HOLYWELLS PARK | 01473 433990
email: holywells.recp@ipswich.gov.uk

IPSWICH BOROUGH COUNCIL
Heritage LOTTERY FUNDED

7 Energy

INTRODUCTION

The Sun gives life to the Earth and the Earth would have no life at all without the energy it receives from the Sun.

Producers and consumers

Plants are called producers because they make their own food. Plants get their energy from the Sun through photosynthesis. They are at the start of a food chain. A food chain is a series of organisms connected by the flow of energy and shows what eats what in a particular habitat. Each stage of the food chain needs the plant/animal before it as a source of food. For example, oak leaves are eaten by caterpillars which are eaten by small mammals, and these are eaten by barn owls. The arrows between each organism in the chain always point in the direction of energy flow from the food to the feeder.

Consumers

Consumers are animals that get energy and nutrients by eating other animals or plants. For example:

Caterpillars eat leaves → mice eat caterpillars → owls eat mice

The links between animals and plants are called food chains. The arrow means 'is eaten by'. Nearly all food chains start with a green plant or parts of a plant i.e a leaf from a tree. Most animals and plants are part of more than one food chain. These are all connected together to form a food web.

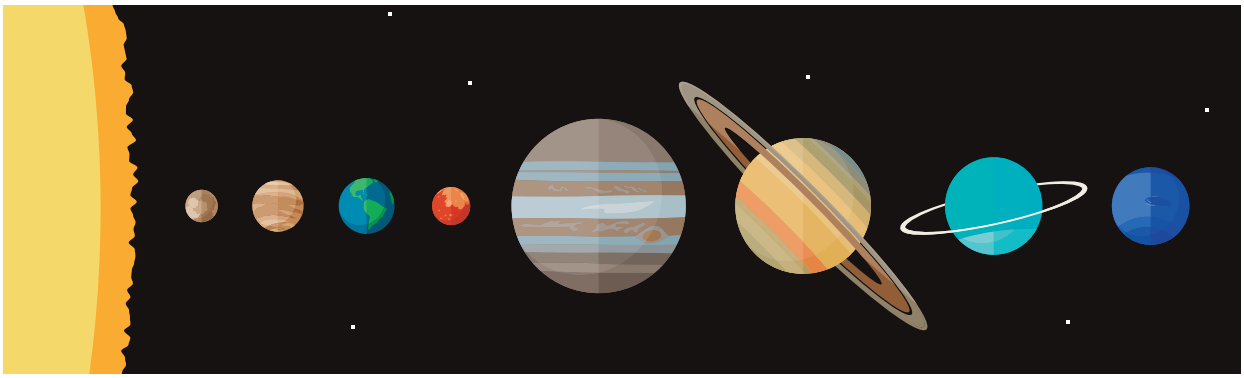
Changes to food chains

If one part of a food chain changes, the whole food chain is affected. For example, if a disease suddenly wiped out caterpillars, it would affect mice, owls and many other animals. Human impacts can affect food chains, for example pollution, which can affect the producers and has greater effects through the food chain. The top predator in the food chain eats a large number of other animals that have eaten polluted food.

Photosynthesis

Plants need air, light, warmth, water and nutrients to be healthy. If they are healthy, they can continue making their own food through photosynthesis. The roots, leaves and the stem of a plant have different functions that help to keep it healthy.

ACTIVITY 1 SOLAR SYSTEM SIZE UP



INTRODUCTION

Our solar system consists of an average star we call the Sun, and planets Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto. It includes the satellites of the planets; numerous comets, asteroids, and meteoroids. Although they can be seen from a distance, the relative sizes of the Moon, Earth and Sun is unknown.

MATERIALS

Range of spheres, beach ball, football, tennis ball, ping-pong ball, marble, peppercorn, coriander seed and small beads.

