

The sea is teeming with life

How to protect and restore the rich biodiversity
of our North Sea?

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Thornback ray © Mijiel Decleer



A sea full of life

Below the water surface of the Belgian North Sea, a surprising amount of life thrives: there are more than 2,000 species of plants and animals, ranging from anemones, seahorses and sole to seals and porpoises. However, this rich diversity is subject to numerous threats, including chemical pollution, plastic waste, climate change and over-fishing. Nevertheless, it is in our own interest to keep the seas and oceans healthy. For example, they supply us with food and oxygen, and they help reduce CO₂. The government undertakes various actions to protect the sea and its inhabitants. Would you like to know how you can help too?



OUR BELGIAN PART OF THE NORTH SEA...

Is small and shallow, but **unique** thanks to ...

- the numerous sandbanks with their sheltered gullies
- hotspots of life on and in the seabed: banks of sand mason worms, gravel beds where oyster banks used to be present, shipwrecks, the bases of wind turbines, etc.
- its location in an area where clear Channel water mixes with the turbid and food-rich coastal and river waters
- its position along the migration routes of countless sea birds

Hosts a **rich biodiversity** (animals, plants and micro-organisms):

- in and on the seabed: worms, molluscs, crabs, starfish, diatoms, etc. and most of the 140 species of fish which have ever been found in Belgium (sole, plaice, whiting, dogfish, ray, sand eel, etc.)
- in the water column, in other words between the seabed and the water surface: plankton (algae, small animals, jellyfish, etc.), fish (sprat, herring, mackerel, twait shad, etc.) and sea mammals (common and grey seal and porpoise)
- in the air and also often swimming or diving: more than 60 species of sea and coastal birds, permanent or temporary (grebe, sandwich tern, common tern, etc.)

Provides numerous **goods and services** which are **essential**, including:

- food (fish, shellfish and molluscs), raw materials (e.g. sand) and energy (e.g. wind)
- production of oxygen and purification of water by algae
- climate mitigation by the absorption of greenhouse gases (CO₂)

Is under pressure from numerous **human activities**: e.g. **shipping, fisheries, sand extraction, dredging, wind farm construction and tourism**. These are the cause of countless **threats**, including:

- pollution by fertilisers, chemical substances and (plastic) waste
- overfishing, by-catch and seabed damage
- climate change, acidification, noise pollution, introduction of non-native species, etc.

Consequently suffers from:

- the extinction of species which were previously abundant, such as the flat oyster and the skate
- the decrease in populations of, inter alia, sprat, herring, sea bass, turbot and brill
- a deteriorated water and seabed quality, with an impact on the entire food chain

Therefore, it must be **protected**:

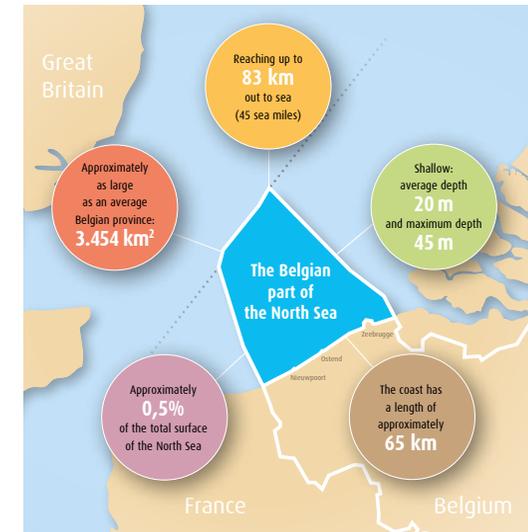
- **protected areas** are demarcated: 1/3 of the Belgian North Sea is protected
- specific **habitat types** are protected in certain areas: sandbanks, gravel beds in the gullies of the sandbanks and banks of sand mason worms
- several **animal species** are protected: the porpoise, the common and grey seal and all birds
- certain **species of fish** can only be caught in limited amounts, or not at all (quotas)
- all activities are coordinated with respect for sea life through a **Maritime Spatial Plan**: some activities can only take place under specific conditions and in specific locations
- a '**good environmental status**' is pursued: the 'sea ecosystem' (all species and their habitat) and all natural resources and services which it provides must be protected, maintained, and where possible restored

The objective: a healthy, clean sea teeming with life!

The preservation and sustainable use of the oceans and their natural resources is also pursued beyond the boundaries of the Belgian North Sea, at the **international** level.

This brochure highlights:

- the various hotspots of biodiversity
- several animal species which live in and on the seabed, in the water and in the air
 - what is special about the animal?
 - what constitutes a threat for the animal?
 - what is the government doing about it?
- several drifters, invasive species and emergent species
- a series of **tips** so you can protect the North Sea and its inhabitants yourself.





NATURE PROTECTION AT SEA

Protected areas at sea:

- The 'Flemish Banks' **A** (named after the sandbanks):
 - sand and gravel extraction is only authorised here in demarcated areas and under specific conditions
 - in four demarcated sub-zones, the authorised fishing methods will be limited, to protect the seabed even more
- three protection areas for birds **B**: construction work and both industrial and commercial activities are prohibited here, except under certain conditions

Hotspots of biodiversity:

- Banks of sand mason worms **C**
 - are places where this worm is abundant, especially in the coastal area, and also at some places on the beach (also see p. 9)
 - constitute a shelter for other animals
 - attract four to six times more animal species than elsewhere
- Gravel beds **D**
 - are beds of gravel, pebbles and larger stones in the gullies between certain sandbanks
 - used to contain oyster banks and were veritable

breeding grounds and incubators for shark and skate species, herring, whelks, squid, etc. (also see p. 11, 21 and 25)

