

Healthy Waterways - Healthy Dolphins

STUDENT ACTIVITY

Introduction

Why do we need healthy waterways? Why are estuaries important for dolphins and other wildlife?

Developed for upper primary and early high school students, this activity explores the importance of estuaries, food chains and environmental conservation.

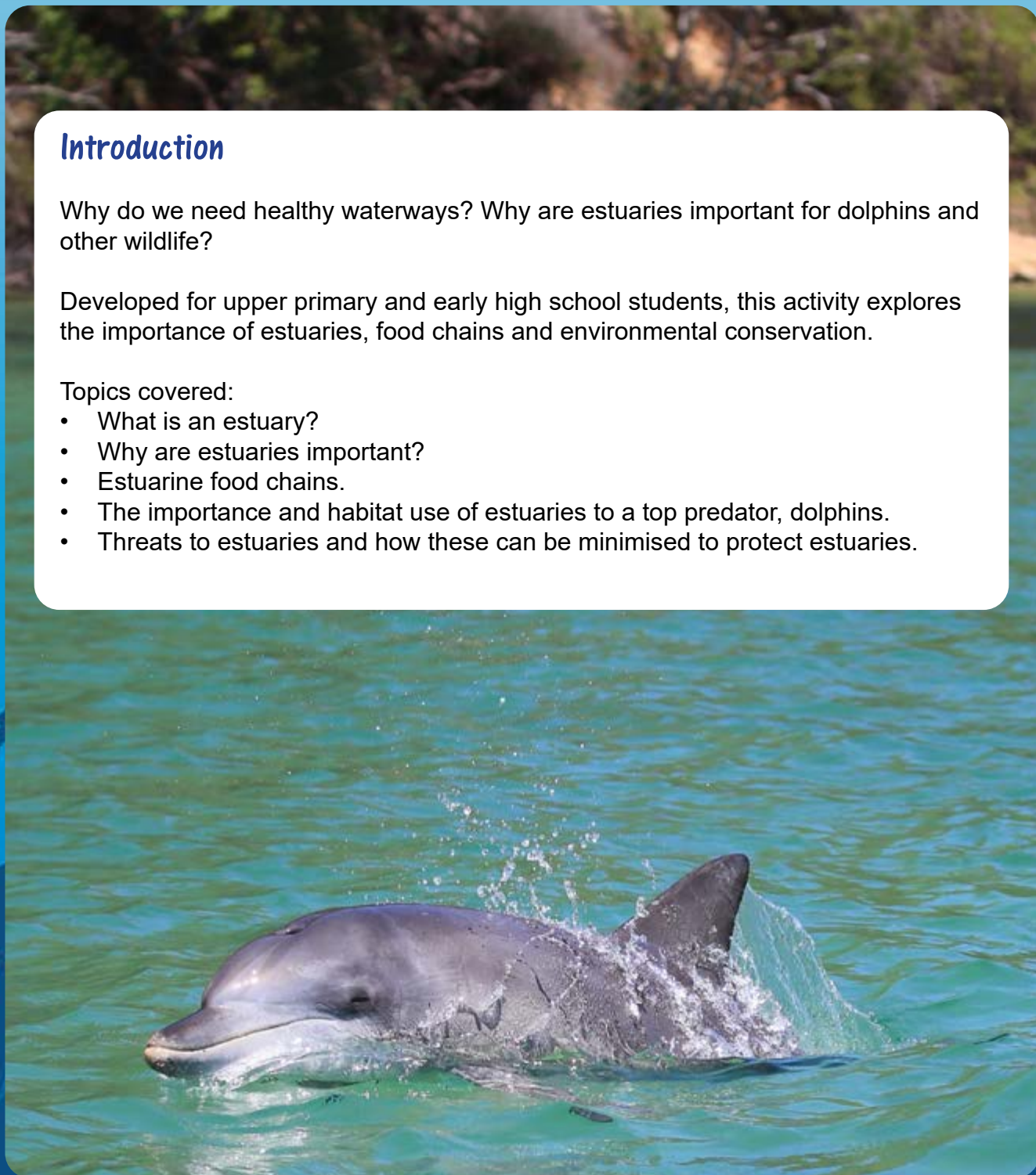
Topics covered:

- What is an estuary?
- Why are estuaries important?
- Estuarine food chains.
- The importance and habitat use of estuaries to a top predator, dolphins.
- Threats to estuaries and how these can be minimised to protect estuaries.



