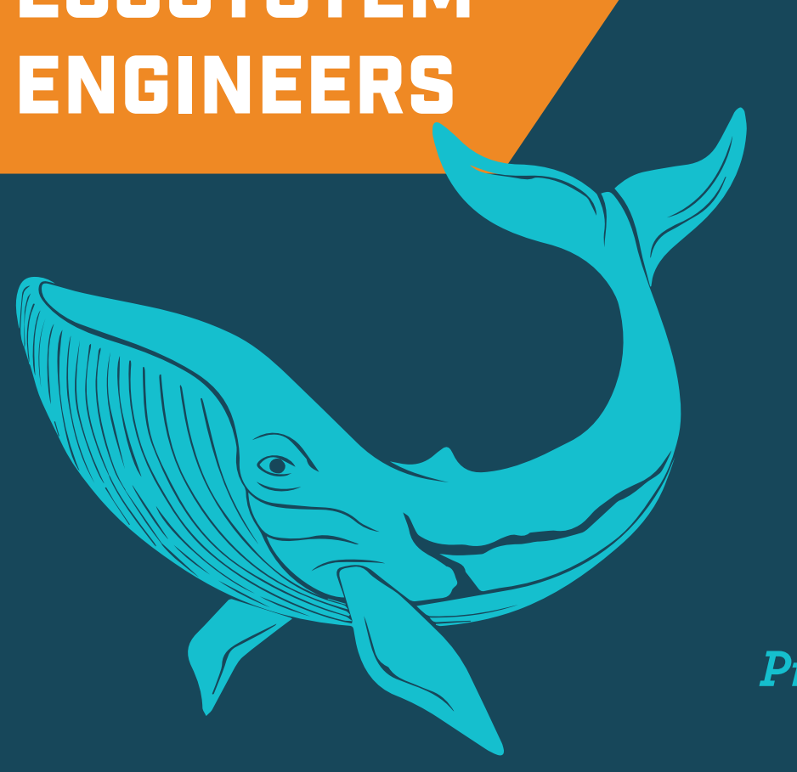
LiveAboard.com

OCEAN SUPERHEROES

WHY WHALES MATTER IN THE FIGHT TO SAVE OUR OCEANS

WHALES ARE ECOSYSTEM ENGINEERS



1. Whales modify their environment to improve their survival
2. They help maintain healthy, resilient oceans
3. They reduce the impacts of climate change
4. They provide services to humans by maintaining a healthy atmosphere and productive oceans

Protection and recovery of whale populations may help buffer marine ecosystems from stresses such as climate change

HEALTHY FISHERIES NEED WHALES WHALES FERTILISE THE OCEANS

Contrary to fishermen believing that whales take their catch, whales are vital for maintaining productive commercial fisheries.

As some of the longest-migrating animals on the planet, whales distribute nutrients across the oceans thanks to their whale poop.

They move nutrients thousands of miles from productive feeding areas at high latitudes (such as the poles) to calving areas at lower latitudes (such as the Pacific Islands).

This release of nutrients via whale poop increases marine productivity in areas that would otherwise be less productive

These nutrients create productive and robust marine ecosystems, supporting the fisheries that humans rely upon.

The nutrients support healthy marine food webs, meaning healthy dive sites and supporting marine ecotourism.

Without whales, the entire ecosystems and fisheries would collapse as those areas of the ocean would not be as productive.

WHALES AND CLIMATE CHANGE

What is climate change?

- Long-term seasonal changes caused due to accumulation of greenhouse gases in the atmosphere
- Every person leaves a "carbon footprint", carbon dioxide that enters the atmosphere from our routines and energy use

