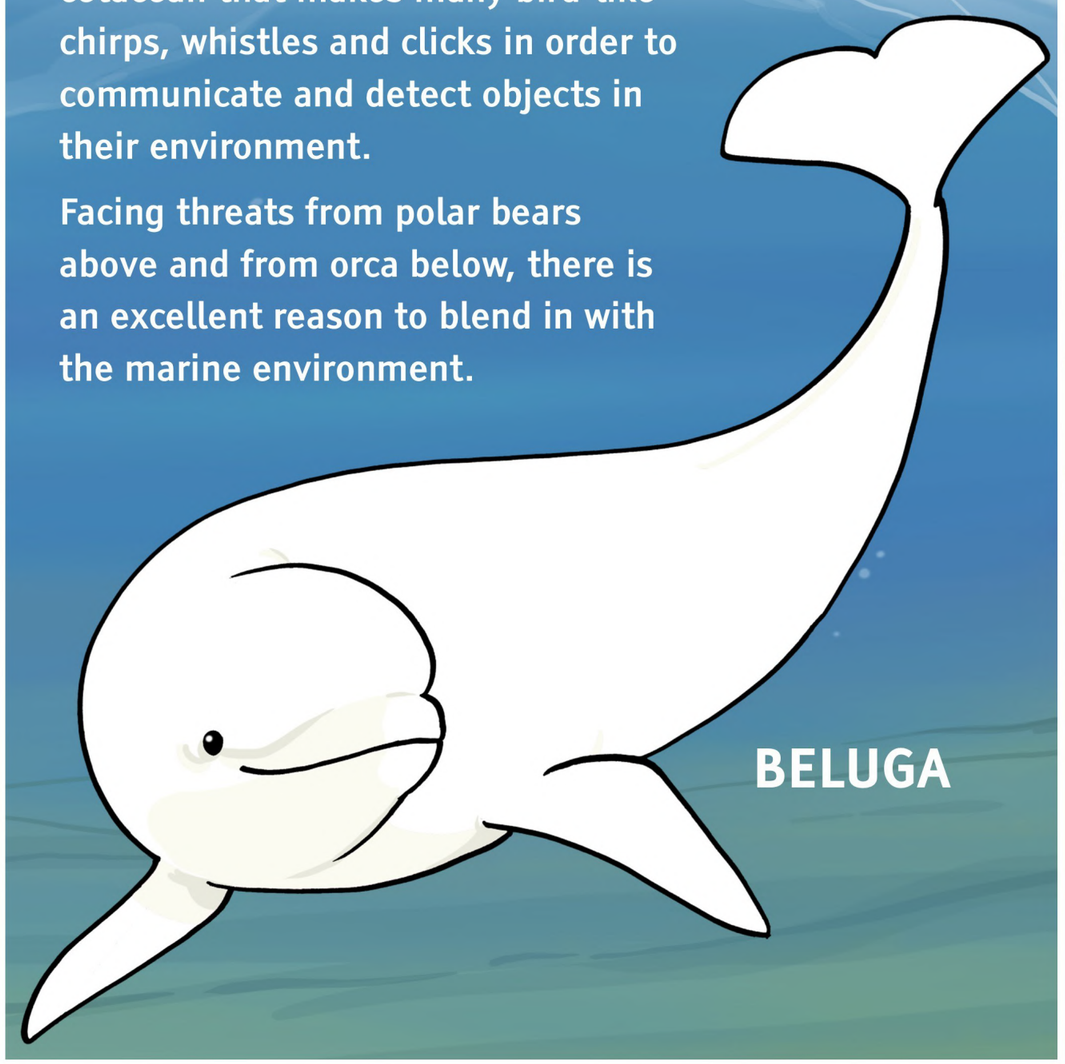
SOWERBY’S BEAKED WHALE

WEARING WHITE

Whether hiding from predators or potential prey, it makes sense to not stand out from your snowy surroundings...

The unmistakable beluga is a social cetacean that makes many bird-like chirps, whistles and clicks in order to communicate and detect objects in their environment.

Facing threats from polar bears above and from orca below, there is an excellent reason to blend in with the marine environment.



BELUGA

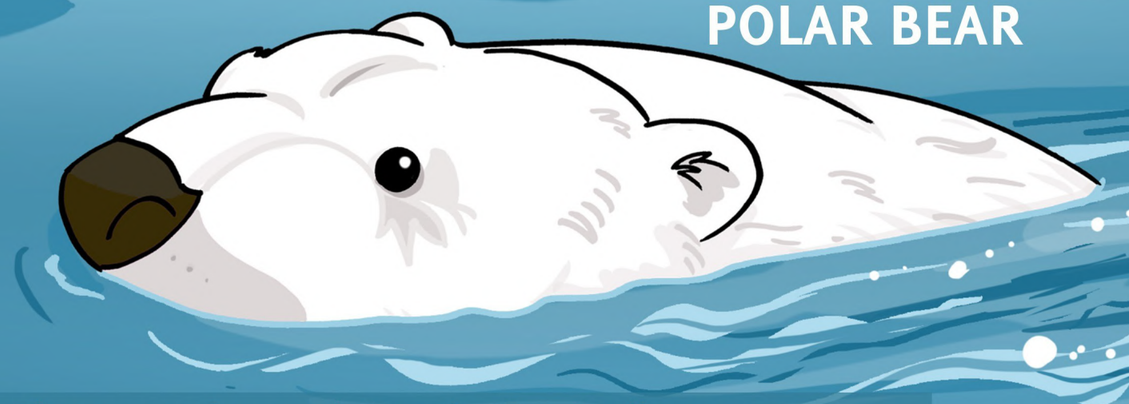
HARP SEAL PUP



Pups of polar pinnipeds, like this harp seal, start life with thick white fur to both insulate them against the cold and camouflage them from predators.