- have been threatened since the 19th century by disruption from fishing, and have almost now completely disappeared, being susceptible to silting, according to recent research
- are protected in certain areas, and the possibility of restoration is being investigated

Historical shipwrecks **E**

- are spread across the seabed: more than 200 in total
- hold a strong pull for various species
- can be acknowledged as underwater world heritage - this has already been the case for 8 historical shipwrecks - for which protection measures apply:
 - e.g. the light vessel 'Westhinder'  which sank in 1912 must remain untouched by the trawl nets of fishing boats within a radius of 40 metres

Bases of wind turbines **F**

ensure, due to their solid foundation, that animals can easily attach themselves: cod and pout come to feed here and crabs and shrimp appear to be significantly larger if they live in the wind farm. Due to the fact that navigation and fishing is prohibited here, wind farms constitute a resting area for many species.





Sand mason worm © Mijke Peedeer

SAND MASON WORM

DESCRIPTION

- Is one of the more than 800 species of worms in our North Sea.
- Builds a long tube from coarse sand and bits of shells, from which they protrude about 5cm above the seabed.
- Increases the quantity of oxygen in the seabed, and constitutes food for other animals.
- Forms banks which attract an enormous amount of life (also see p. 6-7).

THREAT

The banks of sand mason worms are affected by activities which **disrupt, churn up, or destroy the seabed**: fisheries, dredging works, sand and gravel extraction, etc.

PROTECTION

Banks of sand mason worms occur, inter alia, in the 'Flemish Banks' protected area (mainly in the coastal area):

- in this area (and even in the surrounding area), sand and gravel extraction is only authorised in demarcated zones, and with a licence; this is only issued if a report shows that the sand extraction does not represent any threat for the banks present
- in four sub-zones of this area, fishing will only be authorised with appropriate methods, for which the nets do not scrape the seabed, or have a significant lower bottom impact

Other animals which live in the seabed: round-worms, copepods, bristle worms, shellfish and molluscs, sea mouse, etc.

DEAD MAN'S FINGER



DESCRIPTION

- Is a soft species of coral which looks like fat fingers; an adult specimen is as big as a hand.
- Grows very slowly and as such is vulnerable.
- Fully grown specimens have become rare in our North Sea.



THREAT

Gravel beds, the habitat of dead man's fingers and mermaid's gloves, are heavily disrupted by activities which **churn up or destroy the seabed**. For example, the dead man's finger does not get the chance to fully grow to an adult specimen; they are often smaller than one centimetre.

MERMAID'S GLOVE



DESCRIPTION

- Is a sponge which resembles a set of antlers, and is branched like a tree; it grows to 20 to 40cm.
- Has thousands of pores through which water constantly flows: the inflowing water takes in food and oxygen, while the outflowing water takes away waste material.
- Due to its three-dimensional structure, ensures good breeding conditions for, inter alia, sharks and skate who attach their eggs (brown sacks, see p. 15 and 16-17) to it.
- Has pretty much disappeared in our North Sea.



PROTECTION

- Within the 'Flemish Banks' protected area, a sub-zone has been demarcated at the gravel beds, where a prohibition will be enforced for all fishing methods which impact the seabed.
- Certain areas enjoy natural protection due to the presence of sickle-shaped dunes, which prevent fishing nets from getting too close.
- It is being investigated how the gravel beds and their function as breeding grounds and incubators can be restored.





Shrimp © Mijiel Daeleer

SHRIMP

DESCRIPTION

- Lives 2 to 3 years and sheds its skin up to 30 times during its growth stage.
- Is well-camouflaged and during the day, hides in the sand from predators including flatfish, cod and whiting.
- Is most consumed by Belgians (54% of the European production).

THREAT

In recent years, more and more shrimp have been caught in the North Sea. It is also presumably consumed more by whiting and cod, which have not been overfished in recent times (also see p. 19). As a result, shrimp stocks are probably under increased pressure.

Like mussels, shrimp consume waste - including **microplastics** - from the sea. Microplastics are minuscule pieces of plastic which are present in the seas and oceans around the world. They are produced by the decomposition of larger pieces of plastic waste in the sea, which end up there via rivers, by the wind, and directly due to loss or dumping at sea. Microplastics also end up directly in the environment through worn tyres, the mechanical washing of synthetic clothing, or because they are processed into certain toothpastes, cosmetics, scrubs and cleaning supplies. Microplastics

never completely disappear from the environment. Sooner or later, they end up on our plate, when we eat mussels, shrimp or sea salt, among other things. It is currently unclear whether microplastics have an effect on the health of shrimp, and of humans.

PROTECTION

- A national action plan against marine litter should help to reduce plastic pollution. In addition, Belgium will actively cooperate in measures at the European and international level.
- Various sectors are looking for alternatives for the use of microplastics.
- Major European cosmetics manufacturers are already committed to banning certain microplastics.
- Like many other countries and businesses, Belgium participates in the global United Nations Clean Seas campaign in order to reduce quantities of plastic.
- The website www.beatthemicrobead.org shows a list of care products with and without microplastics.



Thornback ray © Misjel Decler

THORNBACK RAY

DESCRIPTION

- Is the cousin of the shark: rays (skate) and shark are cartilaginous fish.
- Has, in addition to the thorns on its back and tail, thorns on its 'wings'. Males have two penises (see adjacent photo).
- Lays its eggs in shallow water, and needs a hard foundation with the accompanying flora and fauna to attach its sea purse (brown sacks). Empty sea purses can often be found on the beach (see photo).
- Is vulnerable because it reproduces slowly - it takes several years before it reaches adulthood - and in addition has limited offspring.

