

SDG14 Future of the Ocean

MM1: Introduction to Ocean Literacy



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Research and Development

Lesson 4: Interconnectedness: Marine Food Web

Subject Areas: CSPE, Climate Action and Sustainability, Geography, Science, SPHE

Lesson Title and Summary:

Interconnectedness; Marine Food Web

Marine food webs are crucial as they support diverse ecosystems, regulate nutrient cycles, and sustain countless species, including those upon which human livelihoods depend.

In this lesson, learners build on their understanding of the interconnections between humans, the land and the ocean by developing knowledge of marine food webs.

Vocabulary: Connection, Food Web, Interconnectedness, Ocean Literacy, Photosynthesis

In this lesson, the learner will:

- increase their ocean literacy skills
- understand the interconnectedness of humans, the land and the ocean (especially from a systems perspective)
- understanding human impact on the ocean
- develop inquiry-based thinking skills
- develop critical-thinking skills

Materials:

- Teacher's Guide: The Marine Food Web-Connection
- Supporting Resource: Marine Food Web (image)
- Ball of string
- Pen, pencil, colouring pens & paper
- Notebooks
- Post it notes

3 GOOD HEALTH AND WELL-BEING



11 SUSTAINABLE CITIES AND COMMUNITIES



13 CLIMATE ACTION



17 PARTNERSHIPS FOR THE GOALS



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L4: Interconnectedness: Marine Food Web



Activity Instructions

Activity 1: The Marine Food Web- Introduction (15 mins)

1. Project the image of the marine food web.
2. Ask learners to work in pairs to describe what is happening in the food web.
3. Ask learners to share their ideas as a whole class, brainstorming ideas around the projected image.
4. Give an explanation of the marine food web (see Teacher's Guide) to sum up and add to the ideas already shared.

Activity 2: The Marine Food Web - Connection (35 mins)

You will need a large indoor or outdoor space to complete this activity.

1. If there are more than 10 learners, you can use 10 volunteers or all of the class to show interconnections within a marine food web. You will need open space for this activity.
2. Form a circle, with the marine food web from the presentation on display. Ask learners what drives the web? (sunshine).
3. Ask someone to move into the middle of the circle and give them the end of a ball of string and tell them they are the sunshine.
4. Ask 'what does sunshine give energy to in the ocean?' (plankton). Sunshine then passes the ball of string to Plankton (another learner) in the outer circle holding onto the end.
5. What eats plankton? (zooplankton), string is passed to another learner.
6. Continue this up the food chain, using the marine food web slide as a guide (print Supporting Resource).
7. When everyone has a piece of the string, ask them to hold it tight. Ask them for an example of something that humans could have influence on within the system that is now interconnected. What would it affect? Anyone who thinks they will be affected needs to sit on the ground.
8. Discuss what happens to the rest of the system? All learners will feel a tug on their piece of string. This simulates the stress on the other elements within the marine food web.
9. Discuss this connection and why it is important.
 - How delicate is the marine food web?
 - What are the consequences of disrupting the connection?

REFLECTIVE EXERCISE: 3-2-1 (10 mins)

- Three things they feel they have learnt from the tasks
- Two things they found most interesting and would like to explore more
- One opinion they have about the activities, what did they like or how they would improve them

Use Post-its or a mentimeter survey - www.mentimeter.com to gather reflections

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EXTENSION / REDUCTION ACTIVITIES

Reduction: For a shorter class, complete Activity 1 only and lengthen the activity by asking learners to write and illustrate a description of a marine food web using local coast examples. Complete Activity 2 in the following lesson.

Extension: For a longer class, include a discussion with learners on interconnectedness and how the system could be affected by one thing we do as humans.