With no vegetation to provide cover on the sea ice, polar bears need to blend in with their surroundings as they stalk their prey.

POLAR BEAR



These massive predators don't actually possess any white pigments in their hollow fur. This scatters light, giving the appearance of really being white!

BRILLIANT BEHAVIOURS

34–35. BUBBLE-NET FEEDING

36–37. TOOL USE

38–39. ORGANISED ORCA

40–41. MOTHER'S MILK

42–43. THE POWER OF THE POD

44–45. MIGRATION

The intelligence of marine mammals has meant they can exhibit some fascinating behaviours. Social interactions in family groups and the benefits of maternal care mean that we make comparisons with our own societies.

Scientists are continuing to discover behaviours observed and passed between generations that have led to some species devising cunning methods of finding their food.



COMMERSON'S DOLPHIN

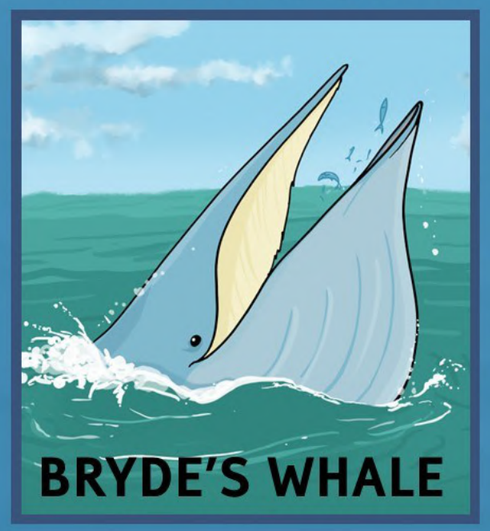
BUBBLE-NET FEEDING

As a filter-feeder, it is more effective to have your prey concentrated in one space. We only know of a couple of whale species that use this ingenious method...

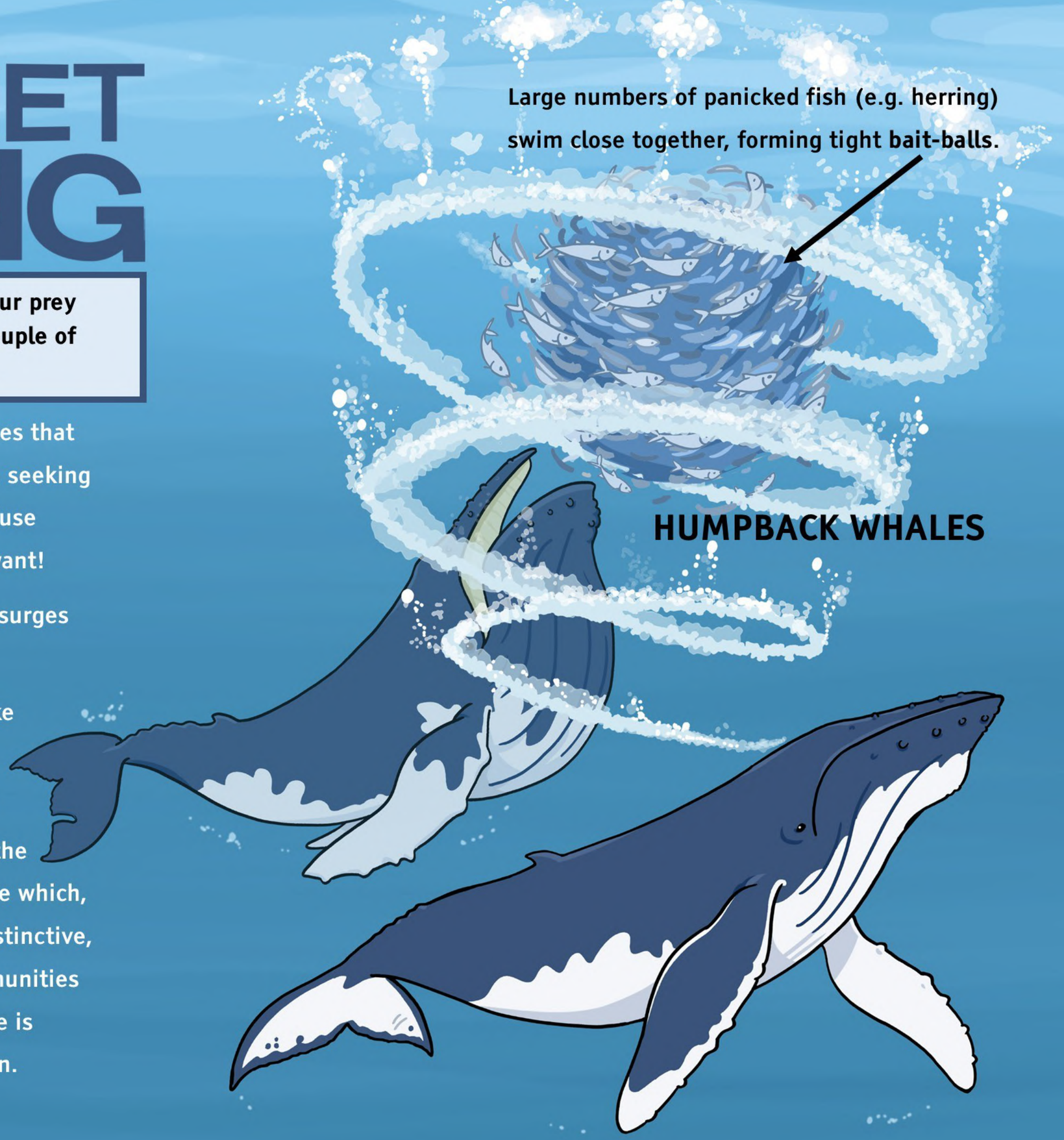
Simply put, the whale releases streams of bubbles that encircle and trap fish. The prey are alarmed and, seeking protection, instinctively form a tight ball to confuse predators—but this is exactly what the whales want!

