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LIFE IN TORRES STRAIT SEAGRASS MEADOWS

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Acknowledgements

We would like to thank the following people for their invaluable encouragement, support and advice: Toshi Nakata, Posa Skelton, Robin South, Helene Marsh, Vic McGrath, Stan Lui, Tony Ghee, Andrew Denzin, Simon Albert and the school students, staff and community members who made our time in the Torres Strait so memorable. We acknowledge the traditional owners and custodians of the sea countries from which many of the photographs in this book were taken. We are also extremely grateful to the traditional owners and custodians who allowed the use of language names within this publication.

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ISBN: 982-978-9097-04-0

Indigenous language names for common animals and plants have been included in the text in brackets. Both Kala lagaw ya (**KLY:**) and Meriam mer (**MM:**) names have been included, where possible. Scientific terms appear in **bold** and are explained in the glossary.



IOI (Australia)



All photographs used in this booklet were taken in the Torres Strait Islands by G. Brodie except for those on page 6 which are specifically credited.

Cover photo: seaslug (nudibranch)

INTRODUCTION

Seagrass plants (**KLY: ial-damu MM: kolap dam**) grow in the sea and can often be seen exposed to the air at low tide.

Seagrass plants are very important as they provide food for dugongs (**KLY: dhangal MM: deger**) and turtles (**KLY: waru MM: nam**).

They also provide shelter for a large number of other plants and animals that do not eat seagrass.

An important thing about seagrass plants is that they use sunlight as a source of energy during a process known as **photosynthesis**. They then make that energy available to other organisms either directly or indirectly.

When seagrass plants are found together in large numbers they form large areas called seagrass meadows.



SEAGRASSES

Seagrass plants (**KLY: ial-damu MM: kolap dam**) are generally found growing in the mud and sand.

There are many different types (**species**) of seagrasses found in the Torres Strait. Some **species** are small and paddle-shaped, some look like ferns, some have leaves that look like uncooked spaghetti, while others are large and strap-like.

Seagrasses are flowering plants. Flowers are the **reproductive** parts of all flowering plants. This makes seagrass plants more closely related to **terrestrial** plants than to other **marine** plants. **Terrestrial** plants rely on wind or birds or insects to spread their **pollen**. Seagrass plants rely on water currents. Male and female flowers must be present in the meadow for new seagrass plants to occur.

Seagrass flowers can be very small and blend into the background or be very large and obvious.



Green algae

OTHER PLANTS AND ANIMALS

Seagrass meadows do not only consist of seagrass plants. Hidden amongst the seagrass plants are other **marine** plants (algae) and also animals.

Algae (**KLY: nairi MM: meau**) and seagrass are quite different from each other. There are many **species** of algae, which can be grouped into red, green, and brown algae. The major difference between seagrass and algae is that algae do not produce flowers.

Many types of animals use and live in seagrass meadows. Seagrass meadows are important as nursery areas for juvenile fish and prawns.

Some animals that live in seagrass meadows are small and hard to see, while others are large and easily seen swimming and feeding in seagrass meadows.



C. Roelfsema

Dugong



F. Loban

A turtle fitted with a GPS tracker

DUGONGS AND TURTLES

Seagrass plants are food for dugong (**KLY: dhangal MM: deger**) and turtle (**KLY: waru MM: nam**).

Dugongs feed mostly on seagrass and may not survive without it. Seagrass meadows are therefore needed to maintain healthy dugong populations.

Drift hunting (**KLY: paupa thaiyne**) for dugong over seagrass meadows is an important part of the traditional way of life for Torres Strait islanders (Ailan Kastom).

Dugongs take many years to grow up and reproduce. It is necessary then, that dugongs are hunted in a way that is **sustainable**. This will allow Ailan Kastom to continue into the future.

Green sea turtles, another animal significant to Ailan Kastom, also eat seagrass. They include lots of algae along with seagrass in their diet.



Seahare



The egg mass of a moon snail

SNAILS AND SEASLUGS

Seagrass meadows are **habitat** for many different **species** of **marine** snails and sea slugs. This group of animals are known as **gastropods**. They rely on many different ways to protect themselves from being eaten by other animals.