Dolphin Research Australia
Knowledge, Awareness, Action - Conserving Our Seas

www.dolphinresearchaustralia.org



Estuaries

What is an Estuary?

An estuary is an area where a river or stream meets the the sea. An estuary is an area where the salt water from the sea enters the river or stream from the tide, and mixes with the freshwater. An estuary is an example of a transition zone between freshwater and marine environments and is an example of an ecotone.

Why are Estuaries Important?

Estuaries are diverse environments that contain many different habitats from marine habitats, rocky reefs, sand and mud flats, mangroves, saltmarshes and seagrass beds. The estuarine environment and habitats also help to filter pollutants and stabilise the Earth's climate.

Estuaries support a high diversity of life, from many fish, birds and shellfish species to aquatic plants. Estuaries provide important nursery, breeding and feeding habitats for these species.



Dolphin Research Australia
Knowledge, Awareness, Action - Conserving Our Seas

www.dolphinresearchaustralia.org

Dolphins & Estuaries

Some dolphin species, like the Indo-Pacific bottlenose dolphins (*Tursiops aduncus*), regularly visit estuaries.



An estuary is like a dolphin's 'kitchen' - a lot of prey species that dolphins feed on are found in estuaries and rivers.



Indo-Pacific bottlenose dolphins feed on a variety of species that inhabit estuaries including; whiting, bream, mullet, occasionally stingrays and even octopus.



Mullet



Whiting

Female dolphins with calves most frequently visit estuaries to hunt and sometimes rest.

Young dolphin calves spend a lot of time learning and practicing how to hunt in estuaries.