Having formed the "bubble net", another whale surges upwards with its mouth open wide.

The whales communicate to one another and take turns to feed and blow the bubbles.



Both humpback and Bryde's whales use the bubble-net technique which, rather than being instinctive, is only seen in communities where the knowledge is taught and passed on.



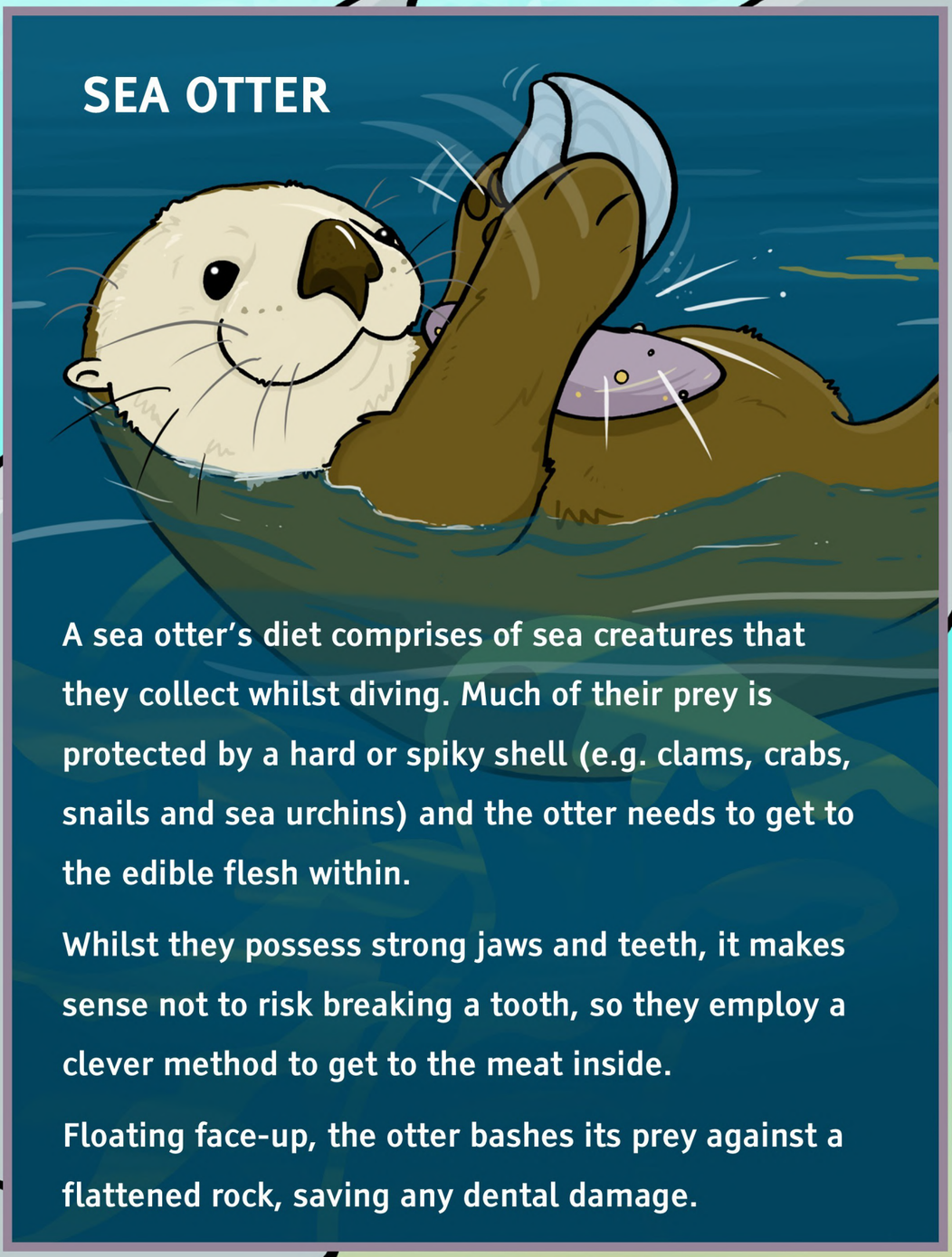
TOOL USE

With large brains, mammals are excellent problem solvers and just like us humans, some marine animals can use objects from their surroundings to their advantage...

A small population of bottlenose dolphins in Australia are an excellent example of cultural knowledge being passed on from one generation to another.

The dolphins like to forage in the seabed for fish, although sharp rocks, spiny and stinging creatures could cause injury to their sensitive beaks. By wearing a sea sponge on their beak, they can probe into the sand safely.

This behaviour is passed between female dolphins and their offspring, who observe and repeat this technique.



SEA OTTER

A sea otter's diet comprises of sea creatures that they collect whilst diving. Much of their prey is protected by a hard or spiky shell (e.g. clams, crabs, snails and sea urchins) and the otter needs to get to the edible flesh within.

Whilst they possess strong jaws and teeth, it makes sense not to risk breaking a tooth, so they employ a clever method to get to the meat inside.