MEDIA BOX: (materials, online video links, extra resources, case studies etc)

Video: The Food Web - Jessica Harvey Expedition Notebook [3:08 mins] <https://www.youtube.com/watch?v=PLQMKNKZv8v8>

Video: Marine Long Chain Food Webs [4:08 mins] <https://www.youtube.com/watch?v=pDsn1MtNdY>

Video: Marine Food Web and Ecosystem [8:54 mins] <https://www.youtube.com/watch?v=0DYR6w7e2zE>

Website: Cullen Fellow co-creates a food web model for the Irish Sea <https://www.marine.ie/site-area/news-events/news/cullen-fellow-co-creates-food-web-model-irish-sea>

Linked Learning: Use MM7 Media Communications: Poster to work with learners to develop awareness-raising posters about Ireland's marine food web.

Local Trip / Expertise / Additional Work and Assessment

Organise a trip to Bord Iscaigh Mhara for learners to experience Ireland's rich marine heritage, focusing on sustainable fishing practices, marine conservation, and the importance of seafood industry to the economy.

Using MM7 Media Communications: Poster, research and create a poster that shows the marine food web in Ireland. Collaborate with science teachers to compare other food web systems in Ireland and their connections to the marine.



Activity 1 What is a marine food web?

A marine food web is an ecological system that shows the interdependence of various marine organisms within a specific water environment. Interconnectedness is how a group of objects interact with each other and one another to form a complex whole that operates as a system. There are many different interconnections in the world from international to local, ocean and land.

Imagine the underwater world as a dinner party, where everyone has a role to play in keeping the ocean healthy and happy. This is what we call a "marine food web." At the very bottom of the party are the "producers," like tiny plants called phytoplankton and algae. They're like the chefs of the ocean, using sunlight to cook up some energy through a process called photosynthesis.

Next are the "herbivores," the plant eaters. They munch on the producers and include creatures like sea urchins and snails. Moving up the ladder, we meet the "carnivores," who are the meat eaters. Fish like sharks and cod join in, gobbling up herbivores.

There are some who like both plants and meat – they're called "omnivores." Animals like crabs and seagulls belong to this group.