THREAT

The hard structures which the thornback ray needs to attach its sea purses are destroyed by fishing methods which **scrape the seabed**. Thornback rays are not purposely fished in our North Sea, but there is significant **by-catch** from bottom fishing with trawl nets, targeted among other things at sole and plaice. As such, the 'ray/skate' group are high in the top 10 of species which are landed most. The thornback ray and spotted ray are no longer threatened by **overfishing**, but other species of ray (including skate) have almost completely disappeared due to this.

PROTECTION

- In the 'Flemish Banks' protected area, areas are reserved where it will only be authorised to fish using methods which do not scrape the seabed, or only to a limited extent.
- Rays must be larger than 50cm in order to be brought to land. This is necessary to give the species breeding opportunities.
- Fishing boats can only catch a limited number of rays per day. For the vulnerable species (including skate) a complete catch and landing ban applies.



Sea purse of thornback ray © Misjel Decler



Dogfish with egg © Foto Frits

DOG FISH

DESCRIPTION

- Is, like the ray, a cartilaginous fish which grows slowly, reproduces slowly, and which needs a hard foundation with the accompanying flora and fauna to attach its sea purse.
- Is the most common shark species in our North Sea, and grows to barely more than half a metre.
- Is a shark which is not endangered, and as such can be fished (and eaten) without reservation.
- Is often sold as a conger eel; watch out for the name on the label (Latin name of dogfish: *Scyliorhinus canicula*).
- Was also previously used to scrub the decks; its skin is as rough as sand paper.

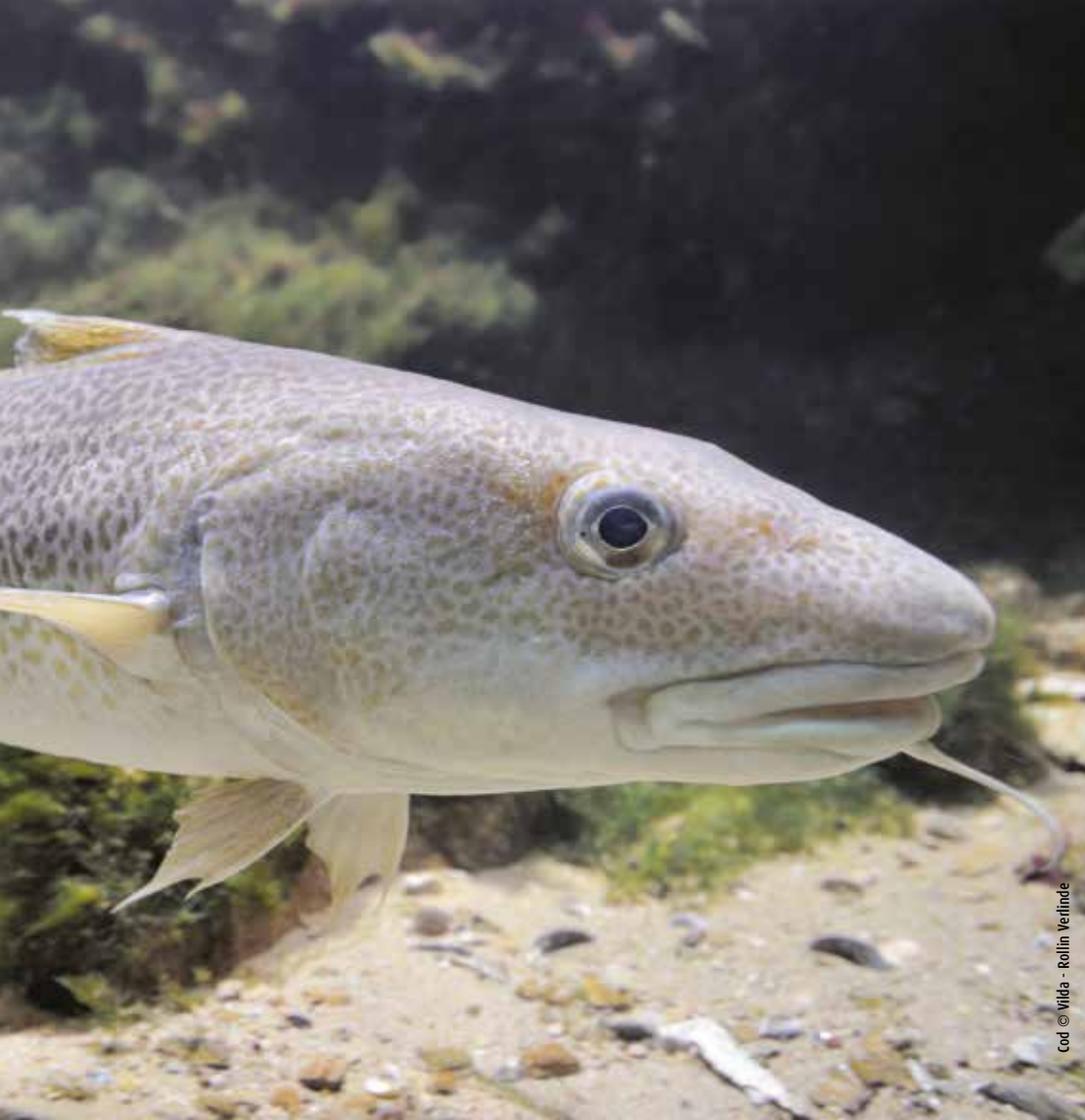
THREAT

Although the dogfish is largely unthreatened, a healthy environment (with good water quality and intact seabed structure) and sustainable fisheries are essential to maintain this. Other shark species are threatened in our North Sea by overfishing: the spiny dogfish, the porbeagle and angelshark. The smaller shark species such as dogfish, greater spotted dogfish and the starry smooth-hound, are mainly sold skinned and headless. As a result, it is extremely difficult to identify the species, and determine whether it is a threatened species or not.