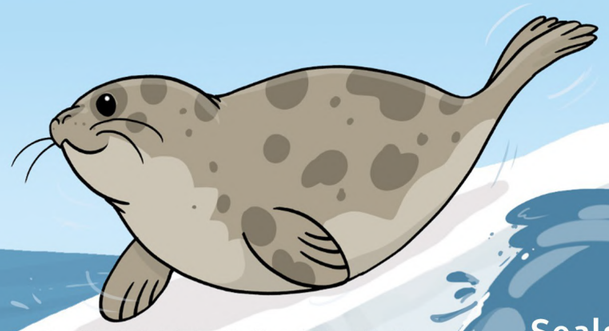
Floating face-up, the otter bashes its prey against a flattened rock, saving any dental damage.



BOTTLENOSE DOLPHIN

ORGANISED ORCA

There are huge benefits of living in a large, social group. Orca pods are able to coordinate to hunt for a variety of prey, forming specific strategies depending upon where they live and the species they are targeting.



WEDDELL SEAL

Seals seek to evade pods of orca and will seek out refuge on floating ice.

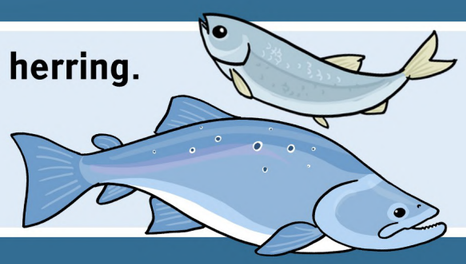
Working together to create a wave, orca seek to tip seals from the safety of ice blocks and into the freezing water.

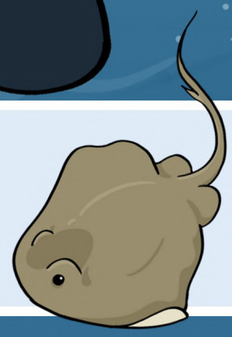
ORCA (male)

Male orca have a far taller, triangular dorsal fin compared to the more curved female dorsal fin.

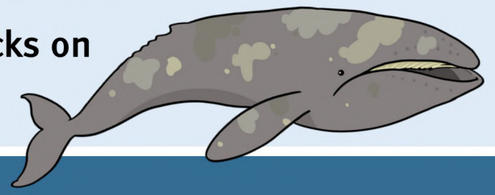
ORCA (female)

Orca hunt fish such as **salmon** and **herring**. Slapping their tails stuns the fish, which are then easily devoured.





Orca flip over stingrays to immobilise them and coordinate attacks on large whale prey.



MOTHER'S MILK

One of the unique features of all mammals is that the females have mammary glands. These produce nutritious milk that their young feed on in their early life.



HUMPBACK WHALE

Having carried her baby inside her for 11 months, a female makes a massive migration from the cooler, food-rich polar seas, to safer tropical waters. These colossal calves are over 4 metres long and stay with their mum for around a year.

A humpback whale calf will cry out to its mother when hungry, demanding to be fed! The milk of a humpback is so high in fat that it has the same consistency as toothpaste and she produces over a hundred gallons of it a day. No wonder the infant whale gets to grow so fast!

Polar bears may nurse their young cubs for the first couple of years of their lives. They stay with their mother for such a long time to develop crucial hunting skills.



POLAR BEAR

Short-finned pilot whale pods typically have between 10 to 20 individuals although groups may be much greater, with super-pods of many hundreds being reported.

THE POWER OF THE POD

Cetaceans may form complex social groups known as pods. These may be comprised of family members, although unrelated groups may come together to exploit feeding opportunities, forming enormous superpods.

SHORT-FINNED PILOT WHALE

Survival rates of calves is much greater when a family group is able to support the care of young cetaceans.

Forming groups has many advantages. There is safety in numbers, with more adults to care for young, be on the look out for danger, as well as passing on knowledge between generations of cetaceans.

