A THREATENED SPECIES OF SEAGRASS

POSIDONIA AUSTRALIS

WHY IS IT SO IMPORTANT TO THE WHOLE ECOSYSTEM?

TEACHERS RESOURCE

This teacher's resource offers links, further information and key resources needed for student learning to reach the desired outcomes.

Download the digital version of this resource to access clickable links: dpi.nsw.gov.au/fishing/threatened-species/school-resources

Curriculum alignment

Living World: Stage 3 — Science T3-4LW-S:
Examines how the environment affects the growth, survival and adaptation of living things

Other relevant curriculum alignment:

GE3-1: Describes the diverse features and characteristics of places and environments

GE3-2: Explains interactions and connections between people, places and environments

3.UL.3: Interacts with others by sharing key points of information in Aboriginal languages

3.MBC.2: Demonstrates understanding of significant cultural values and practices in Aboriginal communities.

Outcomes — A student:

— plans and conducts scientific investigations to answer testable questions, and collects and summarises data to communicate conclusions
— plans and uses materials, tools and equipment to develop solutions for a need or opportunity
— examines how the environment affects the growth, survival and adaptation of living things

Aboriginal Languages and Cross-curriculum priorities

Technologies Years 5 and 6 ACTDEK021

Purpose

One of the key priorities for the Marine Estate Management Authority and DPI Fisheries is to raise community awareness about threatened and protected aquatic species across NSW. The activity-based booklet has been developed to help you educate children about the endangered *Posidonia australis* and its importance to the marine ecosystem.

The booklet considers the ecosystem as a whole to highlight the ways *Posidonia australis* benefits a range of other plants, animals and the wider environment. It also examines the ways *Posidonia australis* benefits humans, and what people can do to help protect this species.

Some questions and tasks have been included here to help stimulate conversation among students and further direct learning.

Background

Seagrasses are one of the most important plants on earth. Found in oceans throughout the world, along coastlines and in estuaries, they're the basis for many marine ecosystems. They provide benefits to other marine plants and animals, humans and the environment.

Task:

Think/Pair/Share routine.

Ask the students to pair up or form small groups.
Ask the students to discuss the following questions within their group before sharing them with the rest of the class.

— What do you know about seagrasses?
— How are they alike/different to seaweeds?
— What other things would you like to know about seagrasses?

Revisit these questions after completing the activity booklet and compare the answers to show how much the students have learned.

What is Posidonia Seagrass?

Posidonia australis, or just "Posidonia", is a species of seagrass that occurs in the southern part of Australia. It is long-lived and forms "meadows", covering large areas and creating an ecosystem. It has thick, strap-like, green leaves with rounded ends that can grow to 80 centimetres in length and 1-1.5 centimetres wide (about one finger width). It is held together by a rhizome – a strong, horizontal runner that is about 2 centimetres in diameter that runs flat along the seafloor. The rhizome is brown and woody and acts just like the runners you would find on strawberry or mint plants.

Note for teachers

Visit operationposidonia.com/how-to-guide or seagrasswatch.org/idseagrass for illustrations and photographs of Posidonia and rhizomes.

Posidonia is a prominent feature of temperate coastlines of Australia. Seagrasses grow in nearshore environments, mostly in estuaries and sheltered embayments. Australia has an estimated 51000 km^2 of seagrass meadows within its waters. Current estimates say NSW has approximately 159 km^2 of seagrass, indicating it is a rare natural resource in this state.

Ask students to go back to their groups to discuss the following questions:

— Do you know what an endangered species is?
— How does something become endangered?
— What are some examples of endangered species?

Follow up discussion for the educator:
When numbers of a species get very low, we say they are "Threatened". "Endangered" is a category of Threatened. An endangered species is any type of animal or plant that is in danger of disappearing forever. When something is considered extinct, not a single one is alive, just like the Dodo or Tasmanian Tiger.

At least 22 of the world's 72 seagrass species are in decline. It's estimated that almost 30% of known seagrass areas across the world has been lost since the 19th century!

Helpful links:
Green Kids Guide to Threatened Species: 9 Ways You Can Help

Endangered Species

Links for further information about Posidonia Seagrass

seagrasswatch.org

Posidonia australis Seagrass Meadows of the Manning-Hawkesbury Ecoregion: A Nationally Significant Ecological Community

Seagrass Educators Handbook

Momentum builds to save Seagrass

Carbon capture and storage: Seagrasses do it for free

Estuarine habitats

Seagrasses of Australia

Cultural connections

Sea Country: A virtual excursion exploring Aboriginal culture of the NSW coast

Australia's First Peoples have been living on the Australian continent for millennia.

Aboriginal and Torres Strait Islander Australia is made up of many different and distinct groups, each with their own culture, customs, language and laws. They are the world's oldest surviving culture and possess invaluable traditional knowledge for the sustainable management of natural resources.

See a map of Indigenous Australia

Apps available on the app store which may be helpful with the research project

The Wiradjuri app
WCC Language Program. Based on the work of Dr Stan Grant and Dr John Rudder.

The NSW AECG languages app
by NSW Aboriginal Education Consultative Group Inc.

What's for dinner?

In any ecosystem there are many food chains and, generally, most plants and animals are part of several chains. This activity shows who eats who by using arrows to create a food web.

Activity answers:
Sun provides energy to seagrass;
the seagrass breaks down into detritus.

Crustaceans → Detritus	Shark → Turtle
Molluscs → Detritus	Turtle → Seagrass
Worms → Detritus	Little fish → Prawn
Prawns → Zooplankton	Big fish → Little fish

Bonus activity
Ask the students to write a persuasive text outlining the reasons why seagrasses are such an important part of the food chain.

Link for further information:
Seagrass Animals

What else are we saving?

Ask the students to choose an animal from the seagrass ecosystem and create a diorama to show its habitat. They should include everything the animal needs to survive, like food and shelter.

An underwater nursery

Activity answers:

Worms	Green turtle
Hermit Crabs	Seahorse
Prawns	Cockle shells
Small fish	Zooplankton
Big fish	Oysters

Bonus activity
Ask the students to form pairs or groups. They then select a species from the seagrass habitat and discuss the importance of seagrass to its life cycle. Ask them to also think about the impacts it would have on the species if the seagrass habitat was not there.

What are threatening our seagrasses?

Out of the Blue: The Value of Seagrasses to the Environment and to People

Activity answers:
01 Boat anchoring in seagrass
02 Kayak dragging in seagrass
03 Dog walking in seagrass
04 Jetty creating shade over seagrass
05 Drain flowing water directly into seagrass

Bonus activity: class debate
Ask the students to form into groups. Each group should select a threat to seagrass habitats to debate in the affirmative or negative.

Questions:
— What type of behaviour will you change to help seagrasses?
— How will you encourage your friends and family to protect seagrasses?

Use the "Threats to Seagrass" page to guide discussion.

Links for further information:
An underwater quest to restore our endangered seagrass meadows

Block and chain moorings in sensitive habitats

The Blue Carbon Initiative: Mitigating climate change through coastal ecosystem management

IUCN: Blue Carbon

Find a Word Answer

The 34 letters are found from the top moving left to right and spell out: POSIDONIA AUSTRALIS MY SCIENTIFIC NAME.

Thank you for using this teacher's resource and associated teaching booklet.

To help us to make this resource better, we ask for any feedback by using the survey link found on this webpage:
dpi.nsw.gov.au/fishing/threatened-species/school-resources