Some **marine** snails have hard protective shells. Others like the sea hare rely on **camouflage**. The sea slugs (**KLY: eroko**) have nasty tasting chemicals stored within their bodies.

Despite these defences, many **marine** snails (e.g. **KLY: kirith kirth MM: keret**) are good to eat. These snails are actively searched for, particularly at low-tide, by **predators** including people.

The egg masses of snails and seahares can often be seen in seagrass meadows. Some **species** try to hide the eggs by making them stick to the seagrass leaves.

SESSILE ANIMALS

Some animals found within seagrass meadows are permanently attached. They are **sessile**, which means they do not move around.

An example of this type of animal is the colonial sea squirt or **ascidian**. They are often found on the leaves of the seagrass plants.



Small ascidians living on seagrass leaves

BURIED HIDDEN ANIMALS

Many animals found in seagrass meadows are hidden in the mud beneath the seagrass plants. They are often small. Being small does not mean they are not a valuable part of the seagrass **habitat**.

When these small animals burrow through the mud they allow **oxygen** to reach areas under the seagrass plants that would not normally receive any **oxygen**.

These burrows can be homes for crabs, worms or even **octopi** (KLY: **sugu** MM: **suga**), all taking shelter from the hot sun, drying air or dangerous **predators**.



A burrow
[possibly of a crab (KLY: **githalaig** MM: **guriz**)]



Fingernail bivalve shell



Bivalve shell (KLY: Akul)

BIVALVES & OCTOPUS

Another type of shelled animal that is found in seagrass meadows are bivalves. Bivalves are animals that have two shells to protect their soft bodies, such as oysters (KLY: it MM: gein) and cockles (KLY: mudu).

The shells of dead bivalves are often seen washed up on the shore or lying between the seagrass plants. A careful look at the shell can often reveal a hole made by a predatory snail (gastropod) or perhaps even a shy octopus (KLY: sugu MM: suga). These animals use a **radula**, a tongue like structure that has teeth, to create those holes seen in the shells of dead bivalves.



Bivalve shell



Starfish



Sea cucumber (sandfish)

STARFISH AND SEA CUCUMBERS

Starfish (**KLY: tituititui MM: saurisauri**) generally have five arms. Some have more or less than this number depending on their **species**, damage from predation or even where they are in their life cycle.

Sea cucumbers (**KLY: iruk MM: aber**) often live in seagrass meadows during the younger stages of their lives. Some **species** are valuable as part of the bêche-de-mer fishery. When left in the ocean, living sea cucumbers are very good at cleaning up dead plant and animal matter that has fallen from the water above to the sea floor. They are often referred to as the vacuum cleaners of the sea.

Sea cucumbers are interesting to watch feeding. Some have tentacles that they put up into the water to catch food. Others push **sediment** into their mouths, which is sorted into the bits that are food from bits that are just sand. The sand passes through their bodies and comes out the other end as clean **sediment**.



Upside down jellyfish



Sea anemone

JELLYFISH AND ANEMONES

Many other strange animals live in seagrass meadows. Some like jellyfish move quite slowly or like anemones, hardly move at all.

A jellyfish (**KLY: dogaira le MM: pupuag**) often seen within seagrass meadows is the upside down jellyfish. Its scientific name is *Cassiopea*. For a jellyfish, it has a strange habit of sitting upside down extending its tentacles into the water column. It does this so that the majority of its body is facing the sun. The tiny algae that live inside the jellyfish turn the sunlight into food and energy for the jellyfish. This process of turning sunlight into food and energy is known as **photosynthesis**.

Anemones (**KLY: grus MM: gares**) move around even less than the upside down jellyfish. They are often partly buried in the sand or mud and can sometimes create a protective living environment for other **species** such as shrimps or worms.

SMALL HIDDEN ANIMALS

Small animals like worms can be very common but still hard to see within seagrass meadows. They are an essential part of the seagrass **habitat** providing food for fish, crabs and many other animals.

Another animal often found in large numbers in seagrass meadows are forams. They are unusual in that they are a single cell animal that produces an internal shell.