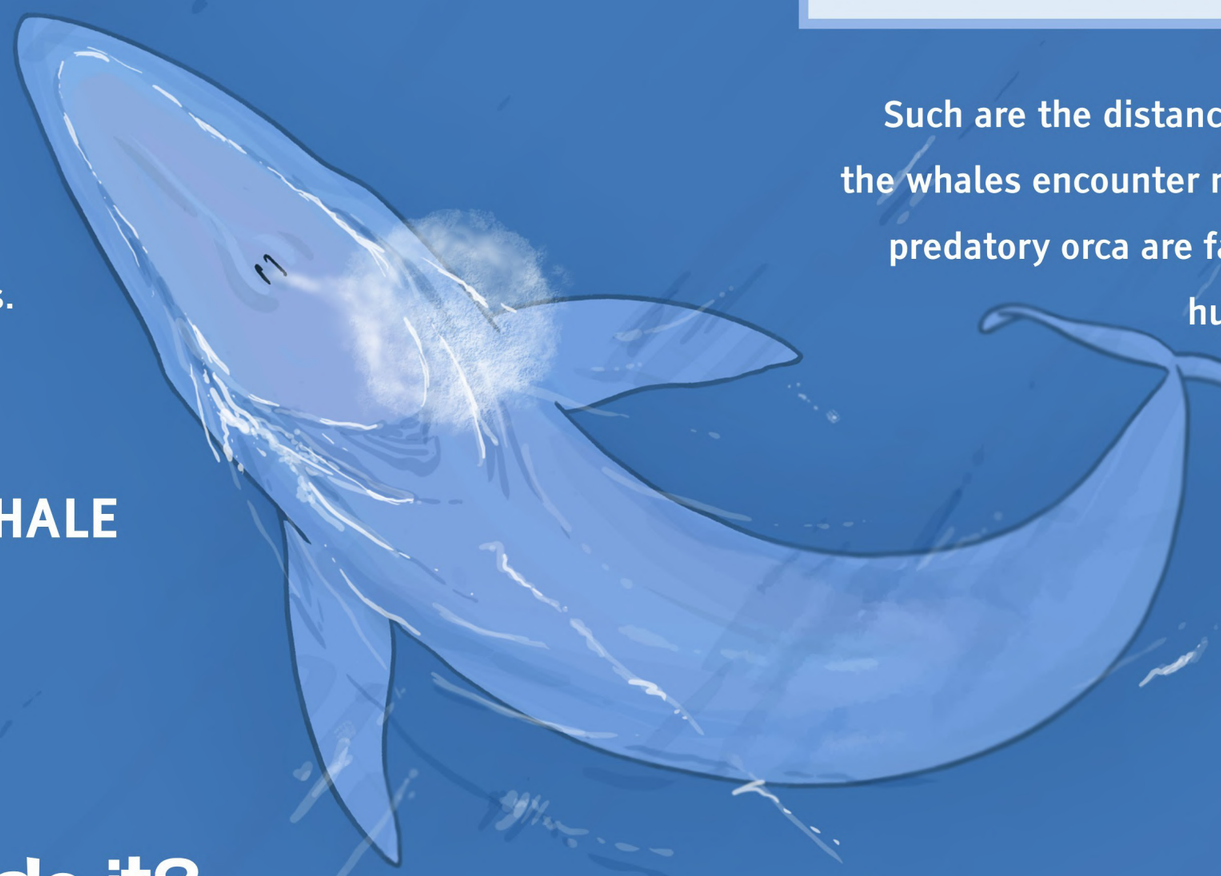
MIGRATION

The nutrient-rich feeding grounds in polar regions may be full of food, but the chilly waters are far from ideal for a young calf. To reach the calmer, warm seas of their breeding grounds, whales undertake journeys across vast distances.

Blue whales are the largest animal ever known to have lived on Earth. Despite their huge size, the exact routes they take remain a bit of a mystery.

Blue whales migrate to tropical waters, although they may begin their journeys from different colder regions.

Some of these seasonal migrations may be over 3,000 miles/5,000 kilometres.



BLUE WHALE

Such are the distances of these massive migrations that the whales encounter many hazards. Natural dangers from predatory orca are far outweighed by threats created by humans. Ship strikes, confusing noise pollution and the risks of entanglement in fishing gear all pose significant risks to whales on their journeys.

How do they do it?



In order to return to the exact same sites where they have been previously recorded, scientists believe that whales use a blend of sounds, features of the underwater landscape, electromagnetic fields and maybe even the stars.