PROTECTION

- Certain shark species can only be caught in limited numbers, indicated in quotas. It is illegal to catch the spiny dogfish.
- A number of threatened shark species, including porbeagle and basking sharks, are internationally protected and cannot simply be commercialised.
- A file with detailed information regarding all species of sharks and rays in our North Sea (the HAROKit file) should help fishermen and fish markets determine which species can be caught, and which are threatened and protected. That way, fishermen can put threatened species back in the sea, and fish markets can collect accurate data regarding the individual species.

Other animals which live on or just above the seabed: starfish and brittle stars, sea urchins, crabs, hermit crabs, molluscs, fish larvae, amphipods and comma shrimp, sole, flounder, plaice, turbot, dab, gobies, pipefish and weevers.



Cod © Wilda - Rollin Verlinde



COD



DESCRIPTION

- Reproduces at temperatures between 4 and 6°C; in our North Sea, this takes place from February to April.
- Can grow up to 2 metres, weigh 100kg, and live 25 years.
- Has a kind of beard with which it can detect the movement of prey living on the seabed.
- Is also referred to as the vacuum cleaner of the seabed due to its omnivorous nature.
- Is generally found close to the seabed, but also swims higher up in the sea column.



THREAT

Up until the end of the 2000s, cod was overfished in our North Sea. In recent years, however, the situation has improved. This is the result of a long-term plan with quotas and limits to by-catch, and throw-back. However, the fishing pressure on cod needs to be reduced further, to ensure sustainable fisheries in the long-term. Due to the fact that the water is getting increasingly warmer by **climate change**, cod is moving further and further up north, in search of its prey. The same applies to other cold-water species, such as haddock. In addition, due to the shallow seabed of our North Sea, the water warms up more quickly here than elsewhere. Oceans absorb 27% of CO₂ emissions,

leading to the water becoming more acidic. As a result, shrimp, crabs, lobster, scallops, coral and starfish have more difficulties growing.



PROTECTION

Climate change must be limited as much as possible, as agreed worldwide in the Paris Agreement on Climate (2015). This is only possible by drastically reducing our emissions of greenhouse gases, including CO₂; we must make the transition to a low carbon society as quickly as possible. This means that we no longer use fossil fuels for our energy needs, but renewable energy sources, such as wind and solar power.

The 12th of December 2015 was a historic turning point: 195 countries reached consensus on an ambitious, global climate deal, which will strive to limit the rise in temperature to no further than 1.5°C.



HERRING



DESCRIPTION

- Swims in large shoals through the water column, and lays its eggs in gravel beds.
- Various populations are present in the North Sea, each with its own characteristics.
- Was formerly heavily fished and was an important source of food during the two world wars; these days it is much less popular among Belgian fishermen.
- We are mainly familiar with the fish in the form of 'maatjes', pickled herring and rollmops.
- Is also processed into fish oil and fishmeal for animal feed.



THREAT

The herring has fewer spawning possibilities because the **gravel beds** (see photo below), where it lays its eggs, are disturbed.



PROTECTION

- It is being investigated how the gravel beds and their function as breeding grounds and incubators can be restored.
- Strong quotas have proven their effectiveness: after the 1970s - when herring stocks collapsed through overfishing - quotas ensured that herring was once again abundant.



Herring © Vilda - Yves Adams



Gravel beds © A.Norro/RBINS/ODNature



Phytoplankton © Victor Chepurinov (Laboratory of Protistology and Aquatic Ecology, Ghent University)

PLANKTON



DESCRIPTION

- Is the collective term for mostly small organisms who passively drift in the water; there are more than 500 species in our North Sea.
- Consists of animals (zooplankton, including fish larvae and copepods) and algae (phytoplankton, including diatoms and algae).
- Together with bacteria and viruses, forms the basis for the marine food web. 1 teaspoon of sea water contains 1 million bacteria and 10 million viruses!
- Is abundant due to large quantities of fertilisers supplied via the River Scheldt.



THREAT

Algae grow stronger by the presence of fertilisers including phosphates and nitrates in the water. These originate from agriculture, industry (discharges) and sewage water treatment plants (waste water), and end up in the seas via rivers. This phenomenon is called **eutrophication**. The excessive algae growth, especially of foam algae, is not a good source of food and creates additional degradation products (waste). As a result, too little oxygen can be left for animals which live on the seabed, which can lead to their extinction. Incidentally, the typical foam formation on beaches comes from degradation products such as the churned up proteins of these dead algae.



PROTECTION

- Thanks to the use of phosphate-free washing agents since the 1990s, there has been a notable reduction in the inflow of phosphates. The use of phosphates in washing agents has been banned in Belgium since 2003; and in detergents since 2017.
- Due to water purification on land, fewer and fewer polluting substances, such as nitrogen, are transported via rivers and deposited in the sea, although nitrogen concentrations remain too high.



Foam © Misjel Decler



SEAHORSE

DESCRIPTION

- Is a fish which lives in rocky, stony and algae-rich areas.
- In our North Sea, there are two species: the short-snouted seahorse and the long-snouted sea horse.
- Just like the pipefish, does not have any scales, and has both an endoskeleton and an exoskeleton.
- Females lay their eggs in a kind of breeding chamber on the belly of the male, in which the embryos develop until becoming capable of surviving on their own.
- Generally clings to vegetation with its curled tail-fin, until the eggs have hatched.
- Swims upright through the water column with its dorsal fin.
- Is rare in our North Sea.