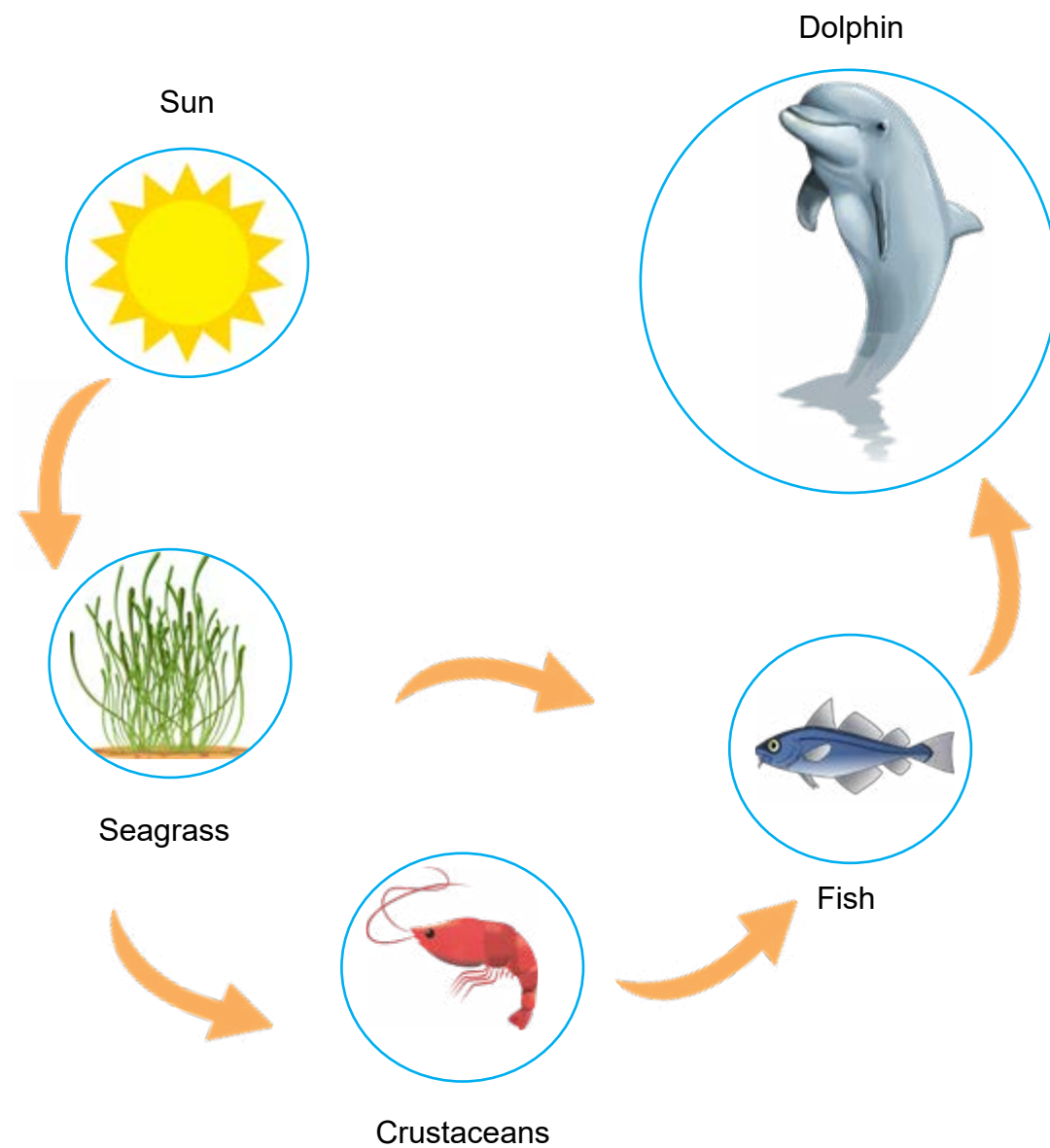


Dolphin Research Australia
Knowledge, Awareness, Action - Conserving Our Seas

www.dolphinresearchaustralia.org

Dolphins & Estuaries

Food Chain



Above is an example of a simple estuarine food chain.

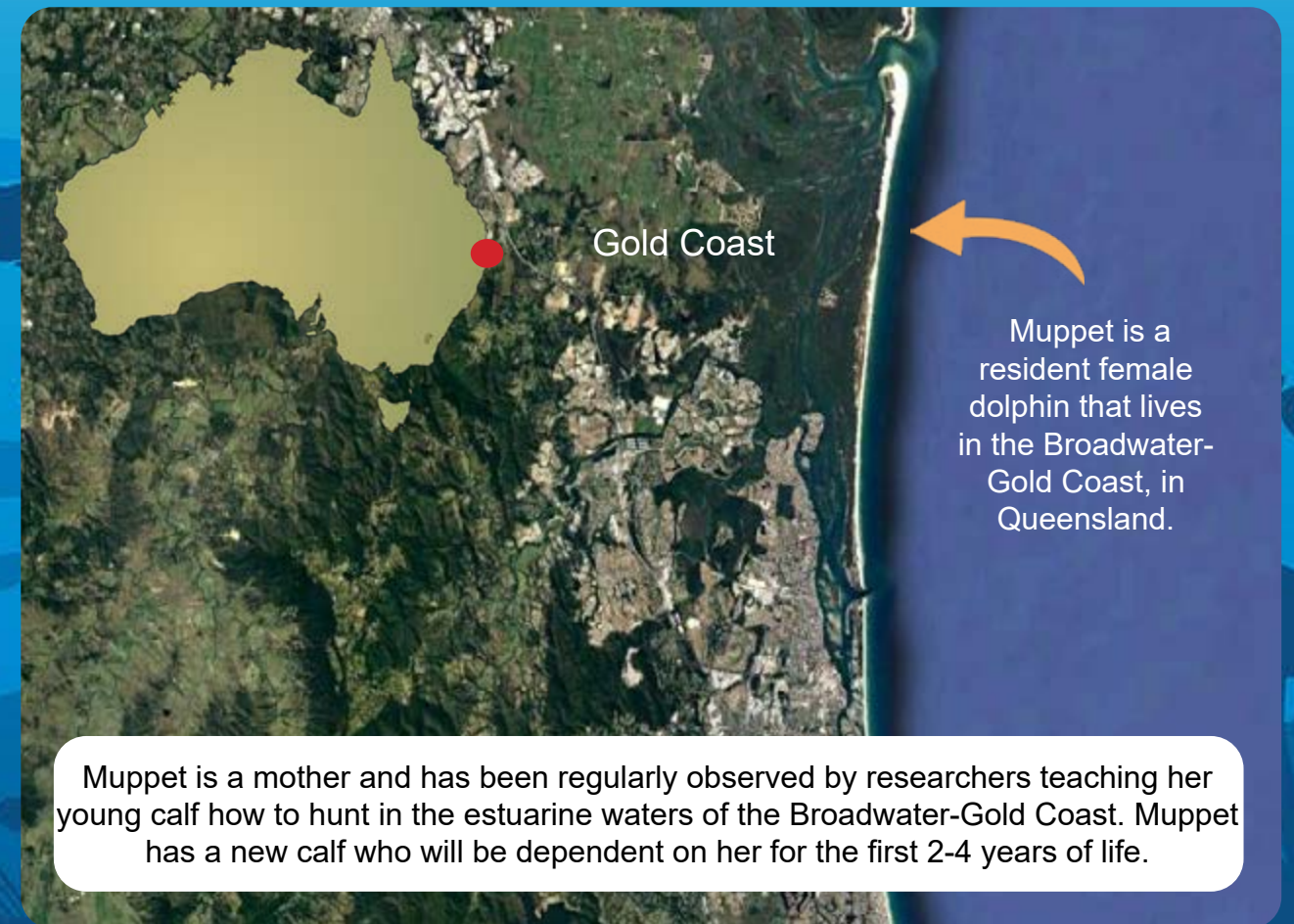
Can you think of another example of an estuarine food chain? Can you identify which organisms are the primary, secondary and tertiary producers?

