

# YEAR 4: LIVING THINGS & THEIR HABITATS

## LINKS TO NATIONAL CURRICULUM

- Recognise that living things can be grouped in a variety of ways (Living things and their habitats, Year 4).
- Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment (Living things and their habitats, Year 4).
- Recognise that environments can sometimes change and that this can sometimes pose dangers to living things (Living things and their habitats, Year 4 ).

### LEARNING OBJECTIVES

1. How can living things be grouped?
2. How can classification keys can be used to help group, identify and name living things?
3. How can changes in the environment pose dangers to living things?

## NOTES TO TEACHERS

- Please note that the Year 4 requirement to "*construct and interpret a variety of food chains, identifying producers, predators and prey*" is covered in the Key Stage 1 Animals lesson plan:  
<http://yppte.org.uk/lesson-plans/animals-key-stage-1>
- One of the curriculum requirements is that children explore living things in their local and wider environment. For more detailed study of animals and plants in different habitats in the UK and around the world, please see <http://yppte.org.uk/lesson-plans>
- The lesson plans are not intended to be of equal length and can be amalgamated or split to suit timings.
- The PowerPoint presentation runs alongside the plans and all slides are referred to in the lesson plans. Please feel free to modify the presentation by adding your own slides or deleting those you don't need.

# 1. HOW CAN LIVING THINGS BE GROUPED?

## SUGGESTED STARTER ACTIVITIES

### How can we sort ourselves? (link to Numeracy)

Ask the children to think of different ways they can group members of their class e.g. hair colour, height, favourite subject, favourite football team etc. Draw attention to the fact that one person can often belong to more than one group. They could collect information and draw different types of graph to display their results.

### Why is grouping helpful?

Can the children think of situations where grouping objects or people can be helpful e.g. food is arranged in categories in a supermarket so that it is easier for us to find, while goods are laid out in different areas of department stores. Children could discuss in groups and their ideas can then be recorded in a mind map on the whiteboard.

## TEACHER INPUT

### KEY WORDS

**Organism** - something which can grow, respire (take in oxygen), excrete (get rid of waste), reproduce and is sensitive to changes in its surroundings.

**Species** - particular kinds of living organisms.

**Genes** - tiny parts in all your cells which give you certain characteristics (e.g. colour of eyes, height, personality) and can be passed onto the next generation.

**Vertebrate** - animals with a backbone.

**Invertebrate** - animals without a backbone.

**Slide 4:** Anything that is alive is a living **organism**. If we look around us, we can see huge numbers of different organisms (ask children to name some). This

enormous variety of life on Earth is sometimes known as "biological diversity" or "biodiversity".

**Slide 5:** Ask the children how libraries are organised and what would happen if the books were randomly displayed. It is helpful to divide living organisms into groups by looking at the similarities and differences between them - this "grouping" is known as classification and it makes things easier to identify and study.

**Slide 6:** All species are different, though some can be very similar to other species. Squirrels can be put into one main group as they have lots of things in common such as bushy tails and long, sharp front teeth. But within this group there are lots of different species of squirrel - more than 200, living all over the world!

**Slide 7:** Ask the children if they know which species we are closest to? Chimpanzees are the closest species to humans, although there are obvious differences in appearance and behaviour. If they have seen chimps in a zoo or wildlife park, did they notice any similarities or differences?  
Similarities - spend lots of time socialising, show affection for each other, facial expressions, both can walk on 2 legs.  
Differences - chimps are more hairy, different shaped jaw and nose, longer arms and shorter legs, prefer to move around on 4 limbs.

Living things can be sorted into many different groups. How many can the children think of?

**Slide 8: Plant or Animal?** It is usually very easy to tell the difference between a plant and an animal.

## Grouping Animals

**Slide 9: Vertebrate or Invertebrate?**

These are the two main groups of animal. Within the family of vertebrates we can sort animals into more detailed categories. Within each category, there are many groups and within each group there are thousands of species.