THREAT

Seahorses have fewer structures to cling to and hide behind. This is because there are fewer three-dimensional fauna such as mermaid's gloves (see p. 11) which live in the **disrupted gravel beds**.

PROTECTION

- Seahorses cannot be brought to land by fishermen.
- It is being investigated how the gravel beds and

their function as breeding grounds and incubators can be restored.

THREAT

Seahorses are revered in China as a traditional medicine against, inter alia, infections and erectile problems. They are also a collector's item. As such, there is an **illegal trade** in seahorses - especially from Africa - which threatens the survival of various species of seahorse.

PROTECTION

Seahorses are internationally protected, and cannot simply be commercialised. Licences are required to ensure sustainable trade (with limited quantities).

There are several animal species where the care is the primary responsibility of the male. In the case of the seahorse, even the fecundation takes place (in the pouch of) the male, which is quite extraordinary.



Common seal © Misjel Decler

SEAL

DESCRIPTION

- Two species are native: the common seal and the grey seal.
- Needs suitable and undisturbed spaces to be able to rest and reproduce.
- Needs good water quality and good food provision.
- Has increasingly been sighted at our coasts, due to the growth of populations (colonies) in neighbouring countries. This 'comeback' can be attributed to improved water quality, the restoration of food supplies, and the ban on seal hunting.

THREAT

Seals can end up on beaches exhausted if they cannot find enough food due to **overfishing**. They are also sensitive to **pollution** (also see p. 31) and often get **entangled in fishing nets** (also see p. 29). A growing problem is the **disturbance** of resting seals on beaches and in ports by passers-by and stray dogs which get too close.

PROTECTION

- Both the common and grey seal are protected: they cannot be disturbed, traded or killed.
- Seals which lie on the beach and groynes are generally healthy animals, which are simply resting. Young seals undergo a stage in their lives when fatty tissue is converted to muscle mass. During this phase, they normally lie on dry land for a few days, and they appear to be sick. Injured and dead animals need to be alerted (see contact details p. 47).
- Strandings of seals, porpoises and other sea mammals are recorded in a database, and where possible, the animals are further examined (also see p. 31).
- Sea Life Blankenberge takes in sick or injured seals, cares for them, and releases them when they are recovered.
- In the port of Nieuwpoort, areas are closed off if seals are present, and there are signs which tell people to keep their distance.
- A floating 'seal pontoon' was built in the port of Blankenberge, where seals can rest.
- Keep your distance (seals have a vicious bite) and keep dogs on a leash!



Porpoise © Mijiel Deleer

PORPOISE



DESCRIPTION

- Is the smallest but most common cetacean in our North Sea: there are between 200 and 10,000 animals, depending on the season.
- Has an outstanding echo location system: it uses underwater sound to communicate, navigate and catch its prey.
- Needs to eat a lot to keep its body temperature at the right level.
- Following decades of absence, is now once again abundant, presumably because it can find more food here compared to areas more up north.
- Is often washed up on our shores (136 porpoises in 2016) as the victim of the grey seal, and due to entanglement in fishing nets.



THREAT

Porpoises, especially young animals (90%), often **get entangled in tangle-nets**; long nets which are used by fishermen on the seabed and on the beach. Entangled porpoises drown because they can no longer come up to the water surface to breathe.



PROTECTION

- The porpoise is a protected species: it cannot be disturbed, caught, traded or killed.
- Recreational tangle-net fishing is banned at sea and on the beach.
- Fish nets (fish traps) fitted with a pre-net with larger meshes ensure that porpoises and seals do not end up in the nets and drown.
- Belgium has signed the Ghost Gear Initiative, an international collaboration which campaigns against abandoned and lost fishing nets (ghost nets).



THREAT

The porpoise is very sensitive to **noise pollution** (from underwater noise) produced by shipping, the installation of wind turbines and the exploding of old munitions.

Other mammals which occasionally can be sighted in our North Sea, are the common bottlenose dolphin and the white-beaked dolphin.



PORPOISE



PROTECTION

Activities at sea which can have a significant impact on the environment, such as the installation of wind turbines, are subject to an environmental impact assessment, and a licence. For this, the effects of the noise must also be examined. Pile-driving can only be done gradually, so that porpoise and other sea mammals have enough time to swim away. These days, bubble curtains are also used to reduce the sound level.



THREAT

The porpoise is also highly sensitive to **pollution**: certain pollutants, including PCBs, pesticide residue, fire-retardants, etc., are stored in their fatty tissue, since they are at the top of the food web. Chemical substances are considered to be polluting if they are toxic (poisonous) at low concentrations, persistent (low degradability) and/or bio-accumulable (accumulate in people and in animals). They can also have a carcinogenic or hormone-disrupting effect. These substances - originating from agriculture, industry and households - have a negative impact on the water and seabed quality, and can end up in the food chain, following absorption and bio-accumulation.



PROTECTION

- Dead porpoises and other stranded sea mammals are investigated to ascertain their cause of death. During the autopsy, samples of tissue are taken away to verify whether pollutants are contained within the body. The results of this scientific research can lead to the adoption of additional measures to reduce pollution.
- Good water quality is pursued by optimising water treatment on land, and limiting discharges of pollutants.
- 'Civic science' initiatives play an important role: reports of observations by non-scientists can contribute to our knowledge of the porpoise. Have you seen a living or dead porpoise? Contact the Royal Belgian Institute of Natural Sciences - OD Nature in Ostend (see contact details p. 47).





