→ Level: First P2 – P4

# Marine Food Chains

MACDUFF MARINE AQUARIUM

## Objective

To examine simple relationships between organisms living in the Moray Firth and explore how this affects their survival.

## Experiences and Outcomes

**SCN 1-02a**
I can explore examples of food chains and show an appreciation of how animals and plants depend on each other for food.

## Background Information

Most people are familiar with the array of colours of tropical coral reefs or images of penguins and polar bears on the icebergs of the north and south poles. It is, however, the temperate seas that are inhabited by a rich diversity and abundance of life. Temperate seas lie between the tropical seas and the polar seas and range in temperature from 5°C to 15°C. The North Sea lies within the temperate zone and is one of the most productive seas in the world, its cool, nutrient rich waters are ideal for the growth of plankton which is the source of energy that sustains the rest of the marine life in the Moray Firth.

In any natural environment, the survival of a species is dependent on its ability to make or find food. Lack of food can result in entire populations of plants and animals disappearing. Plants produce their own food by using light energy from the sun and converting it into sugars in a process called photosynthesis. Like trees on land, plants living in the sea produce sugars from sunlight and this enables them to grow and reproduce.

### Plankton

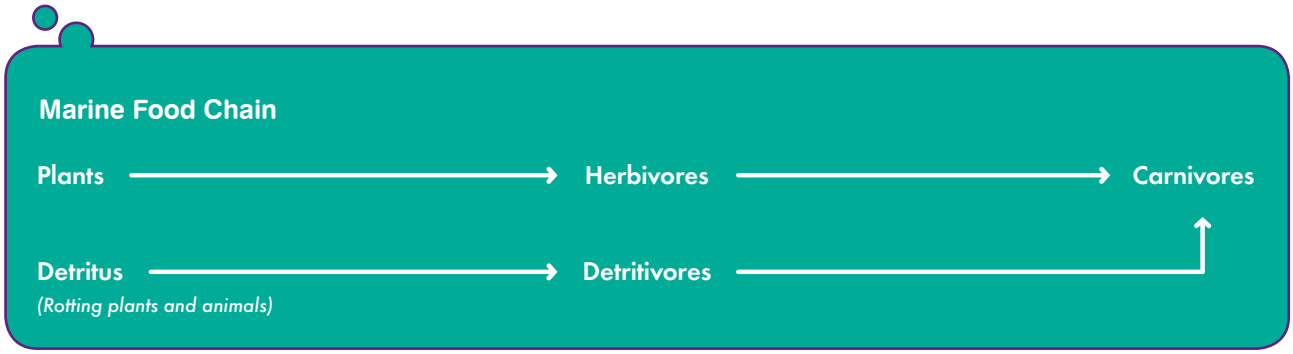
Seaweed and eel grass are the most notable plants living in the sea, however phytoplankton are tiny microscopic organisms similar to plants that grow in vast numbers in the surface waters of the sea and play an important part in the marine food chain. For the purpose of this activity, phytoplankton will be known as plant plankton.

Zooplankton, or animal plankton, are tiny animals living in the surface waters and include copepods, krill and jellyfish, which feed on plant plankton.

In marine food chains, plants and plant plankton (the producers) are eaten by herbivores such as animal plankton, urchins and snails. Herbivores then become the food for carnivores such as sand eels, wolf fish and herring gulls. Herbivores and carnivores are also sometimes known as consumers.

Some animals survive by consuming dead plants and animals and even eat animal waste (faeces). When this waste falls to the sea floor it is known as detritus and it begins to rot, becoming food for bacteria, worms and crabs. These animals are called detritivores which become part of the food chain, being consumed by carnivores such as cod, flounders and rays.

Continued overleaf →




## Activity

**Predators and Prey in the Moray Firth Activity Worksheet 1**
Ask the children to look at the animals found in the Moray Firth and using the clues to assist, connect the predator to the prey by drawing lines between the animals.

**Moray Firth Marine Food Chains Activity Worksheet 2**
Cut out the images of the plants and animals in boxes.

Discuss with the class the differences between producers, herbivores, carnivores and detritivores and sort the plants and animals into the appropriate group.

Using the information about each plant and animal, create food chains of who eats who.

Ask the children what happens to animals when one of the links is removed from a food chain.

## Discussion Points and Follow-on Activities

Marine Food Webs Activity is available for advanced classes in Second Level resources.

Study the animals within the food chain and investigate how they are adapted to finding, catching and eating their food.