**Slides 10-14: Vertebrates** - children will probably have learned about the 5 classes of vertebrates at Key Stage 1, but you may wish to recap with them:  
<http://ypte.org.uk/lesson-plans/animals-key-stage-1>

**Slides 15-23: Invertebrates** - some fly, some crawl, some swim, some wiggle and others squirm! But they all have one thing in common - they do not have a

backbone or skeleton. But there is huge variation between them, so they can be sorted into different groups. Minibeasts are all invertebrates.

#### **Slide 24: Warm or cold-blooded?**

**Warm-blooded** means the temperature of the inside of the body remains the same all the time. Some warm-blooded animals can even survive the freezing temperatures of the polar seas. All mammals and birds are warm-blooded and this makes them the most widespread vertebrates, living in every major habitat in the world.

**Cold-blooded** animals cannot maintain a steady body temperature - their body temperature changes along with that of their surroundings. Fish, amphibians, reptiles and all invertebrates are cold-blooded.

**Slide 25:** The development of animals over time has not been smooth and organised and as a result, some animals do not fit their category description very well. Often animals, such as bats, have developed characteristics that seem better suited to another category. **Bats have always been mammals**, but they have wings which have developed from membranes of skin along their arms which are stretched out by elongated fingers. They developed flight separately from birds and fly in a different way - flapping the membranes between their elongated fingers to create lift.

### **Grouping Plants**

**Flowering and non-flowering** - this is the main grouping used for plants, although there are further sub-divisions within each group:

**Slide 26:** **Flowering** plants produce flowers in order to reproduce. The life of a flowering plant has a cycle like pattern - flowers come from seeds, and they create seeds too. The life cycle of a flowering plant is covered in the Plants Lower Key Stage 2 lesson plan:

<http://yppte.org.uk/lesson-plans/plants-lower-key-stage-2>

**Non-flowering** plants do not produce flowers. There are two main types - those that use seeds to reproduce and those that use spores:

**Slide 27:** Non-flowering plants that use **seeds** to reproduce are called **gymnosperms** and include conifers such as pine and fir. Conifers use cones to house their seeds.

**Slide 28:** Other non-flowering plants do not produce seeds and instead use **spores** to reproduce e.g. mosses and ferns. Spores are tiny organisms. Plants

that make spores produce huge numbers of them. They are very small and light, so can easily be dispersed by the wind.

*Further information on the grouping and classification of living things can be found here:*

<http://yppte.org.uk/downloads/conservation-education-classification>

## **SUGGESTED ACTIVITIES**

### **Sorting Task (pages 6-8)**

Ask the children, in groups, to cut out the animal pictures and then sort them according to their own criteria. Encourage them to use their own ideas and ask them to record the names of all their groups and the animals that belong in each group e.g. warm/cold-blooded, vertebrate/invertebrate, wings/no wings, number of legs etc. They will see that an animal can belong to many groups.