CRITICAL CONSERVATION

48-49. PROBLEMS WITH PLASTIC

50-51. MODERN COMMERCIAL WHALING

52-53. CHEMICAL POLLUTION

54-55. BYCATCH & ENTANGLEMENT

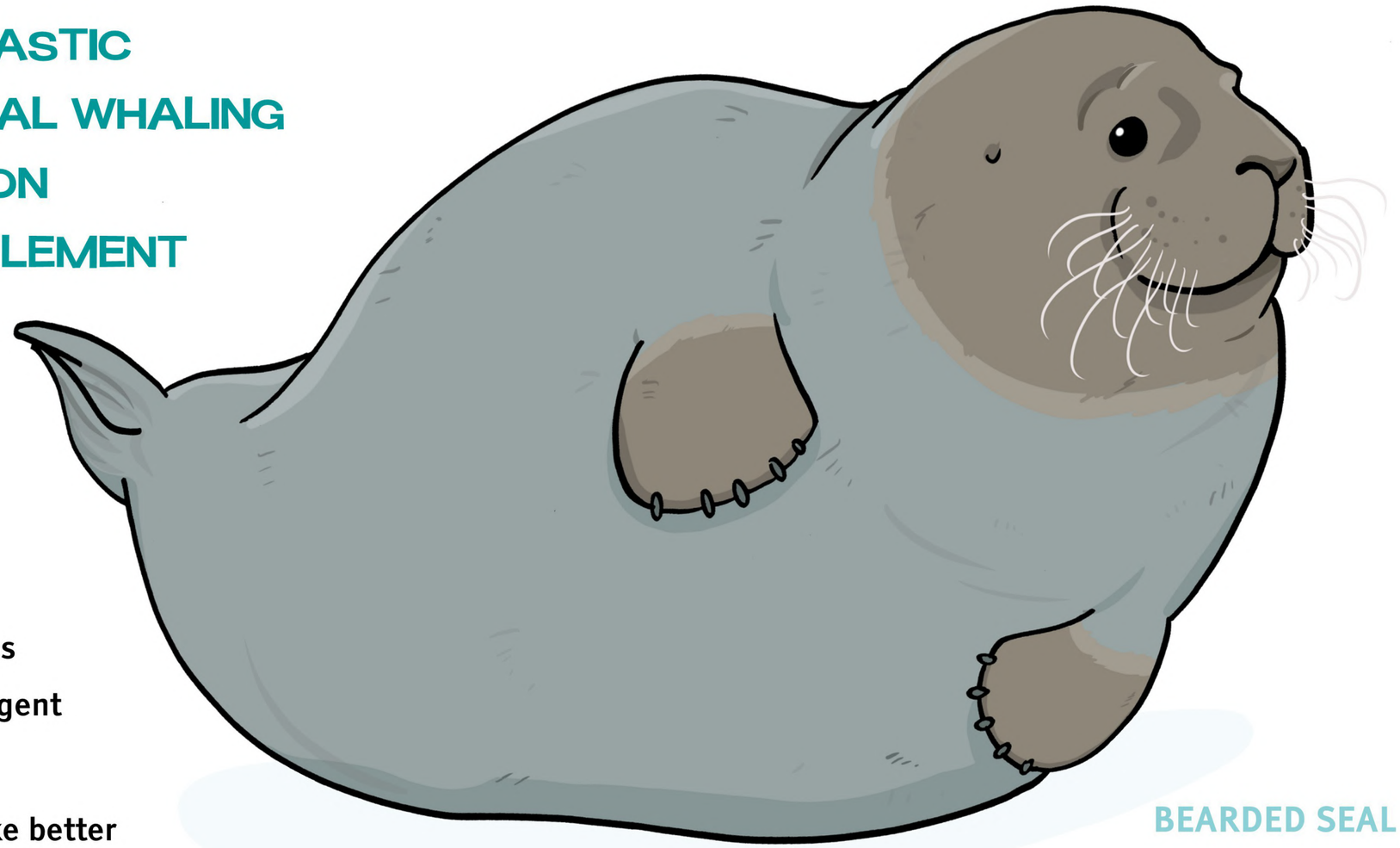
56-57. CLIMATE CHANGE

58-59. HOW WE HELP

The impact of human activity on marine wildlife is reaching a critical point.

Unsustainable harvesting of resources and the irresponsible disposal of our wastes continue to cause problems that require urgent actions to reverse.

An awareness of these issues helps us make better choices and encourages action to protect and conserve these vitally important habitats.



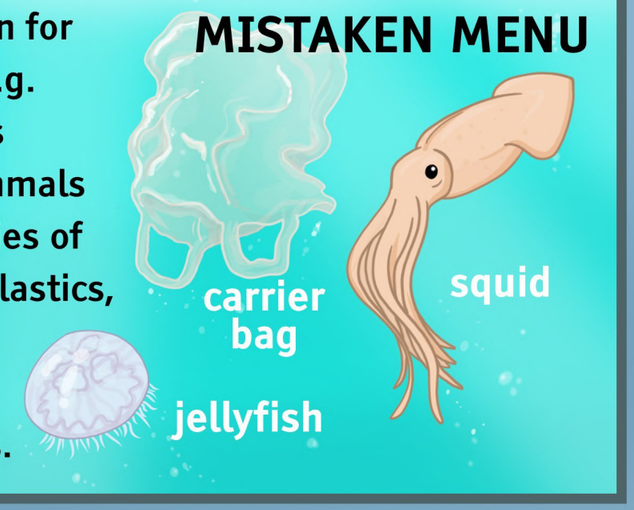
BEARDED SEAL

PROBLEMS WITH PLASTIC

It is estimated that plastic pollution is responsible for the death of 100,000 marine mammals every year.

The presence of plastics, and the toxins associated with them, are frequently found in the guts of marine mammals. Ingesting large items can clog their digestive systems, causing a painful death.

Plastic bags are mistaken for common prey species (e.g. squid, jellyfish), and it is possible for marine mammals to consume vast quantities of plastic. Even tiny microplastics, can accumulate and are passed along the food chain to larger predators.



SPERM WHALE

Many millions of tonnes of plastic enter the ocean every year. Currents transport huge volumes of this non-biodegradable material which may aggregate, creating massive floating rafts even in the most remote waters.

Many products continue to be made from single-use plastics. Often these items, such as drinks bottles, are never recycled and cause great problems for marine ecosystems.

MODERN COMMERCIAL WHALING

The use of large, high-powered whaling ships, armed with explosive harpoons, was so effective at killing whales that some species were hunted to near extinction.

Sadly, this practice is continued by a few countries today...

explosive harpoon

a modern whaling ship

Minke whales are killed annually in their hundreds. Studies have shown that the animals may suffer for a considerable amount of time.

Such was the concern at the decline of whales, the International Whaling Commission issued a moratorium (a self-imposed ban) back in 1986. Whilst this ban has been respected by most nations, Japan, Iceland and Norway have continued to hunt whales for profit. This is known as commercial whaling.