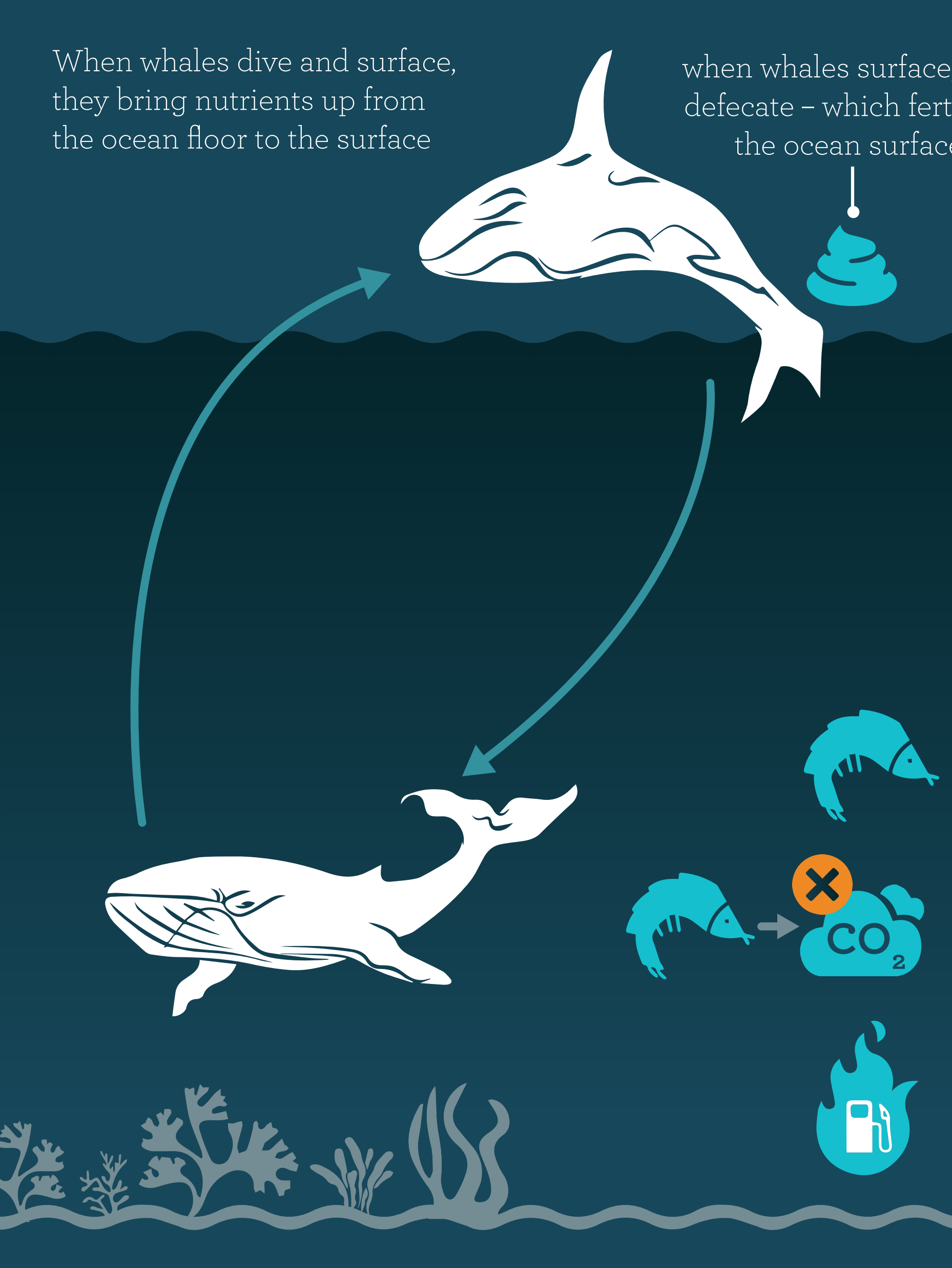
Climate change is a huge global problem.
One solution: whales

Whales help carbon absorption in the ocean, removing carbon dioxide permanently from the atmosphere – This helps prevent/reduce the effects of climate change

Losing whales could lead to increased greenhouse gases in the atmosphere

HOW DO WHALES HELP SOLVE CLIMATE CHANGE?

The deep ocean is a HUGE carbon store
The whale poop cycle reduces the amount of carbon dioxide in the atmosphere



When whales dive and surface, they bring nutrients up from the ocean floor to the surface

when whales surface, they defecate – which fertilises the ocean surface.

Tiny plants (phytoplankton) then grow and photosynthesis at the surface; removing carbon dioxide from the atmosphere and producing oxygen

These plants are then eaten by tiny zooplankton, such as krill.

When those zooplankton die, they sink and take their stored carbon out of circulation permanently.

As much as a third of the carbon dioxide produced by burning fossil fuels is absorbed by the ocean.

Whale poop is rich in iron and nitrogen, which is an important source of scarce minerals that phytoplankton need to grow.

Areas such as Antarctica, where iron is limited, rely on whales to fertilise the surface waters for phytoplankton to grow....which then remove carbon dioxide from the atmosphere.

Without the whale poop, the plankton would not be able to grow as well in those areas, leaving more carbon dioxide in the atmosphere.

Blooms of phytoplankton are the basis of the ocean's ability to absorb greenhouse gases and store them away permanently.