In the Torres Strait we often find the world's largest foram or at least its "shell" lying beside seagrass plants.

In many parts of the world these shells are called mermaids' or sailors' pennies and are made into necklaces.



A foram "shell" or test

CONCLUSION

Seagrass meadows are home or food to a wide range of animals. Their health is fundamental to keeping our **marine** environment in good condition.

When rubbish or chemicals are left along the shoreline or thrown into streams they eventually end up in the ocean and tangled up in seagrass meadows. **Pollution** has the potential to harm the environment making conditions unsuitable for seagrass plants to survive. Some **pollution** (excess nutrients and chemicals) are invisible but can build-up in the seagrass **sediment** over time and be harmful to seagrass, humans and other life forms.

It is important to keep our coastlines and streams clear of rubbish and chemicals so that we look after the environment both for ourselves and for future generations.



Possible Follow-up Exercises

1. Consider joining a local seagrass watch program (http://www.seagrasswatch.org/torres_strait.html) or starting your own coastal clean-up program like Clean Beach Days.
2. The Torres Strait language names given for the plants and animals in this booklet are those from Miriam Mir and Kala Lagaw Ya. Do you use the same names? If not find out what the names are used for these plants and animals where you live.
3. Do you know of any traditional stories about any of the smaller animals found in seagrass meadows? If not, you could ask your relatives and friends about them and bring the stories back to school to share.
4. Do you know of any traditional or cultural uses of the smaller animals and plants found in the seagrass meadows? If so, you could write about it or make a poster/brochure to share with your class mates. If not, you could ask your parents, grandparents or other relatives about them.
5. Can you link any of the plants and animals discussed in this booklet to songs or dances that you know? If not, try to make one up with your friends.

GLOSSARY

Ascidian: an animal with sac-shaped body with openings through which water passes in and out. It squirts out a stream of water when disturbed

Camouflage: something that is intended to hide, disguise, or mislead

Gastropods: a group of animals that includes many thousands of **species** of **marine** snails and sea slugs. This group also contains freshwater snails and limpets and land snails and slugs. The group is characterized by a head with eyes and a large flattened foot a single shell

Habitat: the natural surroundings in which a plant or animal lives

Marine: relating to, found in, or living in the sea

Octopi: more than one octopus (KLY: sugu MM: suga)

Oxygen: a gas that is essential for plants and animals to breathe

Photosynthesis: a process by which plants turn carbon dioxide and water into food and **oxygen**, using light energy from the sun

Pollen: a powdery substance produced by flowering plants that contains male cells

Pollution: the placement of man made objects (litter, chemicals) into the natural world that can cause harm to the surrounding or living organisms

Predators: an animal that hunts, kills, and eats other animals in order to live

Radula: a band of tissue in the mouth of some snails and octopi containing rows of small teeth, used bringing food into the mouth

Reproductive: relating to, taking part in, the making of new offspring or individuals

Sediment: sand, mud or soil that has settled in either a lake or ocean; wet soil

Sessile: describes an animal that is permanently attached to something rather than free moving

Species: plants or animals that resemble each other by sharing similar features that on the basis of these same features are grouped together

Sustainable: to make use of a naturally occurring material without destroying it; so that what is taken is replaced in a balanced way

Terrestrial: living or growing on land rather than in the sea or the air

Life in Torres Strait Seagrass Meadows is an Environmental Science reader for school students in the Torres Strait and other tropical Indo-Pacific Islands. It is hoped that it will raise awareness and appreciation of the diversity of our living environment and that this will result in strengthening individual responsibility to care for these precious natural resources.

Gillianne Brodie (JCU/USP) is a tropical marine invertebrate biologist who learnt something special from the youth of the Torres Strait Islands. Alison Haynes (USP) is a semi-retired freshwater biologist who has published many books on Pacific Island invertebrates and the habitats that they live in. Frank Loban (TSRA) is a Torres Strait Islander with first hand experience in turtle, dugong and marine natural resource management in the Torres Strait. Jane Mellors (DPI&F) is a seagrass and invertebrate specialist who has extensive experience with seagrass monitoring in the Torres Strait.