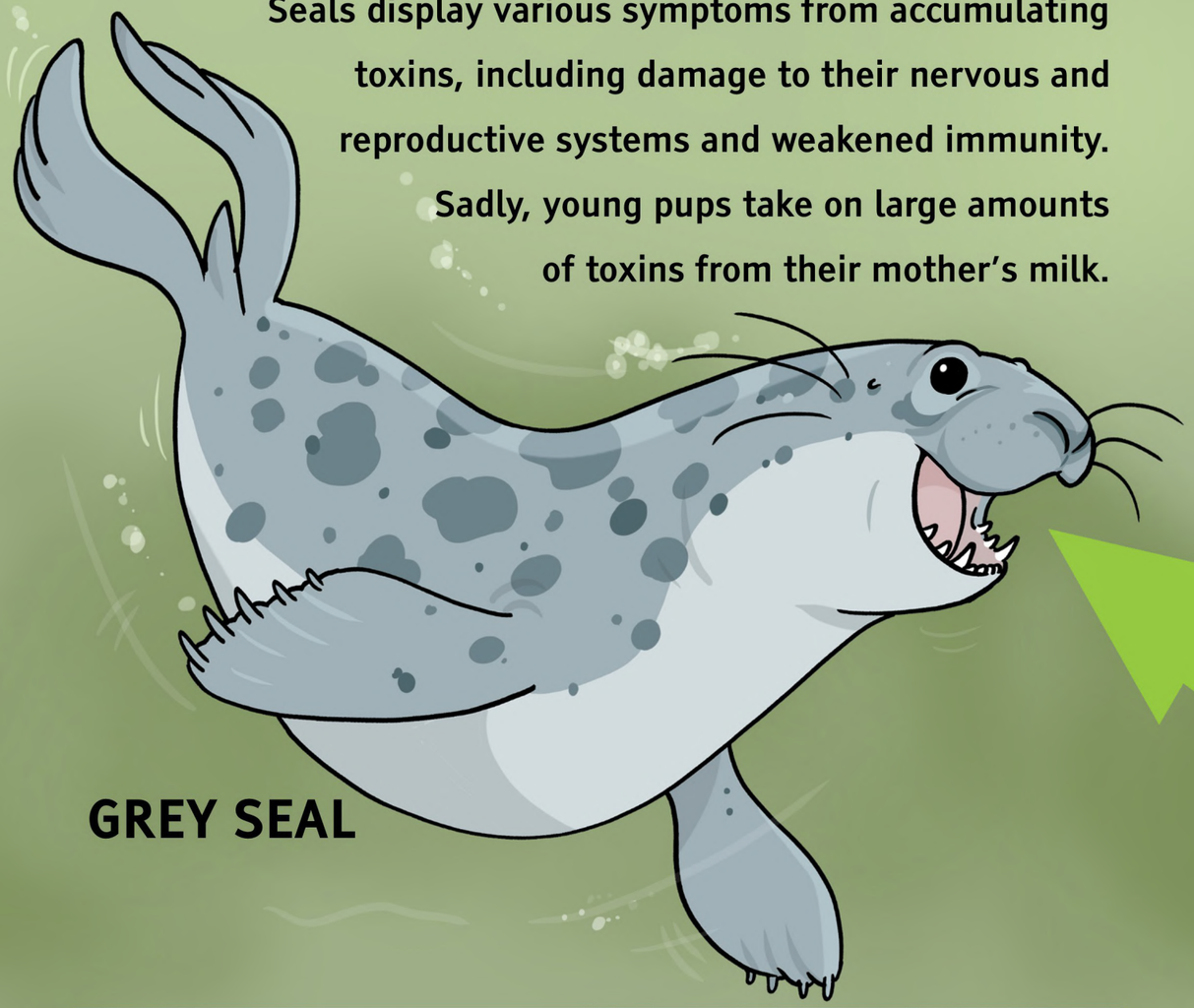
Whilst there remains a demand in some cultures for whale meat meant for human consumption, the flesh also ends in pet food. Much of the body goes unused and is wasted.

MINKE WHALE

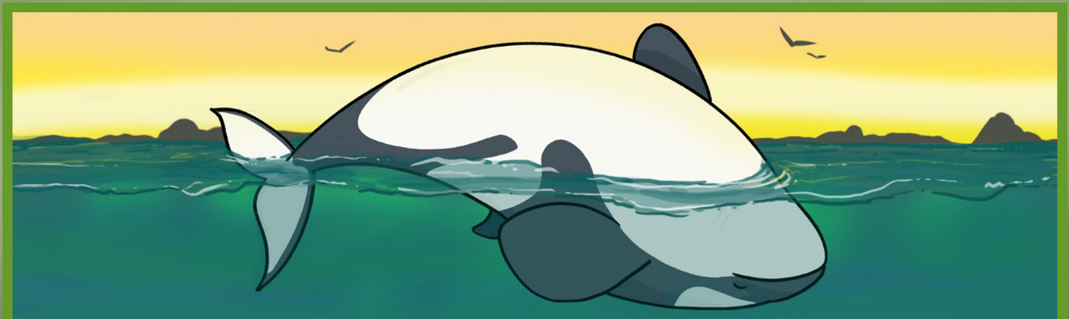
CHEMICAL POLLUTION

Bioaccumulation is the building up of toxins from the environment and along the food chains, ultimately ending up in the tissues (e.g. blubber) of marine mammals.

Seals display various symptoms from accumulating toxins, including damage to their nervous and reproductive systems and weakened immunity. Sadly, young pups take on large amounts of toxins from their mother's milk.



GREY SEAL



Such was the level of poisonous chemicals accumulated in the body of an orca found on the coast of Scotland, that the body itself had to treated as toxic waste.