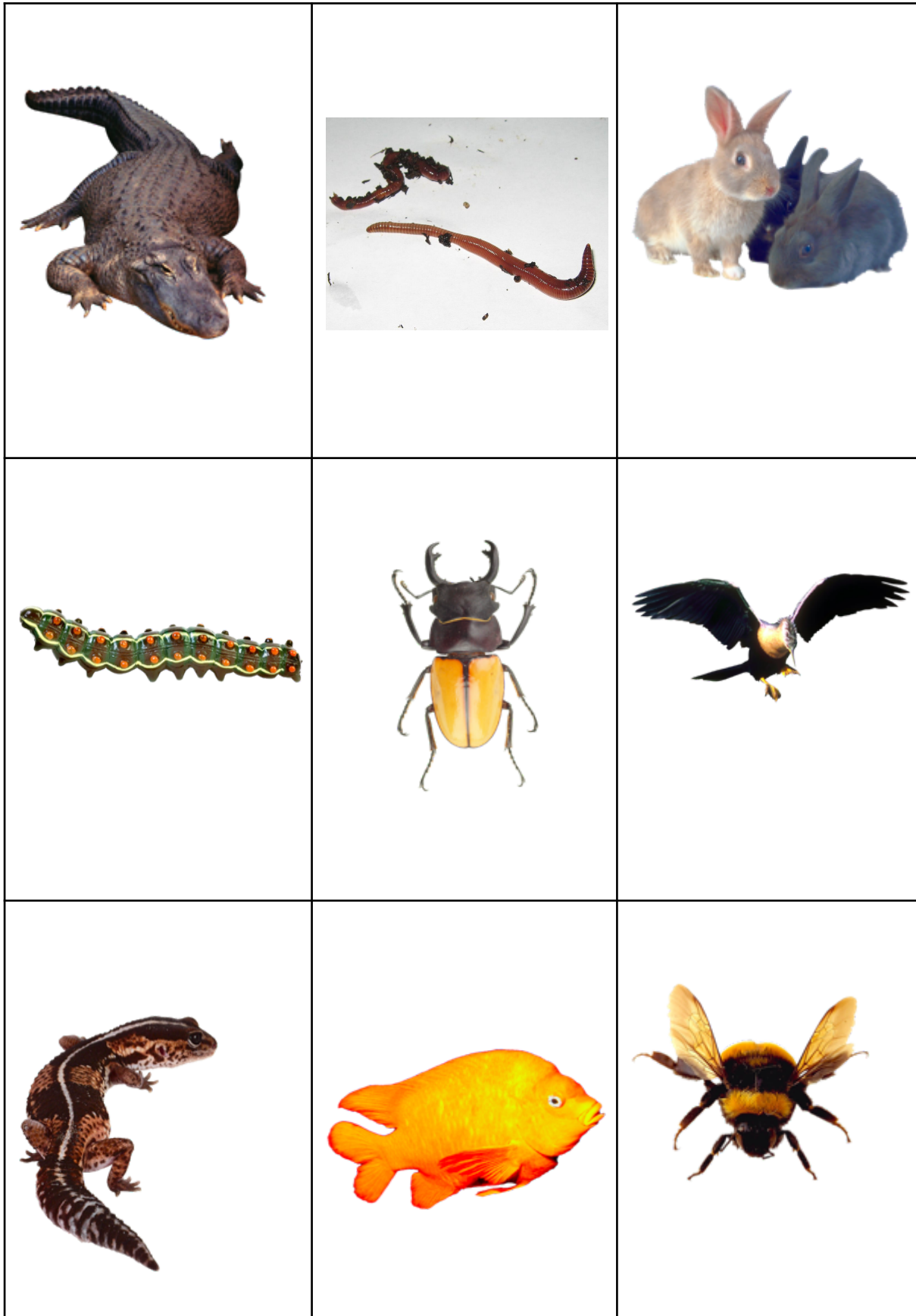
### **Creative**

Ask the children to imagine they are professional biologists who have just discovered an exciting new species of animal. They should describe and draw the physical characteristics of their animal. They could also write a fact file including information on where in the world they made the discovery, the animal's habitat and its behaviour. What name will they give their animal?

