

Sorting Living Things

Background Information

It is estimated that there are nearly 9 million species of living things on the planet. This vast figure includes everything from microscopic bacteria and fungi to large mammals and birds. Of this 9 million species, there are approximately 1.5 million species living in the sea, many of which have not yet been discovered. Over time, new species evolve and others become extinct. Extinctions may be caused by natural events such as a volcano erupting, wiping out an island colony, or may be due to human actions such as hunting.

Biodiversity

Biodiversity is the variety of living things existing on Earth. An environment can be described as rich in biodiversity; it has many different species surviving in it, or poor in biodiversity; lacking a variety of species living within it.

For centuries scientists have been discovering new species and classifying them into groups according to their common characteristics. Each organism is grouped into categories according to its features and given a name. The largest categories are known as kingdoms, and include the plant and animal kingdom.

Exploring the Plant Kingdom

There are over 300,000 species of plants on the planet, from large conifer trees to tiny flowering plants, however the marine environment is dominated by algae. Algae are a diverse group, including single celled plankton species to enormous kelp plants. Large seaweeds inhabit the rocky shores around our coast, attaching to the rocks using a holdfast. Their stalk, or stipe is flexible to move with the waves and their fronds sway in the water, capturing sunlight in order to grow. Algae are simple plants and reproduce by releasing spores into the water.

Exploring the Animal Kingdom

The animal kingdom branches into invertebrates (animals without backbones) and vertebrates (animals with backbones).

Objective

To compare the similarities and differences between living things.

Experiences and Outcomes

SCN 101a

I can distinguish between living and non-living things. I can sort living things into groups and explain my decisions.

Invertebrates

These animals lack a backbone in their bodies. 97% of all animals are invertebrates and in the marine environment there are over 160,000 known species. There is an incredible diversity of invertebrate forms, from simple sponges and jellyfish to octopus and insects. There are no marine insects and so insects have not been described below.

Sponges are very simple animals; they come in all shapes, colours and sizes. Sponges stick to the sea floor and feed by drawing water in through hundreds of holes in their bodies, filtering it for food and pushing it out again.

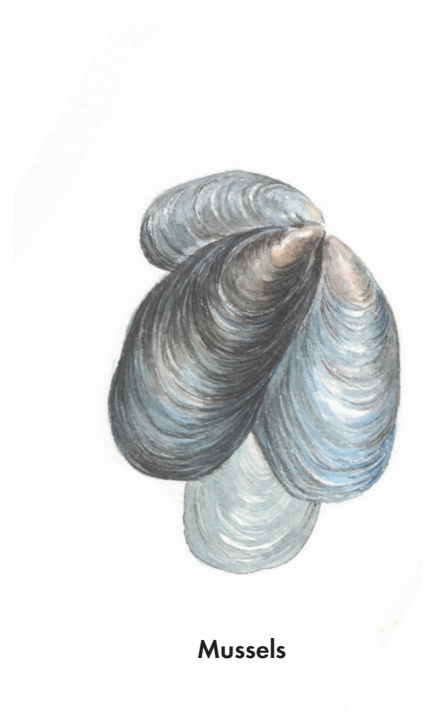
Anemones, corals and jellyfish have a circular body shape with a central mouth that is surrounded by stinging tentacles. They may exist as stuck-down polyps, like sea anemones, or be free-swimming like adult jellyfish.

Worms have long bodies with a head end and a tail end. They may be flat, round or segmented. Familiar marine worms include lugworms and peacock worms.

Molluscs have a head, a soft body and a muscular foot and some have shells. They are a diverse group and include gastropods (snails with a single shell), bivalves (with two-part shells such as oysters, mussels and clams) and cephalopods – octopus, squid and cuttlefish.

Arthropods are a large group of animals with over 1.5 million species on the planet. The group includes crustaceans such as crabs, lobsters, shrimps and barnacles. All have several pairs of jointed limbs, a tough external skeleton and stalked eyes.

Echinoderms, the spiny skinned animals, are all marine animals and include starfish, sea urchins, brittle stars and sea cucumbers. These animals have radiating body parts (star-shaped), with a central mouth and special tube feet for moving around.



Mussels

Vertebrates

There are 5 groups of vertebrates; mammals, birds, reptiles, amphibians and fish.

Fish are cold-blooded animals with scales covering their bodies. They breathe air through gills. Fishes' eggs are laid and hatch in water. The egg contains nutrients which the young uses to develop before it hatches and is left to fend for itself alone in the sea.

Amphibians are cold-blooded animals with soft leathery skin. Amphibians breathe air through gills when they are young and lungs when they are adults. They lay eggs outside their bodies, in water. After hatching they spend part of their life in the water before they lose their gills and come onto land. There are no marine amphibians.

Reptiles are cold-blooded animals; they breathe air through lungs and have scales covering their bodies. The female lays eggs in the ground that are fertilised outside her body. The egg contains nutrients which the young uses to develop before it hatches. The parents do not nurture either the egg or the young.

Birds are warm-blooded animals and breathe through lungs. Their bodies are covered with feathers and their feet are covered in scales. The adult birds mate and fertilisation occurs inside the female's body, eggs are laid in nests and the young are protected in a hard-shelled egg which contains nutrients for the developing chick. The parents nurture the egg until it hatches, and care for the young until it is ready to fledge.

Mammals are warm-blooded animals and most have hair or fur on their bodies, they breathe through lungs and the young develop inside the female gaining nutrients from a placenta. After birth the young suckle milk from the mother and stay with their mothers for several months or years.

Activity

Use the 'Sorting Living Things' activity worksheet to match organisms that have common characteristics.

Discussion Points and Follow-on Activities

Follow on with 'Identifying Animals', available for advanced classes in second level resources.