

SUPPER IN THE SEA – Primary Science Programme

On-Line Version – 2020

Notes for Teachers

Under Covid-19, when schools are not able to visit the NZ Marine Studies Centre we wanted to provide you with a few programmes that schools can engage with from their homes or classrooms.

There are two ways this programme can be delivered:

1. **Independent Learning** - Choose a range of activities from the attached list for your students to carry out from their home or classroom using the resource links.
2. **Guided Programme via Zoom** – Our educators can engage with your students from the NZMSC using Zoom. Meet the touch tank animals and learn about their feeding strategies from the experts – all online. The attached range of activities can be used for pre and post activity. Note this programme is only possible under Alert Level 1 or 2 and a small charge will apply.

Programme Overview:

All living things need food to survive. What do marine animals and plants eat? What senses do they find their food? How do they catch their food? How do they avoid becoming food for another marine animal? This programme investigates the different feeding groups or trophic levels in the ocean, how they are all connected to each other, and the adaptations they have to aid their survival. We will be looking at a range of seashore animals and plants, and for each species we will investigate:

- What they eat and how they find their food
- Who their predators are and how do they protect themselves

Learning Outcomes:

- Students will be able to describe the unique adaptations that some of the local marine creatures have to survive
- Students will be able to model a food chain and/or a food web and explain the connections between the animals
- Students will be able to explain what it means if a creature is a predator, scavenger, grazer, producer and filter feeder

Curriculum Links – Years 4-8 Levels 2-4

Science: Living World:

- Ecology: Recognise that living things are suited to their particular habitat
- Life processes: Recognise that all living things have certain requirements so they can stay alive

Nature Of Science: Understanding, Investigating, Participating and contributing

Key Competencies: Thinking, Managing Self



Key Resources:

- [Fishy Web Cams](#) – live stream of tanks at NZMSC
- [Supper in the Sea Activities](#) – downloadable resources
- [Seashore videos](#) and [NZMSC videos](#) – students can view animals feeding

Short Programme (e.g. 1-2 lessons)

Lesson 1 Introduction – Video [Life in Rock Pools](#)

Watch the video to meet some of local creatures that we will be learning more about.

Lesson 2 Feeding strategies – Poster [Life in a Rock Pool](#)

Explore the types of feeders at different levels of the food web. Look for evidence of feeding behaviours.

Lesson 3 Examples of who eats who – Colouring book [The Rocky Shore Who Eats Who Colouring Book](#)

This colouring book highlights the different types of feeding strategies used by rocky shore animals and plants

Lesson 4 Creating a food web – Colouring book [The Rocky Shore Who Eats Who Colouring Book](#)

Use the example of a food web to create your own using the template provided.

Extended Programme (e.g. 4-6 lessons)

Refer to the matrix document (attached) for ideas and links to relevant resources. This explores in more detail each trophic level and extends students understanding of feeding structures and adaptations. Pick and choose what part of the food web you would like students to focus on and explore the supporting activities / videos.

For example:

Lesson 1 – Introduction to feeding strategies

Lesson 2 – Seaweeds & Plankton – Producers of the Sea

Lesson 3 – Filter Feeders – Finders of Floating Food

Lesson 4 – Grazers – Snacking on Seaweed

Lesson 5 – Predators – Crunching Carnivores (Carnivorous Critters)

Lesson 6 – Pulling it all together – Making Connections - food chain and food webs

Follow us on Facebook, Twitter and Instagram for more information, resources and activities. Sign up to our email list for newsletters through this link:

<http://eepurl.com/dgkWIL> to keep up to date.



Extended On-line Programme: - Supper in the Sea

This resource provides teaching ideas and resources links about the different feeding groups or trophic levels in the ocean, how they are all connected to each other via food chains / webs, and adaptations of marine species to aid their survival.

There are lots of videos to watch and activities to do to support your (students) learning. Many of these videos are found on our website www.marine.ac.nz.

