Term 1 – Seaweed diversity and its importance in the marine environment

Kia ora, and welcome to the Love Rimurimu programme. We look forward to taking your students on a journey of discovery, diving into your local marine environment and exploring the potential of seaweed to solve some of the biggest issues we face today.

Programme Information

The full Love Rimurimu programme is a year-long inquiry which focuses on a different element each term:

Term 1 - Seaweed diversity and its importance in the marine environment.
Term 2 – Human impacts and climate change.
Term 3 - Seaweed solutions and marine restoration.
Term 4 – Taking action, sharing knowledge and reflection.

These Teaching and Learning Activities have been adapted for teachers to use independently. They focus on Seaweed diversity and its importance in the marine environment.

If you wish to take part in the full Love Rimurimu programme, with support from your local Experiencing Marine Reserves Coordinator please contact us at info@mtsw.org.nz.

These resources have been developed by the team at Mountains To Sea Wellington, https://www.mountainstoseawellington.org.

Visit the Science Learning Hub for an overview of the project, Love Rimurimu Project resources in downloadable PDF format, and planning pathways using MTSW and Hub resources.

Information on Content, Activities and Resources: Term One

Classroom Sessions and Resources

Focus and learning objectives

- Able to identify some seaweed species by their Latin, common and/or te reo Māori names.
- Able to name the three main parts of macroalgae.
- Know the difference between red, green and brown seaweeds
- Understand some of the important ecological roles they play.

Resources needed

- ID guides
- Collected seaweed species from the beach, or visit your local beach with students.

Suggested activities and resources	
Seaweed Identification	Love Rimurimu seaweed identification guide – Wellington's top – Seaweeds for Wellington's most common species. It includes scientific, common and te reo Māori (when available) names. Tautuhi Rimurimu – Te whānau rimurimu kei Te Upoko o Te Ika – Te Aho Tū Roa. Wellington Underwater Club seaweed identification guide – Simple photographic guide with scientific names of the most common Wellington species. Easy to print and laminate. Beautiful Browns – NIWA – Document that looks into each species' distribution, characteristics and habitat in detail. Just focuses on brown seaweeds. Te Papa Seaweed Collection – Nancy M. Adams, seaweed pressings and ID. Otago University Marine Guides – PDF Guides of rocky and sandy shore biodiversity found in various marine habitats.
Seaweed info and facts	Kelp, help! 2-minute video covering structure, habitat, and more. Young Ocean Explorers. Seaweed, Te Ara Encyclopedia – General information on NZ seaweeds, distributions and uses. Good reading to start digging into seaweed and its superpowers.

	Wellington Underwater Club infographics in te reo Māori and English – facts about seaweed and the creatures that live in a seaweed habitat. Available in te reo Māori.

Field Trip

Shore based session
Become familiar with different seaweed species. Collecting seaweed samples for in class ID and seaweed pressing.

Focus and learning objectives

- Able to ID seaweeds of interest in their local environment.
- Identify the location of different seaweed species in the rocky shore such as intertidal vs subtidal species.
- Identify biodiversity that uses seaweed as a habitat or food source.

Resources needed

- Waterproof Seaweed and Rocky Shore ID guides (see below)
- Underwater camera

Suggested follow up activities and resources	
Seaweed Harvesting	Seaweed harvesting and storage guide Take your students back to the beach to collect further seaweed samples for pressing. Following this harvesting guide to ensure best practise is followed.
Seaweed samples and pressing	Seaweed Storage – if you haven't pressed your seaweed samples in the field, you will want to make sure these are stored in a way to avoid creating a stinky classroom. Check out our seaweed pressing method to find out how to keep your seaweed stink free and how to press your seaweed samples in the classroom.
Brainstorming activity	Create a class brainstorm of all the different seaweed species and creatures living within that were seen on your snorkel. Use these ID guides to help identify different creatures and seaweed. • Love Rimurimu seaweed identification guide – Wellington's top seaweeds • Tautuhi Rimurimu – Te whānau rimurimu kei Te Upoko o Te Ika – Te Aho Tū Roa • Northern Rocky Shore Guide – Otago Marine Studies Centre

	• Southern Rocky Shore Guide – Otago Marine Studies Centre • Puka ārahi mō te ākau pōhatuhatu – te reo Māori Northern Rocky Shore Guide – Otago Marine Studies Centre • Puka ārahi mō te ākau toka – te reo Māori Southern Rocky Shore Guide – Otago Marine Studies Centre
ID practice	Print out pictures and names of different seaweed species. Cut them up and challenge students to match names/species to help their ID skills. Practice in te reo Māori too!

Classroom Session

Focus and learning objective

- Understanding of seaweed's ecological role in the ocean, including production of oxygen.

Suggested activities and resources	
Habitats and Food Webs	What is a kelp forest? – Young Ocean Explorers video explaining the importance of seaweed/kelp to other creatures (1 minute 30 seconds). Rimurapa – Young Ocean Explorers video (1 minute). Food Web game – game from Fish Forever. Students become a species in the food web, making connections to other species. Printable creature cards included.
Seaweeds producing oxygen	Seaweed makes oxygen – Wellington Underwater Club information and video. See below to find out how you can set up an in-class photosynthesis experiment after a field trip to the beach.
Seaweed ID activities and games	Continue seaweed pressing methods to ensure seaweeds are well dried. Seaweed Secrets – Otago Marine Studies Centre provides a simple activity sheet on seaweed basic facts/structure from. Rimurimu fun facts – slides of seaweed facts.

	Practice ID and play ID games. Set up student-created quizzes to test each other.

Field Trip

Shore based activities
Collect samples and seawater for photosynthesis experiments.
Invite local experts to share knowledge on species, mātauranga Māori, learning about traditional seaweed uses and values.

Focus and learning objectives

- Gain further confidence with seaweed ID
- Collect seaweed samples for photosynthesis experiment
- Understanding of seaweed's ecological role in the ocean, including production of oxygen

Resources needed

- Waterproof seaweed and Rocky Shore ID guides.
- Camera
- Equipment for seaweed oxygen experiment (see video below) when back in class.

Suggested follow up activities and resources	
Seaweeds producing oxygen	Seaweed Oxygen Experiment – MEL Science YouTube video which shows how to set up the seaweed oxygen experiment. Set up this experiment in class using the Seaweed photosynthesis experiment. There are lots of variations you can try with your students.
Citizen science projects	Citizen science projects are a way in which students/volunteers are able to contribute to scientific projects, usually by collecting or analysing data. Before starting a citizen science project, check out these supporting resources: Planning for students to be citizen scientists Getting started with citizen science Teacher's Guide to using iNaturalist Floating forests asks volunteers to trace patches of kelp in images taken by Landsat satellites. Project Baseline Wellington A platform for divers, free divers and those interested in the local marine environment to

	contribute underwater and marine observations, help build a long-term record and inform the public about marine conservation. Observations of large brown seaweed distributions using iNaturalist.
In class activities	Can seaweed curb climate change? – Tim Flannery's TED talk video (15 minutes). The potential for seaweed to mitigate climate change.