Northern fulmar © Misjel Decler

NORTHERN FULMAR



DESCRIPTION

- Resembles a seagull, but flies with straight, rigid wings.
- Exists in both a light and dark colour variant.
- Lives off fish, squid, plankton and fish waste.
- Is often in the vicinity of fishing boats.
- Is primarily found at sea, and only comes on land to breed.



THREAT

Northern fulmars pick up floating **plastic** from the water surface which they mistake for food. Since they cannot break down the swallowed particles - unlike seagulls - they have a false feeling of satiety, whereby they eat less, become weak and even die due to undernourishment. They can also choke in waste, or get entangled in it. Worldwide, there is already 86 to 150 million tonnes of plastic waste at sea, and this grows annually by 4.8 to 12.7 million tonnes per year. This equates to one truckload every minute, on average. This plastic waste represents 80 to 90% of all marine litter. 15% of the annual production of plastics ends up in the sea, and annual production is increasing sharply worldwide.



PROTECTION

- Due to its sensitivity to plastic, the Northern fulmar is used as a yardstick to assess how much plastic birds absorb, by investigating the contents of their stomachs. An average stomach contains an amount of plastic equivalent to a full lunchbox, if converted to a human stomach. The target objective for a healthy North Sea is fewer than 10% of Northern fulmars with more than 0.1 grams of plastic in their stomach. However, of the birds found in Belgium, 51% have exceeded this limit.
- An increasing number of studies regarding the monitoring of beach waste and marine litter are being carried out, so that a more efficient tackling at the source is possible.
- An increasing number of beach clean-up initiatives are being organised, including the annual Eneco Clean Beach Cup.
- Fishermen associated with the Fishing for Litter project bring caught litter on land. As such, it can be monitored what kind of waste is in the sea.
- The non-profit organisation Ecoduikers removes old fish nets from shipwrecks and frees animals which have become entangled in them. Healthy Seas recycles fish nets into e.g. socks. The government also finances projects to clean up underwater shipwrecks.



COMMON SCOTER

DESCRIPTION

- Is completely black (male) or brown with light cheeks (female).
- Appears within 10km of the coast.
- Dives for and eats molluscs.

THREAT

The common scoter is sensitive to **disruption** by shipping and military activities (such as shooting practice). Due to a **lack of food**, the common scoter has migrated from previously known locations: up until 2000 mainly at the banks of the cut trough shell - its favourite food - off the coast of Nieuwpoort. However these banks have largely disappeared, meaning that the common scoter has since appeared throughout the entire western coast area, with the highest concentration generally off the coast of Koksijde in the winter, and off the coast of Zeebrugge in the spring.

PROTECTION

The common scoter is a protected species: it cannot be disturbed, caught, or killed. In order to limit disruption, water sport competitions, high-speed vessels and exercises with helicopters less than 500ft (150m) away are prohibited between 1 December and 15 March in two protected areas

for birds. The areas where the common scoter searches for food and spends the winter partly fall within the 'Flemish Banks' protected area. The measures to prevent seabed disruption will possibly contribute to the recovery of the banks of the cut trough shell.

THREAT

Common scoters often swim in large groups and as a result are extremely sensitive to **oil pollution** and oil disasters. Fortunately, oil pollution has fallen sharply over the last few decades, since the number of illegal oil discharges at sea has practically stopped. In the 1960s, more than 60% of stranded birds were smeared with oil, in recent years this is less than 20%.

PROTECTION

- Regular supervision with aircrafts and patrol ships create a disincentive for ships to illegally discharge oil. This also enables polluters to be prosecuted. If accidental oil discharges do occur, anti-pollution resources are swiftly deployed to clean up the pollution.
- Have you seen a washed-up bird? Contact the Reception Centre for birds and wild animals in Ostend (see contact details p. 47).





Sperm whale © L.Donnay/RBINS/ODNature



Basking shark © J.Haelters/RBINS/ODNature



Humpback whale © Rudy van Gelderen



Angelfish © J.Haelters/RBINS/ODNature

DRIFTERS

- Are mobile species which belong to the Atlantic Ocean and occasionally drift to our North Sea; species from the Arctic Ocean only rarely appear in our parts.
- It's difficult to explain their presence in our North Sea, but possibly scarcity of food in their natural habitat and the expansion of populations or changes to the ecosystem (by climate change) can play a part.

Some examples:

- **Sperm whale**
 - Is the largest toothed whale and can weigh up to 50 tonnes.
 - Can be found in deep waters and will have issues in our shallow North Sea; the animal often strands on beaches, where it cannot survive.
 - Presumably, the grow in population, after the ban on whale hunting at the end of the twentieth century, along with changes to the ecosystem, makes this a more frequent occurrence.
- **Humpback whale**
 - Is a large baleen whale, which is, due to its appearance close to the coast and its spectacular jumps, the most popular species worldwide for whale tourism.
 - Can travel more than 10,000km every year.
 - Has been spotted more frequently in recent years in our North Sea, possibly due to a growing population and food shortage.

- **Basking shark**

- Is a harmless shark: it doesn't have teeth, but gill rakers with which it can strain plankton out of the water by slowly swimming with its mouth wide open.
- Is, except for the whale shark, the largest fish in the world (6 to 8m long on average).

- **Angelfish**

- Is the heaviest bony fish; can weigh more than 2 tonnes.
- Washes up on the beach some years, in late autumn or early winter, and is frequently spotted during the summer.