Topic	Activity
<p><u>Introduction</u></p> <p>How do animals that live in the sea survive? What do they eat? How do they not become food for something else? We will be looking for evidence to try and answer the following questions:</p> <ul style="list-style-type: none"> - What do marine animals / plants eat? - Who eats them? - How do they protect themselves? 	<p>Look at (download and print if you can) the 'Life in a Rock Pool' poster. Read the information about some of our local animals and think about the answers to some of the questions or discuss with your family.</p> <p>Use the Rocky Shore Colouring book 'Who Eats Who?' to get you started on your way to learning about different feeding strategies.</p> <p>Watch the 'Life in the Rock Pool' video and meet some of our local creatures.</p>
<p><u>Producers</u></p> <p>Seaweeds need sunlight, nutrients and water to grow (produce their own food). They provide food, oxygen and shelter for many animals.</p> <p>Seaweeds need blades (like leaves) to capture sunlight for photosynthesis (making their food).</p>	<p>Watch the video from Greenstone TV on seaweeds- Kelp Help- and complete the worksheet 'Seaweed Secrets'.</p> <p>Find out more about seaweeds by visiting the Te Ara website, and discover early Maori uses for seaweeds such as Karengo and Bull kelp.</p> <p>Watch this video and have a go at making your own bag from an old T-shirt at home.</p> <p>Identify some seaweeds you know using the Southern Rocky Shore Guide. Can you describe the different features that help these seaweeds float? Discover more producers that are found in our local waters using our Marine Life Database.</p>

<p>Plankton are known as ‘drifters of the sea’. Most of them are microscopic and form the base of the food web in the ocean.</p>	<p>Place a flat piece of paper on the surface of the water in a bowl (see photo) and describe what happens. How does this relate to seaweed? Draw a diagram and label it.</p> <p>Find out about research on kelp that is being undertaken by Matt Desmond from Department of Marine Science at the University of Otago.</p> <p>Find the meaning for the word Phytoplankton (<i>Phyto= ,Plankton=</i>).</p> <p>What do you think zooplankton are? Watch this video about munida. What do they eat? Find out more about Plankton here.</p> <p>Baby crabs, like many baby marine creatures, are zooplankton when they first hatch. Find out more about a crab life cycle and have a go at the activities. Research and draw the Life Cycle of some other sea creatures like octopus or sea stars.</p>
<p><u>Filter feeders</u> These animals get their food in the way their name suggests- they filter the water to get the food that is in it. They do this in different ways.</p> <p>Filter feeders come in different shape and sizes, from the tiniest barnacle living on a rock to the largest animal in the world- the blue whale.</p>	<p>Mussels are filter feeders and eat phytoplankton (by passing all the water over specialised filtering structures that trap the microscopic plants.) They expel the particles that aren’t food. Watch the video link from Science Learning Hub about mussels to find out how they do this.</p> <p>Find out about how natural resources are being used by mussel farms.</p> <p>How do some rocky shore animals protect themselves and what do they need to protect themselves from? Watch the video of the tube worm to find out. What does the tubeworm eat?</p> <p>Observe how much energy it takes for this scallop as it escape its predator.</p>

	<p>The half crab is a filter feeder. It lives on the rocky shore at low tide. Watch this video of the half crab feeding. When do you think it is able to feed? How does the shape of the half crab help it survive?</p> <p>Watch these videos to find out how the blue whale gets its food: Blue Whale lunge Feeding Blue Whale off NZ coast</p> <p>Find out more about the Blue Whale from the Department of Conservation.</p>
<p><u>Grazers</u> Grazers like snails, chitons and limpets eat seaweed. They use their tooth like tongues -called a radula- to scrape at the plants.</p>	<p>Watch the Life in a Rock pool video and find out how the limpet gets its food? What adaptation does it have to protect itself? Name other Grazers with the same adaptation.</p> <p>Can you see some of them feeding in this video?</p> <p>Write 5 facts about the Kina after watching the video What sea animal eats like a cow. Include information about how it protects itself, what and how it eats, and what senses it might use to find its food.</p>
<p><u>Predators</u> This group of animals eat other animals to get their energy. Some move quickly to <i>chase</i> or <i>ambush</i> their prey, while others <i>crawl</i> over their food.</p>	<p>What sense do you think is important for predators to be able to get their food? Do all predators use the same sense(s)? Watch the videos of a various predators moving and catching their prey and make a list of the animals and the senses you think they use and what they are eating.</p> <p>Sea star lunch Seahorse Feeding Sea stars looking for food Sea star lunch 2 Marine animals feeding</p> <p>Find out more about the adaptations of sea stars from the Science Learning Hub.</p> <p>Many snails are grazers but some are not. Watch the video Life and Death on the Mud Flat and draw a simple food chain using the</p>