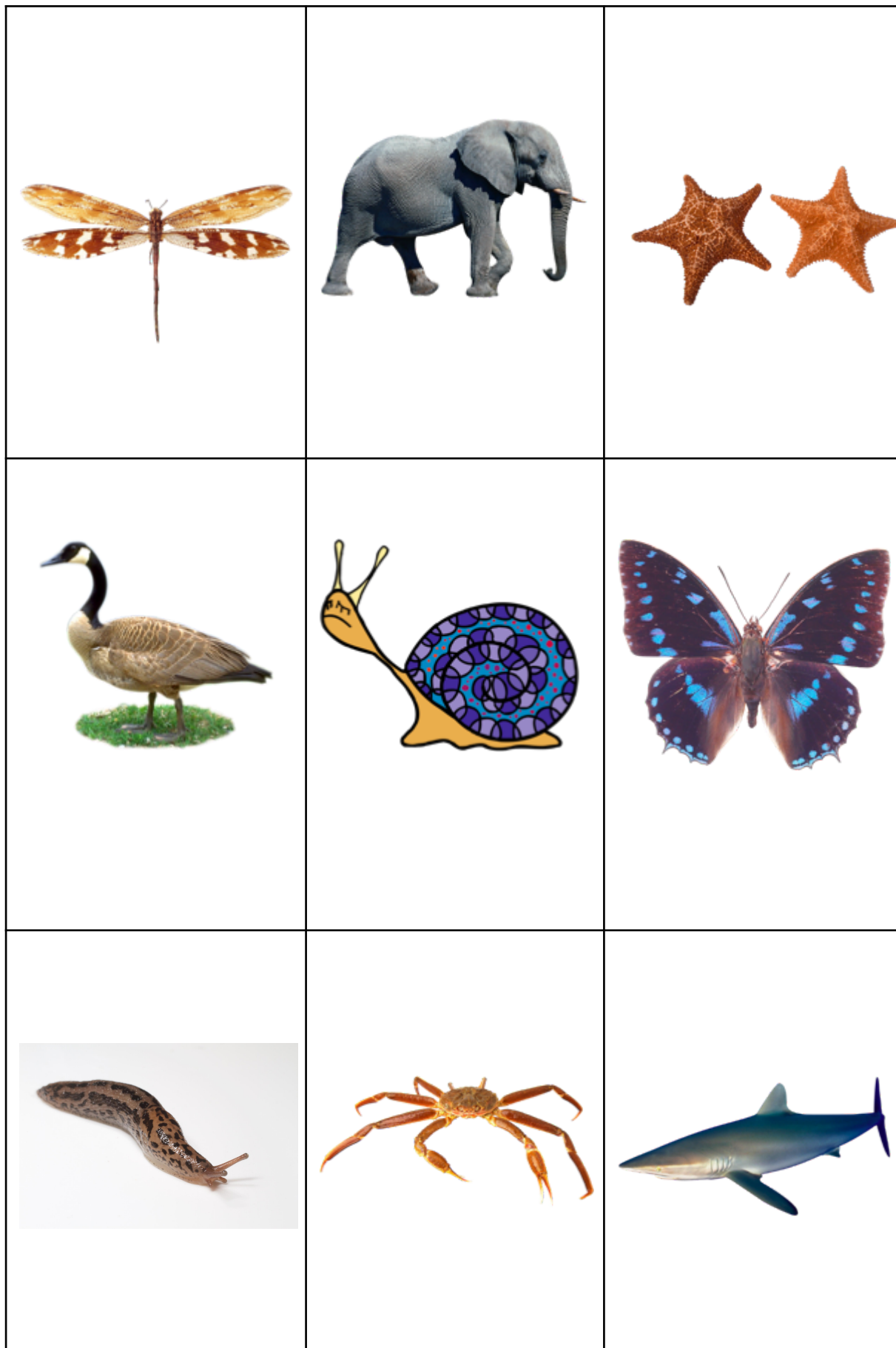
### **Research**

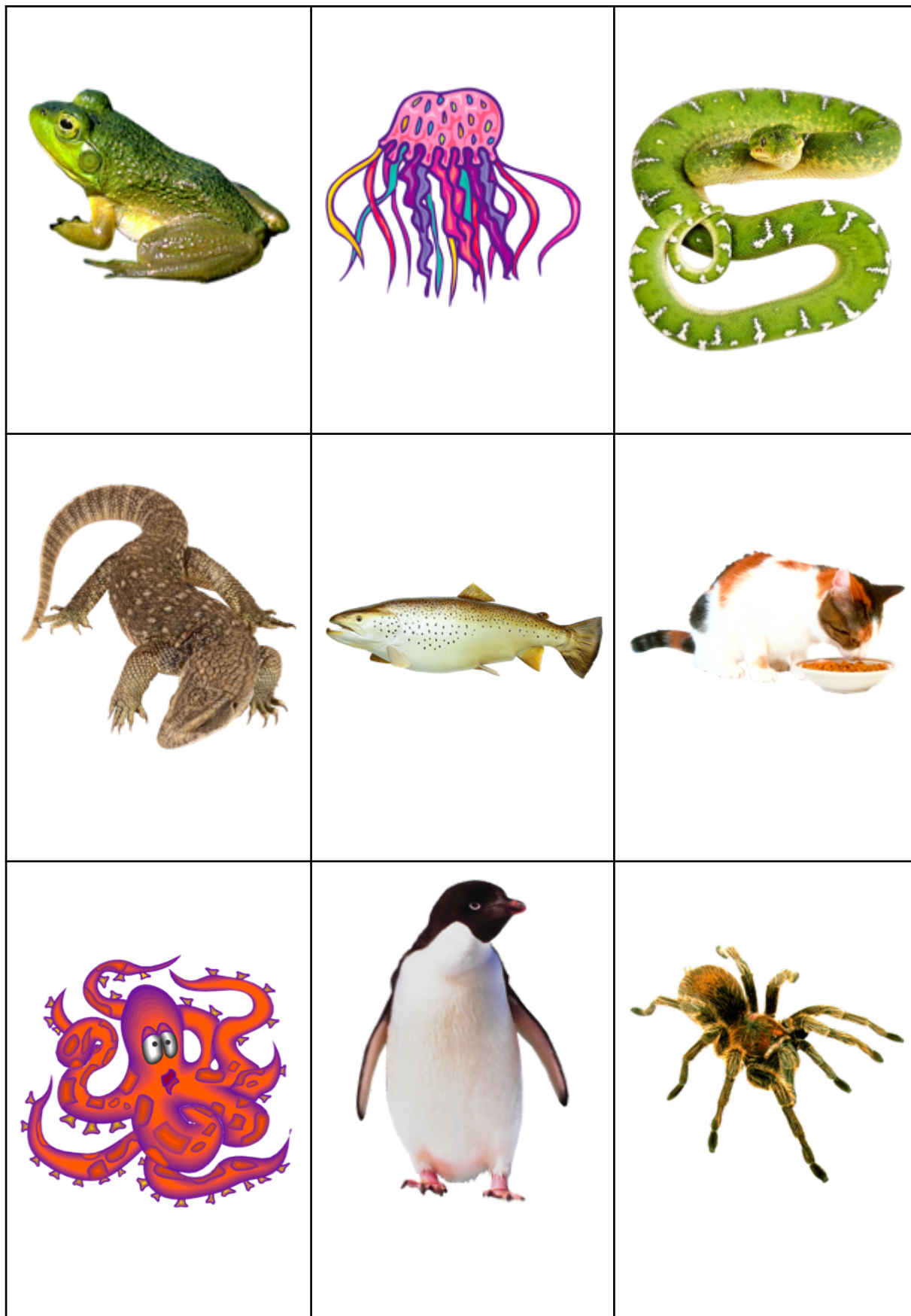
New species are still being discovered, especially in our rainforests and oceans. Can the children research a species of plant or animal that has recently been discovered and produce a fact file on it?

## ANIMAL SORTING ACTIVITY











## 2. WHAT CLASSIFICATION KEYS CAN BE USED TO HELP GROUP, IDENTIFY AND NAME LIVING THINGS?

### SUGGESTED STARTER ACTIVITIES

#### Creating a Flow Chart

**Slide 30:** This is an example of a flow chart that has been created to allow people to identify the type of personality they have - it is just for fun, but shows how this simple form of classification key can be used.

The children may have seen flowcharts in various places - perhaps used as a personality quiz in a magazine, a trouble-shooting tool to find out why an appliance is not working, a symptom sorter for when you are unwell or to help you make a decision. Can they give you some examples of flowcharts they have seen and perhaps used?