Dolphins & Estuaries



Some dolphins, like 'Muppet' (ID #007), have been found to use the same estuary almost every day for over 30 years! Muppet is a female Indo-Pacific bottlenose dolphin.

The unique notches on her dorsal fin allow researchers to easily identify her from photographs.



Muppet is a resident female dolphin that lives in the Broadwater-Gold Coast, in Queensland.

Muppet is a mother and has been regularly observed by researchers teaching her young calf how to hunt in the estuarine waters of the Broadwater-Gold Coast. Muppet has a new calf who will be dependent on her for the first 2-4 years of life.



Dolphin Research Australia
Knowledge, Awareness, Action - Conserving Our Seas

www.dolphinresearchaustralia.org



Dolphin Research Australia
Knowledge, Awareness, Action - Conserving Our Seas

www.dolphinresearchaustralia.org

Dolphins & Estuaries

Estuaries can also be dangerous habitats for dolphins and other wildlife. There are lots of threats that can be harmful to dolphins and make them sick, injured or worse.

Threats

- * Boats
- * Fishing interactions
- * Litter & pollution
- * Habitat degradation
- * Coastal development

As apex predators, dolphins are essential to maintaining a functioning and healthy ecosystem.

If dolphins eat unhealthy prey, they can become ill. Mother's can even pass on toxic contaminants and illnesses to their calves.



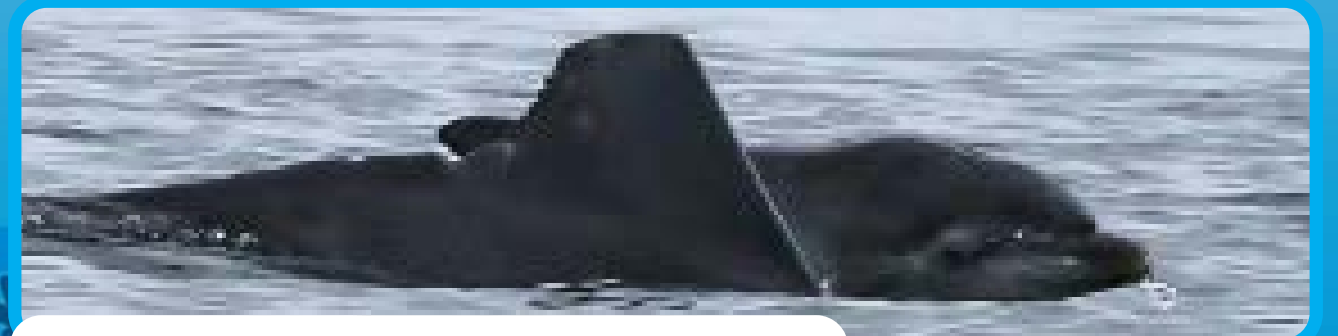
Bioaccumulation is the accumulation of toxins in the food chain. The concentration of toxins increase up the food chain.

Apex predators, like dolphins, are most affected by toxins from pollution because they are at the top of the food chain.

Dolphins & Estuaries

This is 'Chopper' (ID #10). She is a resident female Indo-Pacific bottlenose dolphin who lives in the Gold Coast-Broadwater. She is also a good friend of Muppet.

