

Populations

These activities are intended to teach children how animal and plant populations can be affected by different environmental factors

Blooming Algae

An aquarium tank or other vessel filled with water will soon become colonised by algae. Many of these simple plants are invisible to the naked eye at low populations but under certain conditions their populations will "bloom" and turn the water green. Fill identical aquaria or other suitable transparent vessels with tap water. Leave for a day or so to allow chlorine to leave the water. Take some water from a pond and introduce an equal quantity to each vessel; this should help to start your algal colony. For faster results, you can add an equal quantity of visible algae to each vessel. Observe how the "greenness" varies between vessels exposed to different levels of oxygen (use an air pump to vary), temperature, sunlight and chemical nutrients (use organic fertilisers, artificial fertilisers or simple chemicals, perhaps comparing the effects of each). Observe what happens to the algal colony after its bloom.

Flower Wars

Measure the heights of plants of a given species in two locations which differ only in that one is more shaded by other plants (perhaps trees or bushes) than the other. Plant seeds in arrangements which will demonstrate competition. For example, plant one strip of seeds between strips of the same species which have been planted earlier, and at the same time plant another strip away from others which would compete for light. Compare the heights of plants grown from seeds planted at different densities. Compare the success of species planted in mixtures with that of the same species planted in single species stands.

Homing Snails

Find some snails and mark their shells with very small dabs of bright nail polish in different colours. Mark the place where they were found similarly and check regularly to see how far they move. Move them 2m away from their "home" to see whether they can find it again.

Human Pyramid

Ask each pupil to write down the name of a plant or animal that lives in the habitat under discussion. Then announce that you are going to build a pyramid. Ask those who gave the names of plants to kneel down on all fours, to be the primary producers which support the whole pyramid. Ask the plant-eating animals to prepare to climb on top, and the meat-eating animals to be ready to

go on top of them. By this stage it will probably be apparent that the structure would be top heavy and not sustainable. Challenge the pupils to alter their species choices such as to construct a stable pyramid.

Making a Pyramid

The data needed to construct a pyramid of numbers or biomass can be collected from any habitat (see Rocky Shore Biomass Pyramids), although this must not be done destructively. Bear in mind that in some cases the lowest level may be difficult to quantify (i.e. where phytoplankton includes the main producers) or may consist of a very small number of large plants (biomass is more useful here). The pyramid can be constructed as a diagram, as a painting or mural featuring illustrations of species, or as a model. Boxes of appropriate relative sizes can be used for the levels and decorated with pictures of the relevant species.

Variation

Count the number of petals (or the number of ray florets in composite flowers) in individuals of the same species growing under the same conditions. Compare the lengths of tadpoles hatched from the same clump of spawn (i.e. laid by the same frog) and kept under the same or different conditions.