Challenge them to create their own flow charts. Remind them that questions should have a yes/no answer. Ideas may include a flowchart that helps them reach a decision e.g. should I do my homework this evening? Or a flow chart could be devised to explain how to do something e.g. how to make pastry.

#### The Liquorice Allsorts Challenge!

You will need to use a packet of sweets that contains sweets with different colours and shapes - liquorice allsorts and dolly mixtures work well. Choose about 6 different sweets and ask the children (in groups) to create a flow chart/branching database to sort the sweets. They should use about 5 questions to do this, each needing a yes or no answer.

You may need to help them think of a starting question and encourage them to experiment by moving sweets around and using different questions. Hopefully they will use the colour, number of colours and shapes of the sweets to create their questions. **Slide 31** shows an example of how it could be done. The children could then compare each group's classification keys - are some easier to use than others?

### TEACHER INPUT

A **classification key** is a set of questions and answers for identifying something or deciding which group it belongs to. It often looks like a flow chart and is also called a **branching database**. It can be thought of as a "key" for unlocking the identification of an object or a living thing.

**Slide 31:** The liquorice allsorts classification key is a very simple example of how a flow chart can be used for identification.

**Slide 32:** This is an example of a simple classification key for the identification of minibeasts. Explain how it should be used and why it is useful.

*You can find further information about the classification of minibeasts here:*  
<http://yppte.org.uk/downloads/minibeasts>

## **SUGGESTED ACTIVITIES**

### **Minibeast Challenge (pages 12-13)**

Cut around the minibeast pictures, so you have 10 picture cards. Challenge the children to use the minibeast classification key (**page 11**) to identify each of the minibeasts.

### **Using and Creating Classification Keys**

If possible, take the children outside to look for plants and minibeasts. They should aim to find 5 different species of each. Can they identify the species they have found? A ruler and magnifying glass may be useful here. For identification, the Woodland Trust Nature Detectives website have some excellent spotter sheets for identifying leaves, flowers, birds and minibeasts:  
<http://www.woodlandtrust.org.uk/naturedetectives/activities>

Now can they create their own simple flow charts for the species they have found? They could then swap them with another group/class and see if they enable them to identify the plants/minibeasts accurately.

Ideas for possible questions:

#### **Plants**

- Do the leaves have sharp/rounded edges?
- Do the leaves have veins?
- Is there one big leaf/are the leaves made up of lots of smaller leaves?
- Are there any flowers? (If so, what about colour and number of petals)?
- Are there any cones?

#### **Minibeasts**

- Does it have a shell?
- Does it have wings?
- Does it have 6 legs?
- Does it have more than 8 legs?
- Is it segmented?
- Does it have antennae?