As much as a third of the carbon dioxide produced by burning fossil fuels is absorbed by the ocean.

WHALE CARCASSES/ FALLS

When whales die, their carcasses sink to the bottom of the ocean, storing lots of carbon in the deep ocean

190,000 TONS

Whale carcasses transport about 190,000 tons of carbon, which is the equivalent of that produced by 80,000 cars, per year, from the atmosphere to the deep oceans.

They also provide food & habitat. Dozens, possibly hundreds of species depend on these whale falls and would not exist without them

This is why it is so important to protect individual whales and protect their populations

THE INCREDIBLE SPERM WHALE

The iron-limited Southern Ocean plays an important role in regulating atmospheric carbon dioxide levels

200,000 TONS

There are around 12000 sperm whales in the Southern Ocean, which permanently remove 200,000 tons of carbon from the atmosphere each year

50 TONS

How?
Southern Ocean sperm whales defecate 50 tonnes of iron into the photic zone (surface zone) each year

This stimulates ocean productivity and carbon export to the deep ocean

The ability of the Southern Ocean to act as a carbon sink may have been diminished by large-scale removal of sperm whales during industrial whaling.

THE WHALES THAT WERE ALMOST HUNTED TO EXTINCTION

90% The population declines of the "great whales" due to whale hunting was in the region of 66 to 90%

What are the "great whales"? The great whales are the baleen and sperm whales; which includes commonly-known whales such as bowhead, right, gray, blue, humpback, sperm, fin and sei whales.

By 1900 bowhead, gray, northern humpback and right whales were almost extinct due to whale hunting

Around 300,000 blue whales were hunted in the 20th century. That equals approximately 30 million tonnes of biomass removed from the oceans and that's just one species.

3,000,000 During 1900 – 2015: 3 million whales were caught!!

The International Whaling Commission (IWC) declared a commercial whaling ban from 1986

This decline of the great whales likely altered the structure and function of oceans, accelerating climate change without us even knowing. With conservation efforts, recovery IS however possible

ENDANGERED WHALES

There are 13 species of great whale and 6 of them are still classified as endangered, even after decades of protection. These include:

The blue whale, an ocean giant that eats 4 tonnes of krill per day was almost hunted to extinction. Blue whale populations are increasing but this whale is still endangered.

The North Atlantic Right whale has shown no signs of recovery since it was protected in the 1930s. It is one of Earth's most endangered species. There are thought to be just 300-350 individuals left.

The Western North Pacific Gray Whale population is critically endangered, with around 150 individuals left.

WHALES IN RECOVERY

Humpback whales are increasing in numbers

Sperm whales are increasing in numbers BUT are still vulnerable to extinction

WHAT ARE THE GREATEST THREATS TO WHALES?

Plastic pollution

Whales such as sperm whales, which feed on squid and octopi are vulnerable to plastic pollution as they swallow plastic bags they mistake as prey.

They cannot digest these plastics, which cause fatal blockages in their bodies.

Entanglement in abandoned fishing gear

Whale entanglement in fishing gear is a growing concern.

Most whales are at risk from entanglement and entanglement mortalities have been increasing since 2010

Climate change

The depletion of the ozone layer and rise in UV radiation is a real threat to whales in Arctic waters, such as bowhead, narwhals and beluga whales.

These changes cause declines in krill populations in key areas where the whales feed

Toxic contamination

Chemicals & heavy metals in food chains are affecting whales' survival

High levels of persistent organic pollutants and endocrine disrupting chemicals have been found in whale tissues

These are thought to cause damage to the whales reproductive & immune systems

Oil and gas developments is a growing concern, with many effects on whales:

Exclusion from primary feeding habitats

Possible hearing damage from oil and gas exploration/drilling

Disturbance of whales feeding, resting and breeding areas

Key whale habitat degradationbeen increasing since 2010

Ship strikes

Whaling is still a threat and is carried out in Norway, Japan and Iceland

HOW YOU CAN HELP SAVE WHALES

Choose sustainable seafood using your country's good fish guides

Say no to single-use plastics

Reduce your carbon footprint to help limit climate change

Buy local produce to reduce your food miles

Offset your carbon from travel

Reduce, reuse, recycle

WHERE CAN YOU SWIM WITH WHALES?

You can go whale watching and swim with a variety of whales, including humpbacks, dwarf minke whales, grey and blue whales.

Top dive destinations where you can swim and dive with whales include:

Read our article about ***where to spot whale species worldwide*** to find out more.

https://www.liveaboard.com/diving/marine-life/whale-watching

LiveAboard.com