Chopper has survived being entangled in fishing line, being hit by a boat and attacked by a shark.



In 2019, Chopper gave birth to a calf called 'CJ' (ID#669).



At 2 months old, CJ was hit by a boat. He has a large injury from the propellor across his back. He was lucky to survive!



Dolphin Research Australia
Knowledge, Awareness, Action - Conserving Our Seas

www.dolphinresearchaustralia.org

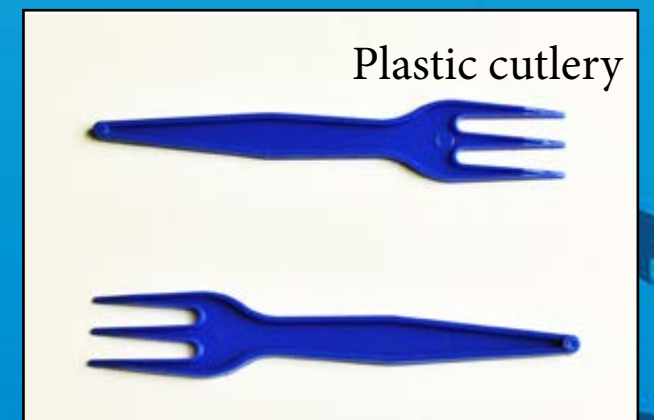
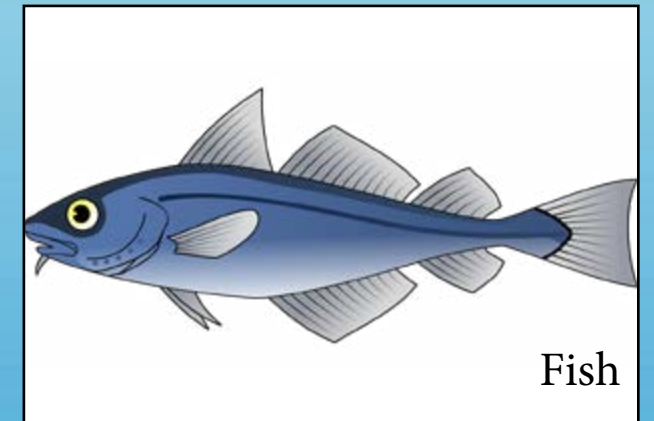
Activity Instructions

- The following activity can be done as a class or in small groups.
- Below are a combination of cards showing good and bad objects that can be either healthy or unhealthy for waterways.
- Cut the cards out and prompt the class to place the cards under the 'healthy' or 'unhealthy' columns on the background card on page 4.
- Once all cards are placed under columns, discuss why the element belongs under that column. You might find that there are some cards that are more difficult to allocate to a particular column than others and worth discussing with the class.
- Discuss how students can help to reduce the number of unhealthy cards. What can be done to eliminate the unhealthy cards and make a waterway healthy? What kind of alternatives can be used to reduce the threat from unhealthy objects and activities?

Some of the largest cities around the world are built along estuaries.



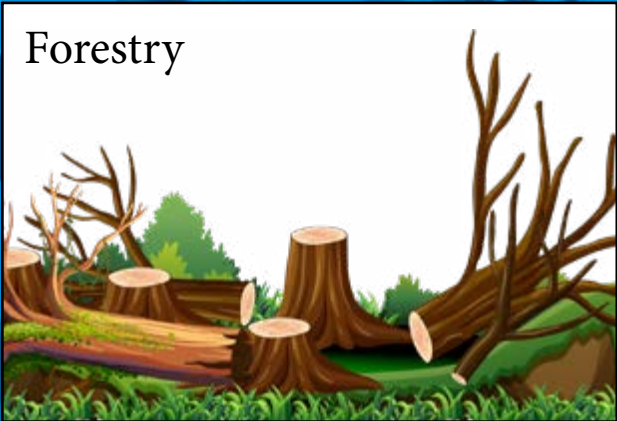
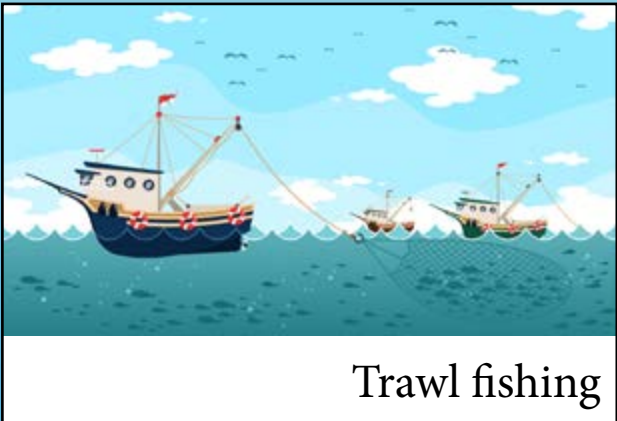
CARDS