	<p>information from the video. What adaptations do the creatures have for survival?</p> <p>Camouflage is an adaptation that many animals use to protect themselves from being food. Watch the video from the Hakai Institute about camouflage -List some of the methods these animals use to camouflage themselves.</p>
<p><u>Scavengers</u> These creatures play an important role in the marine food web. They are the rubbish collectors of the sea and eat detritus, dead plants and animals, found on the sea floor.</p>	<p>The sea cucumber is a very important scavenger. Watch how it eats in the video. What sense do you think it uses to find its food?</p> <p>Some crabs and some sea stars are also scavengers (e.g. cushion and biscuit sea stars and the camouflage crab). Use the research worksheet 'My Research Project' to learn more about these animals or other scavengers in the ocean.</p>
<p><u>Conclusion</u> Now we want to try and put what we have learnt all together and create a food web showing the connections of the animals to each other and how they all have a part to play in the marine ecosystem.</p>	<p>Watch the video from California Academy of Science about food webs.</p> <p>Look at the food web in the 'Rocky Shore Who Eats Who' colouring book and make your own food web with our local marine animals by drawing your own pictures or use pictures from Rocky shore guide.</p> <p>Draw some food chains first, then connect them to make a food web.</p> <p>Find out more about food webs by watching this video on Science Learning Hub.</p> <p>Explore the interactive diagram by clicking on the pictures and learn more about the ecosystem and how trophic levels are connected. This features scientists from Department of Marine Science at the University of Otago.</p>

	<p>Watch a food web in action on this video Sardine Feeding Frenzy. This is called a bait-ball or meatball.</p> <p>Write about some things that you think might affect the food web. What do you think will happen if a predator is removed from the food web? Watch the video from Young Ocean explorers that helps explain this.</p> <p>Download and Print the Gulp and Swallow card game. Have a go at playing it at home.</p> <p>Complete our Supper in the Sea Booklet using knowledge you have gained.</p> <p>Cut up the Southern Rocky shore Guide and group the animals according to their feeding strategies. Create a food chain and food webs with the photos.</p>
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Extension Activities

1. Write a definition for the following terms: producer scavenger filter feeder predator grazer
2. Design a Marine Animal – What environment does it live in (its habitat)? What does it eat and what eats it? What are the adaptations it has for getting its food and protecting itself? Draw your animal in its habitat- label its features- or make a model. Refer to '[New Zealand Rocky Seashore Activities](#)' for further instruction.
3. Make a Marine Model - with clay or play dough. Use the '[Rocky Shore Guide](#)' or '[Who Eats Who](#)' colouring book to help with the shape and its features. What is the most obvious feature of each species? Think about how it is adapted to get its food and how it avoids its predators.
4. Murder Mystery - Now you have gathered lots of information about who eats who, have a go at our [Murder Mystery Activity](#) by downloading the Book and watching the [touch pool cams](#) and animal [videos](#).

Useful Websites

New Zealand Marine Studies Centre <https://www.otago.ac.nz/marine-studies/index.html>

Marine Metre Squared – www.mm2.net.nz/resources

Science Learning Hub <https://www.sciencelearn.org.nz>

- <https://www.sciencelearn.org.nz/resources/142-marine-organisms-and-adaptations>
- <https://www.sciencelearn.org.nz/resources/1126-adapting-to-marine-habitats>
- <https://www.sciencelearn.org.nz/resources/149-sea-stars>
- <https://www.sciencelearn.org.nz/resources/145-marine-habitats>

Young Ocean Explorers <https://www.youngoceanexplorers.com>

Other Curriculum Resources

Ministry of Education: [Science online](#)- Building Science Concepts

Book 4: Animal Life Histories

Book 5: Fur Feathers and Bark

Book 21: Life between the Tides

Book 22: Tidal Communities