INSTRUCTIONS

1. Ask the students to work in groups and to put the Earth, Moon and Sun in order of size by choosing from a range of spheres e.g. beach ball, football, tennis ball, ping-pong ball, marble, peppercorn, coriander seeds and small beads
2. Do the students understand that the Sun is larger than the Earth and that the Moon is smaller? Choose the largest sphere and explain that it represents the size of the Sun. Ask the students to suggest which sphere might represent the correct size of the Earth and then which might represent the size of the Moon. (For a 60cm beach ball Sun, the Earth is a blueberry (1cm) and the Moon is a coriander seed or tiny bead
3. If the beach ball is chosen, the equivalent distance to the Earth (blueberry) should be approximately 12m

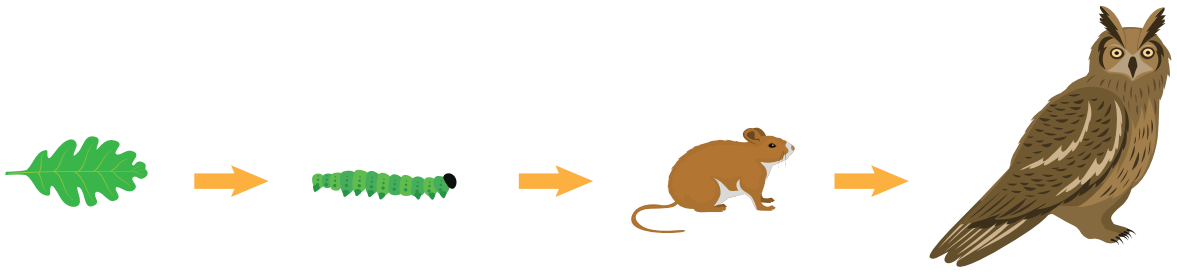
STAY SAFE

- Beware of younger students potentially choking on smaller objects.

REVIEW

Why is the sun so important for life on Earth?

ACTIVITY 2 HOLYWELLS FOOD WEBS



INTRODUCTION

This session gives students the chance to create food chains/webs by putting themselves in one with the habitats and thinking about the animals that live there and how they are connected. Students will better understand the transfer of energy through the food chain, as well as understand that the sun is the primary source of energy in a food chain. This lesson ends with students constructing their own food chains on paper, and writing a summary paragraph.

MATERIALS

Pen, paper

INSTRUCTIONS

1. A Venn diagram would be appropriate for classifying, herbivores, carnivores and omnivores KS1
2. Then try doing the same by thinking what animals live there in the park
3. KS 2 should do the same but try and expand their Venn diagram into a food web
4. Write a summary paragraph to explain the flow of energy through the food chain they constructed

STAY SAFE

• Slips, trips and falls

REVIEW

Try and do a food chain for some of the other Park habitats i.e. freshwater, woodland, grassland.

ACTIVITY 3 ENERGY CURRENCY

INTRODUCTION

This activity can be run with varying degrees of complexity depending on the age and ability of your pupils. For all versions, each child is given an animal character, e.g. as a sticker/on string/as a laminated photo.

MATERIALS

- You will need a mixture of species across all the categories of producers, primary consumers, secondary consumers
- You may also need lots of different colour pegs or tokens that represent energy that can be passed around from one student to another

INSTRUCTIONS

1. Students need to find another character they might eat, or that might eat them. Move around the room until you are in a group of 3 or 4
2. They can only take tokens from a creature they would eat. Gradually introduce the secondary and tertiary consumers into the game. Who ends up with all the energy? This can be simplified by using “characters” from just one food chain, or by only having three layers e.g. bluebells, aphids, and ladybirds
3. These pegs can be attached to the strings or pegged to the clothes of the students
4. If using multi-coloured tokens and pegs, why not reveal a secret poison, that only acts when a character has three or more tokens of that colour (bio accumulation of chemicals, e.g. slug pellets kill hedgehogs)

STAY SAFE

- Dynamic game which involves running around.
- Maintain safe working distances and wear suitable footwear.

REVIEW

Were you able to use animals from the park? Remember each habitat has its own “trophic level”.