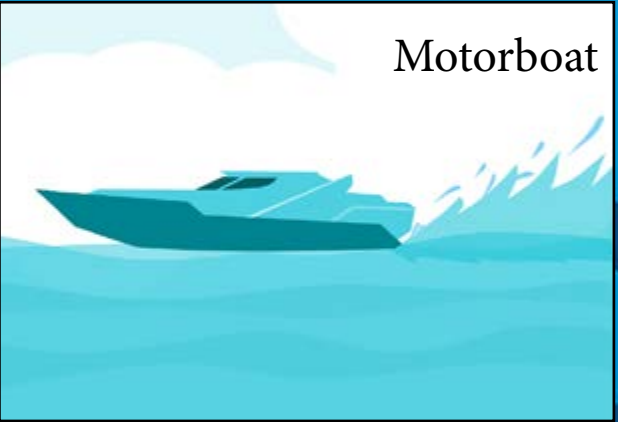
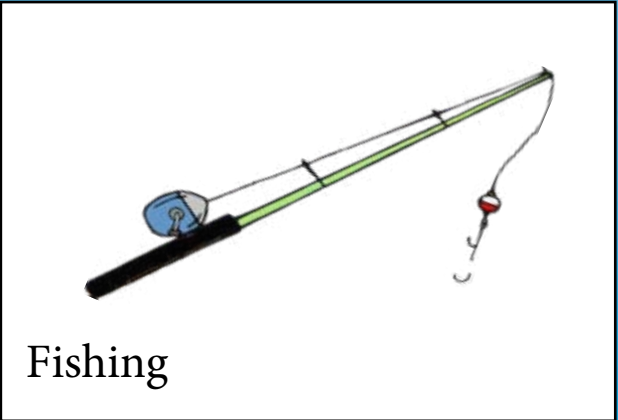
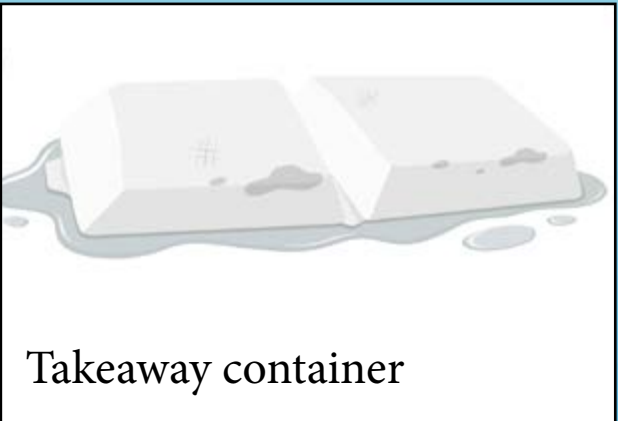
Dolphin Research Australia
Knowledge, Awareness, Action - Conserving Our Seas