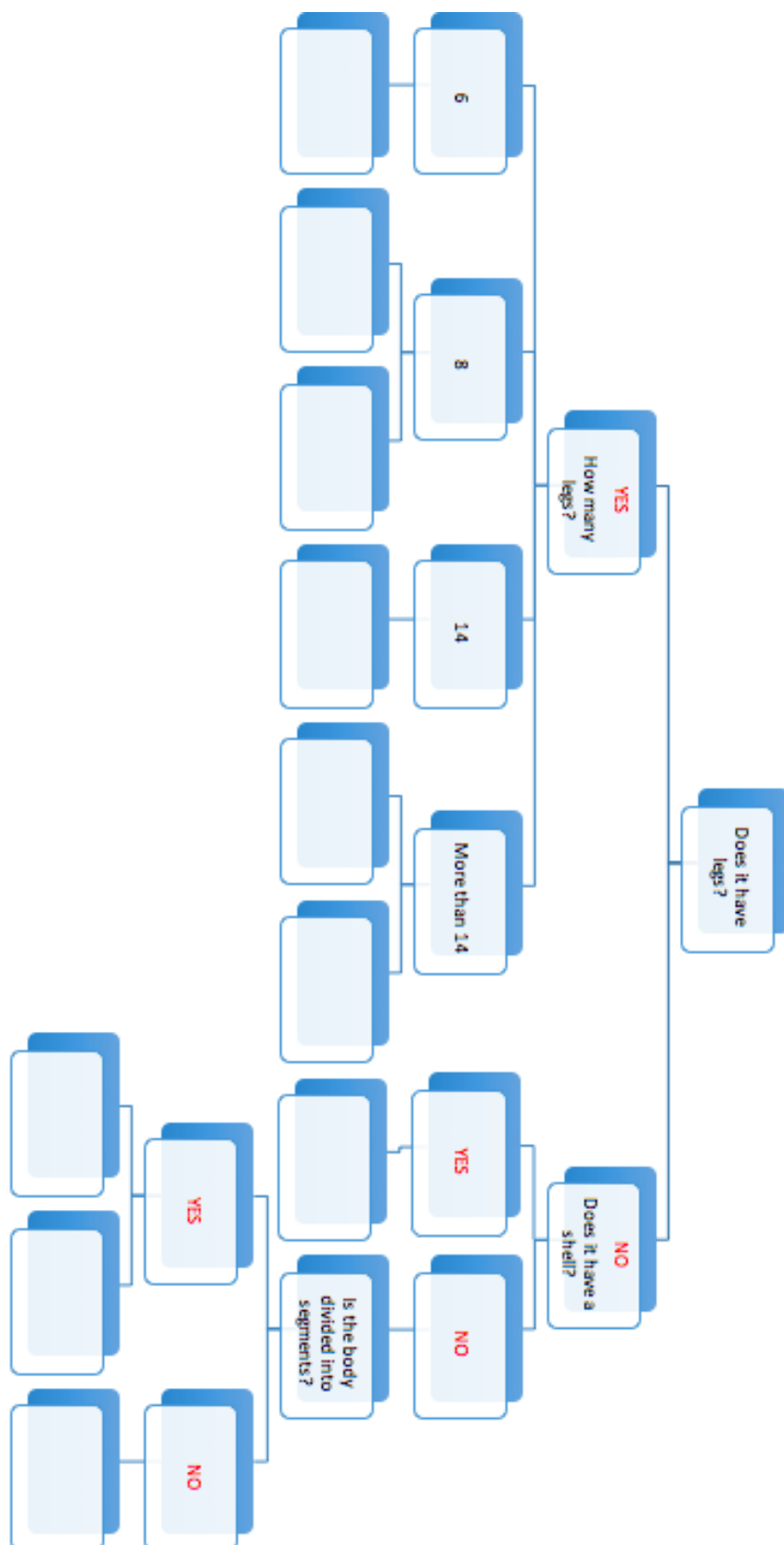




Photo: Colin Avison



Photo: Stefan Ray



Photo: Martin Cooper



Photo: Stefan Marks



Photo: Susannah Anderson



Photo: Jon Sullivan



Photo: Steve Loya



Photo: Lois Elling



Photo: bramblejungle



Photo: Jonathan Stonehouse



### 3. HOW CAN CHANGES IN THE ENVIRONMENT POSE DANGERS TO LIVING THINGS?

#### SUGGESTED STARTER ACTIVITY

##### Exploring Ideas

Ask the children how they think people can change the environment in both good and bad ways. Has anything happened in their local area that has put wildlife at risk? Do they or their families do anything to help wildlife? Enter their ideas in two mind maps on the whiteboard - positive and negative effects.

#### TEACHER INPUT

##### KEY WORDS

**Habitat** - any area where plants and animals can live undisturbed (comes from a Greek word meaning :“home”).

**Deforestation** - the clearing, or cutting down, of forests.

**Urban development** - the improvement/expansion of urban areas (towns and cities) by building e.g. houses, factories, shops, offices, roads.

**Pollution** - when the environment is contaminated, or dirtied, by waste, chemicals and other harmful substances.

**Global warming** - a raising of average global temperatures that is thought to be a result of increased levels of certain gases e.g. carbon dioxide and methane in the atmosphere.