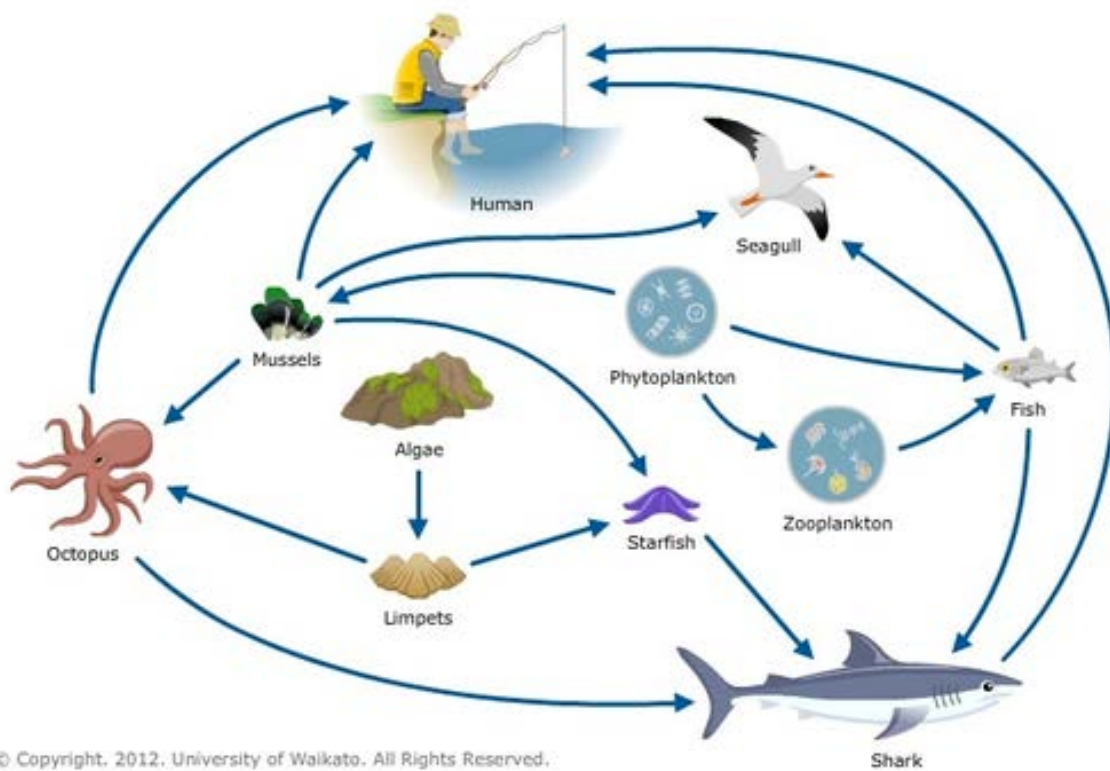
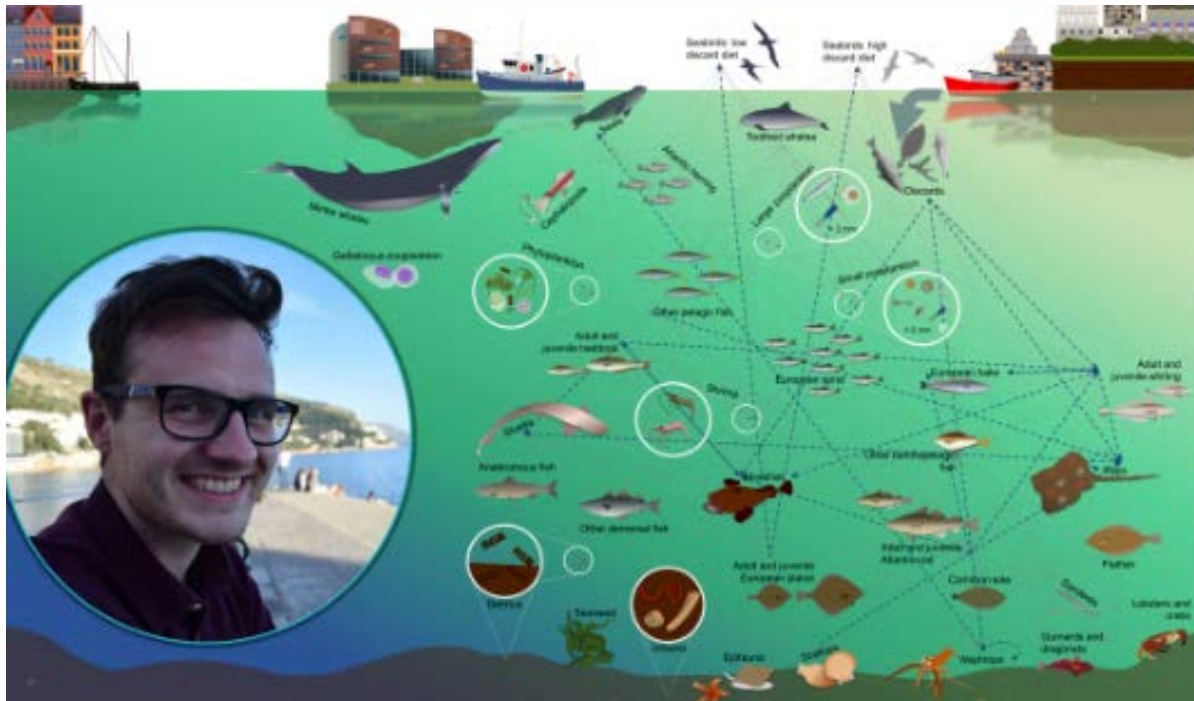
Now, every good dinner party needs a clean up crew. That's where the "scavengers" come in – they eat the leftovers and make sure nothing goes to waste. Sea stars and crabs are like the ocean's clean-up crew.

Remember, everyone is connected at this underwater feast. If one group gets too big or too small, it can cause a ripple effect, affecting the whole party.

MM1: L1WS MARINE FOOD WEB



<https://www.marine.ie/site-area/news-events/news/cullen-fellow-co-creates-food-web-model-irish-sea>



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