www.dolphinresearchaustralia.org

CARDS

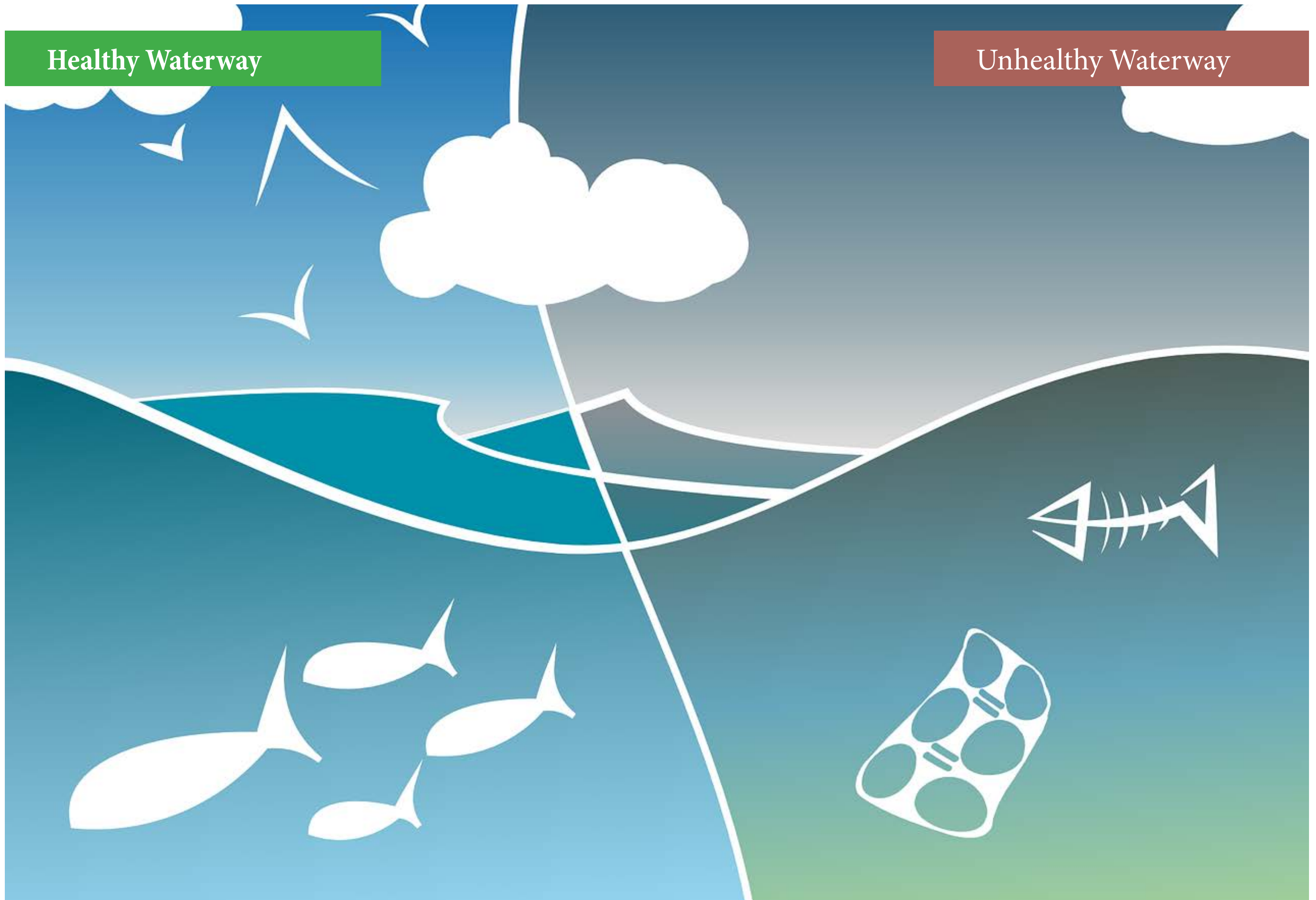


CARDS



Healthy Waterway

Unhealthy Waterway



Dolphins & Estuaries



Dolphins & marine life need healthy habitats!

Additional Resources

Dolphin Research Australia have a number of free resources available for download from our website that can be a helpful accompaniment to this exercise.

> Posters for your classroom on Healthy Waterways and Unhealthy Waterways

<https://www.dolphinresearchaustralia.org/fun-activities-downloads/>

> Learn more about Chopper, CJ, Muppet and the resident dolphins of the Gold Coast

<https://www.dolphinresearchaustralia.org/learn-about-dolphin-whales/gold-coast-dolphins/>

Other videos and other online media resources

Estuary: Definition, Facts, Characteristics & Examples

<https://study.com/academy/lesson/estuary-definition-facts-characteristics-examples.html>

Copyright Dolphin Research Australia Inc. 2021. www.dolphinresearchaustralia.org

This resource was written and designed by Dolphin Research Australia volunteers and staff.

Images sourced from Vecteezy.com, Wiki Commons & Pixabay.com This resource has been developed with funding support from the City of the Gold Coast Catchment and Citizen Science Grants Program and the Queensland Government's Community Sustainability Action Grant Program.



Dolphin Research Australia

Knowledge, Awareness, Action - Conserving Our Seas

www.dolphinresearchaustralia.org