Two recent unique cases in Belgium of mammals, originating from the North Pole area:

- In April of 2016, a narwhal was found dead along the banks of the Scheldt. The young male, with not yet a full grown tusk, signified the first registered case of this spectacular whale in the North Sea in almost 70 years.
- In April of 2017, for the first time ever, a bowhead whale was spotted in the North Sea, along the coast of Ostend and Middelkerke.





Japanese oyster © Mijiel Decker

INVASIVE SPECIES

- Are species which are not naturally occurring here, but which have been consciously or unconsciously introduced by people, and have a harmful impact on the ecosystem.
 - Have often arrived as stowaways on ships: micro-organisms, animals and algae are transported over large distances to other habitats through ships' ballast water (which is used to keep the ship stable) or on the ship's hull. Ports are hotspots for invasive species.
 - Can appear in large numbers in a short space of time and replace native species.
 - Can introduce germs and competition for food in our waters.
 - It is prohibited to consciously introduce non-native species in our North Sea, unless there is a permit. This applies, for example, to aquaculture. The unconscious introduction of non-native species is also limited: the ballast water and sediments (deposits including gravel, clay or sand) from ships are inspected and managed.
- Displaces native razor clams and other molluscs in the coastal area.
 - **Japanese oyster**
 - Was introduced for cultivation in aquaculture as an alternative for the local flat oyster. At the end of the 19th century, the extensive oyster banks of the native flat oyster were completely depleted over the course of a few years due to overfishing.
 - Grows at a more rapid speed and is therefore ready for consumption more quickly.
 - Has spread explosively in recent years due to the rising water temperature.
 - Attaches itself to solid foundation such as groynes, dykes and mussel banks, and consequently poses a threat to native mussels and other molluscs.

Some examples:

- **Atlantic jack-knife clam**
 - Landed from North America in Europe through the transportation of larvae in the ballast water of cargo ships.
 - Was first identified in Belgium in 1987, but now in the millions are washed up on our beaches.

Other invasive species:
warty comb jellyfish,
common slipper shell, New
Zealand barnacle, Asian
shore crab, etc.



Atlantic jack-knife clam © J. Haelters/REINIS/ODNature



EMERGENT SPECIES

Are species who are faring well in our North Sea due to, inter alia, climate change, as they thrive in warmer water. The changes in the species which are emerging can also bring about changes in the food chain.

Some examples:

- **Certain species of jellyfish**

- Like warm conditions and as a result can live longer and reproduce faster.
- Profit from overfishing: since there are fewer fish which eat zooplankton, there is more available for them.

- **Sardines and anchovies**

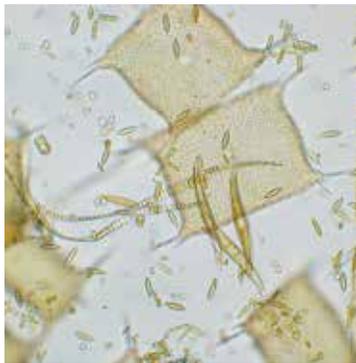
- Are pelagic species (they inhabit the water column) which are currently increasing in our North Sea; this concerns both the recovery of the local population (anchovies) and possible migrants from more southern areas (sardines).
- Are not caught here since Belgian fisheries are focused on groundfish such as sole and plaice, and therefore use larger meshes.



Sardines © Rudy van Gelderen



Common Jellyfish © Mijgel Decler



WILL YOU HELP PROTECT THE SEA?

More than 80% of the pollution at sea comes from land. As such, everyone – big or small – can help from far away or nearby to protect our North Sea!

At sea

- Never leave your waste on the beach: throw it in the litter bins or take it home and sort it there.
- Take part in beach clean-up initiatives.
- Protect vulnerable dunes: stay on the paths, don't take plants or animals home, and don't light fires.
- Put cigarette butts in a beach ashtray, which you can find at all tourist services.
- Choose a sustainable holiday home (with the European Ecolabel or the 'Groene Sleutel' (Green Key)).
- Sort waste in holiday home just like you do at home.

Everywhere

- Choose sustainable fish: avoid endangered species, try a less well-known fish and find out about the catching and cultivation methods (see www.zeevruchtengids.org).
- Limit your waste: avoid, reuse and recycle packaging.
- Do your shopping with reusable shopping bags; avoid disposable plastic bags.

- Use a drinking bottle and lunchbox instead of plastic bottles and aluminium foil.
- Avoid plastic straws.
- Use toothpaste, scrubs, cosmetics and other care products without microplastics (you can find a list at www.beatthemicrobead.com).
- Do not throw your waste in nature: throw it in the litter bins or take it home and sort it there.
- Ensure that balloons do not end up in nature or in the sea: don't let them fly away.
- Don't throw frying oil, paint residue or white spirit down the toilet or drains, take them to the container park in the section Small Hazardous Waste.
- Never throw moist wipes, cotton swabs, sanitary towels, etc., in the toilet.
- Limit your own CO₂ emissions: eat less meat and take the bike more often. Choose green electricity. Insulate your house sufficiently.
- Eat seasonal vegetables and locally-grown fruit.
- Become a member of a nature association.
- Raise awareness among your friends, family and/or neighbours!



Lumpsucker © Rudy van Gelderen



Small weever © Misjel Decler

DO YOU KNOW OUR NORTH SEA AND ITS INHABITANTS?