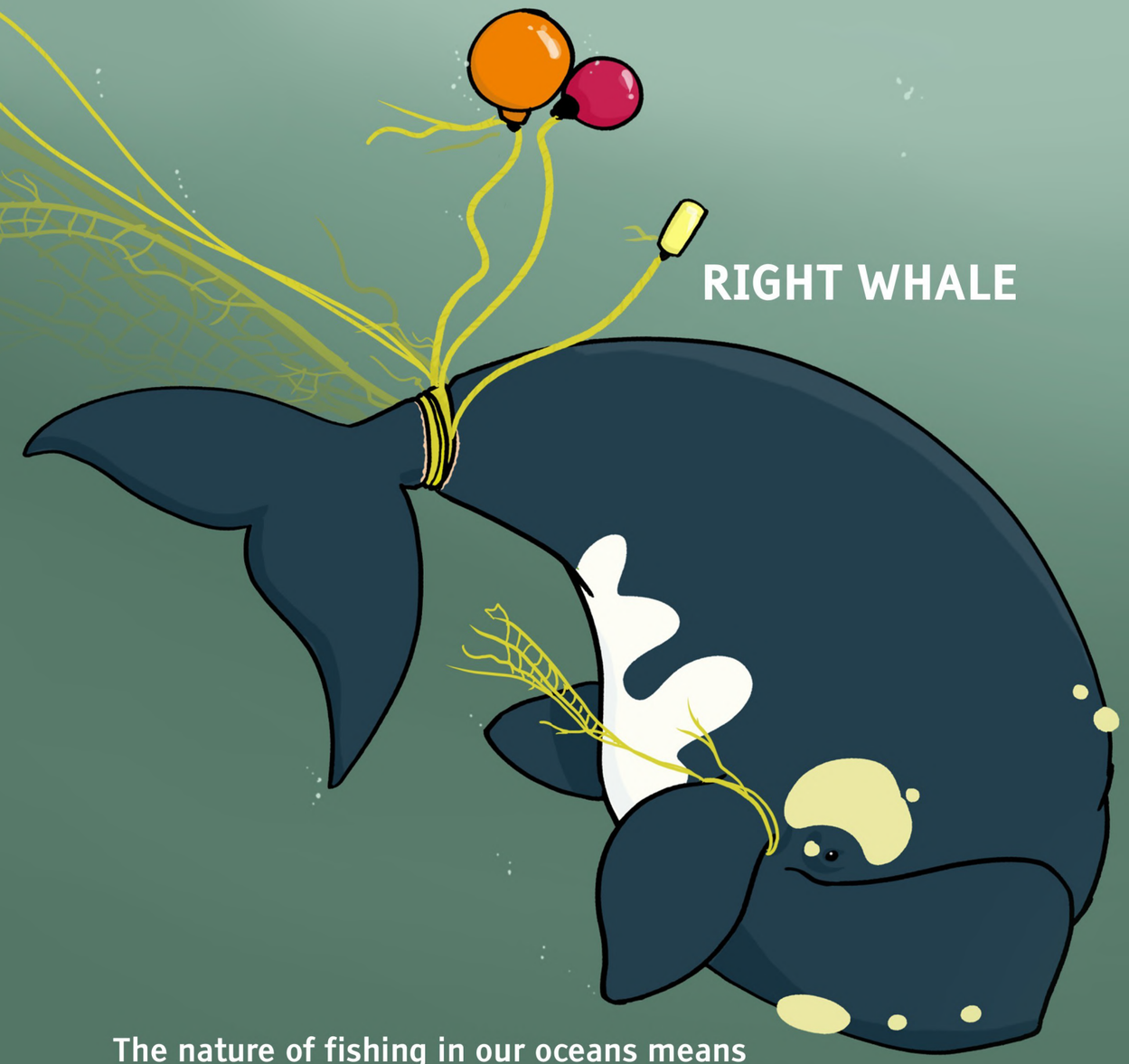
Despite the banning of toxic chemicals in the 1980s, PCBs (polychlorinated biphenyls – used in many products, including pesticides) persist in marine food chains. Many of the pollutants created are unaccounted for and there is evidence that they continue to find their way in to the oceans.



There are a range of ways in which harmful chemicals enter the seas. Run off from fertilisers, pesticides, untreated sewage and even chemicals from our pharmaceutical products can be taken in and passed along food chains.

ENTANGLEMENT & BYCATCH

Mammals must breathe oxygen from the air, so even the most advanced divers need to surface periodically. Fishing nets unintentionally capture and drown marine mammals (known as “bycatch”), however, such equipment does not have to be in active use to become a problem...



The nature of fishing in our oceans means that equipment may be lost, broken or discarded. In such cases, the ropes, nets and buoys may drift and whales can easily become entangled in what are called “ghost nets”.

With thick, durable ropes wrapping around their bodies, whales can be exhausted from dragging around additional weight as well as having their movements greatly restricted, including being able to take a breath of air.

Fishing nets may prevent marine mammals from feeding, so the animals become ever weaker. They are also much more likely to develop infections from injuries caused from equipment cutting into their skin, further harming their health.

Sadly, only a lucky few are freed from the gear that is entangling them.



CLIMATE CHANGE

Temperatures in the Arctic regions are increasing at a faster rate than elsewhere on Earth. This change to the climate increases the melting of ice and subsequently, sea levels rise. Marine mammals have adapted to life there and changes threaten their future existence.



POLAR BEAR

The polar bear has adapted to life in a very specific setting. Ice is needed so that they may hunt, find a mate and make dens, where they give birth to their cubs. Their most common prey, seals, also raise their pups on the ice, making the bears doubly-dependent on this frozen habitat.

Despite being incredible swimmers, the increasing loss of sea ice is likely to put great pressure on populations, with the changes occurring too quickly for polar bears to adapt.

Ribbon seals are an Arctic species that require ice on which to haul out to moult. As sea ice is reduced, it also becomes harder for them to successfully raise their young, with ice breaking up and separating parents from pups.



RIBBON SEAL

HOW WE HELP

We can all help marine mammals by understanding how our everyday choices contribute to lasting, positive change. We can also raise awareness of the organisations that undertake research, advocate for, rescue, and protect marine wildlife.

CONSUMER CHOICES

We can make decisions about the places we go and how we shop. Here are some simple tips that you can do today...

- Reduce your consumption of seafood and where it is eaten, make sure that it is sustainably sourced.
- Reduce your use of plastics and dispose of/recycle any you do use.
- Consider how to reduce your carbon footprint.
- Help with beach cleans.
- Do not support captive dolphin shows and be a responsible tourist with any marine activities.



BOTTLENOSE DOLPHIN

RESEARCH & RESCUE

Many organisations that support wildlife conservation rely heavily on charitable donations and the work of committed, dedicated volunteers.

Supporting their work and fundraising can make a huge help to them.



MINKE WHALE

Only trained specialists should try to recover a stranded whale or dolphin.

Seals may frequently spend time on a beach and should always be given space. They are wild animals with sharp teeth. If you have a reason to suspect that an animal may be sick or injured, always search for a specialist local rescue group*.

NEVER try to capture it, or return it to the water yourself.



COMMON SEAL PUP

*British Divers Marine Life Rescue (BDMLR) hotline 01825 765546

LIVING WORLD EDUCATION

www.livingworldeducation.com

Mammal SOCIETY

www.mammal.org.uk

BRITISH DIVERS MARINE LIFE RESCUE

https://bdmlr.org.uk/

Rescue Hotline: 01825 765546