- 1 Which animal does not exist?
 - o Lump sucker
 - o Sea mouse
 - o Sea pear
 - o Michelin Man
- 2 Which fish is caught most in our North Sea?
 - o Salmon
 - o Tuna
 - o Pangasius
 - o Plaice
- 3 What is **not** a characteristic of sea mammals such as dolphins and whales?
 - o They do not lay eggs; their young are born and then suckled.
 - o They must come, on a regular basis, to the surface to breathe.
 - o They have vertical tailfins.
 - o During the course of evolution, they have also lived on land before adapting themselves as sea animals again.
- 4 What is the most dangerous animal in our North Sea?
 - o Small weever
 - o Anglerfish
 - o Basking shark
- 5 How long does it take before the water of the North Sea is completely renewed by Atlantic waters?
 - o Several weeks
 - o Several years
 - o 100 years

Solutions

- 1 The sea pear. The lumpsucker is a lumpfish, known by its eggs, the sea mouse is a brittle worm and the Michelin Man is a spider crab.
- 2 Plaice. Salmon and tuna are only found in small numbers in the North Sea, and pangasius is mostly cultivated in Vietnam (with a large environmental impact).
- 3 They have vertical tailfins' is incorrect: unlike fish, sea mammals have horizontal tailfins, because they move forward by moving their backbone up and down, instead of side to side, like fish.
- 4 The small weever lives in the sand of shallow water. A sting from this small fish, by standing on it, can be extremely painful. Anglerfish is the official name of the monkfish. The basking shark only appears sporadically, and does not have any teeth, since it only eats plankton.
- 5 Several years. This ensures that the pollution in our North Sea does not constantly increase, as is the case in the Mediterranean Sea.



WANT TO KNOW MORE?

Contact details to report animals on the coast

- **Helpless living seals:** Sealife Blankenberge - 050/42 43 00
- **Dead seals and dead or living porpoises, dolphins, whales, etc.:** Royal Belgian Institute of Natural Sciences - OD Nature in Ostend - 059/70 01 31 or call a local government department - dolphin@naturalsciences.be
- **Sick or injured birds:** Reception centre for birds and wild animals in Ostend - 059/80 67 66 - www.vogelopvangcentrum.be

Websites and brochures

- **www.environment.belgium.be > North Sea and oceans:** website of the Belgian Federal Public Service Health, Food Chain Safety and Environment **brochures** (info@environment.belgium.be):
 - 'Living water! Biodiversity and Natura 2000 in the Belgian part of the North Sea' (only available in Dutch and in French)
 - 'A marine strategy for the North Sea' (only available in Dutch and in French)
 - 'Something is moving at sea: a marine spatial plan for the Belgian part of the North Sea'
- **www.naturalsciences.be > Science > Research > Natural Environment:** website of the Royal Belgian Institute of Natural Sciences - Natural Environment

brochure 'What to do in the event of sightings, strandings and accidental catches of protected sea animals? Guide to information and action' (only available in Dutch; info@naturalsciences.be)

- **www.vliz.be:** website of the Flanders Marine Institute
 - 'De Grote Rede' (only available in Dutch): free information sheet about the seas and the coast which is published three times per year
 - 'Zeekrant' (only available in Dutch): annual summer journal (info@vliz.be)
- **www.vliz.be/wiki (Dutch):** information about coastal and marine science
- **www.vliz.be/vleet (Dutch):** marine and coastal encyclopaedia for the Low Countries
- **www.vliz.be/harokit:** identification kit for sharks and rays in the Belgian fisheries
- **www.vliz.be/seafetyfirst:** website about the dangers of the sea
- **www.planeetzee.be (Dutch):** educational website about the sea
- **www.zeevruchtengids.org (Dutch/French):** fish and seafood guide for professional users
- **www.recreatievisserij.be (Dutch):** online platform about fishing methods, legislation and monitoring of Belgian recreational sea fishing
- **www.ilvo.be:** website of the Institute for Agricultural and Fisheries Research
- **www.inbo.be:** website of the Research Institute for Nature and Forest





WANT TO KNOW MORE?

- www.marinespecies.org/berms: Berms - the Belgian register of marine species
- www.marinemammals.be: database of observations of sea mammals of the Royal Belgian Institute of Natural Sciences - OD Nature and the Department of Morphology and Pathology of the University of Liege
- www.zeezoogdieren.org (Dutch): website to report sea mammals, managed by Natuurpunt Antwerp North non-profit organisation
- www.waarnemingen.be: website for nature information of Natuurpunt and Stichting Natuurinformatie
- www.beatthemicrobead.org: website about microplastics in care products
- www.cleaneas.org: website of the 'Clean Seas' campaign of the UNEP (United Nations Environment Programme)
- www.1001biodiv.be/acties (Dutch/French/German): bio-tips engine with 1001 actions for biodiversity
- www.ikgeeflevanaanmijnplaneet.be: website where you can engage for biodiversity
- www.my2050.be: an interactive, educational webtool, allowing you to build your own low carbon scenario for 2050
- www.klimaat.be (Dutch/French/German): Belgian federal website about climate change

Publications

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Masked crab © Mijiel Dedeer

COLOPHON

This brochure has been produced by the Belgian Federal Public Service (FPS) Health, Food Chain Safety and Environment.

Date

July 2017

Editorial

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Design

Cunéiforme ltd

Original map p. 6

Grontmij and the University of Ghent on behalf of the FPS Health, Food Chain Safety and Environment

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Legal Deposit

D/2017/2196/25

Reproduction of text and maps is permitted on condition of the prior agreement of the FPS Public Health, Food Chain Safety and Environment.

The electronic version of this brochure is available at: www.environment.belgium.be > North Sea and oceans

Cette brochure existe également en français.
Deze brochure bestaat ook in het Nederlands.

Printed with vegetable ink on paper with the EU Eco-label (FR/011/002).





Common tern © Mijiel Decker



federal public service
**HEALTH, FOOD CHAIN SAFETY
AND ENVIRONMENT**