Humans can have positive and negative effects on wildlife by changing their habitats. Below are some examples:

##### Negative Effects

##### Slides 34-36: Litter

Ask the children how they think litter could harm wildlife. **Slide 35** outlines some of the dangers: animals can eat it and either choke, be poisoned or suffer internal injury; it can get caught in animals' wings, necks and legs; it can injure animals e.g. broken glass, rusty tins; animals can become trapped in it e.g. plastic bottles, fishermen's nets; it can start fires e.g. broken glass, cigarettes and it can leak substances into the soil that can make it difficult for plants to grow.



**Slide 37: Chemical Pollution**

Chemicals from fertilisers, pesticides and industrial waste can pollute streams, rivers and the coastline. This can lead to fish, other animals and water plants being killed.

**Slide 38: Oil spills**

Oil can leak into the land and the sea. This can result in the fur and feathers of animals becoming choked with oil and can cause death. It can also poison animals, choke them and cause blindness.

**Slide 39: Deforestation**

All over the world trees are being cut down. This is sometimes done so that the wood can be sold, but often it is to clear the land for farming or development. Where land is being cleared, it is often deliberately burned rather than cut down. Deforestation has devastating effects, as animals are left without a habitat, while burning the forests releases more carbon dioxide into the atmosphere. Rare plants and animals can be lost and those that survive at first will struggle to live in areas full of people and roads etc.

*You will find lots more information on deforestation here:*

<http://ypte.org.uk/lesson-plans/rainforests>

**Slide 40: Urban Development**

As population grows and more people are living in our towns and cities, there is increasing demand for housing, factories, shops, roads etc. When land is cleared to make way for building projects, habitats are destroyed, food chains broken and animals are unable to reach water or other animals to mate with. The cost of development for living things can be very high indeed.

*You will find plenty of information here on the environmental issues threatening our planet and ideas about how we can live more sustainably:*

<http://ypte.org.uk/lesson-plans/sustainable-development>

**Slide 41: Global warming**

By burning fossil fuels and cutting down trees, humans are contributing to a change in the Earth's atmosphere that is causing it to heat up. It is resulting in changing climate and weather patterns, in particular an increase in severe weather events such as droughts, flooding and hurricanes in some parts of the world.

*You will find lots of resources here covering global warming and climate change:*  
<http://ypte.org.uk/downloads/conservation-education-21-wildlife-and-climate-change>  
<http://ypte.org.uk/downloads/conservation-education-29-climate-change-update>

## **Positive Effects**

### **Slide 42: Nature reserves**

These are set up to protect wildlife in an area. No building work is allowed in these areas, so plants and animals are left to thrive. Are there any local nature reserves or have the children ever visited one?

### **Slide 43: Ecologically planned farms, parks and gardens**

Gardeners and farmers may introduce wildflowers into selected areas - this helps to maintain habitats for invertebrates such as butterflies and bees, birds and small animals such as dormice and hedgehogs. Other measures such as bird boxes, bat boxes, insect houses, log piles and compost heaps can all help to provide habitats and protect species. Do the children have any of these in their gardens or school grounds?

*Here you can find advice on how to create wildlife area in school grounds:*  
<http://ypte.org.uk/factsheets/wildlife-areas-for-schools-learning-outside-the-classroom/why-create-school-wildlife-areas>

### **Slide 44: Ponds**

Garden and school ponds provide water for many living things, as well as a safe habitat and breeding place for animals such as frogs, toads, newts, pond snails and dragonflies. Today the pond is regarded as an endangered habitat, as so many have been lost to urbanisation. Digging a pond in your school grounds or garden will provide an essential habitat for many species of plants and animals.

*Please see here for information and advice on ponds:*  
<http://ypte.org.uk/downloads/conservation-education-12-ponds>

### **Slide 45: Community Projects**

Local communities sometimes help local wildlife e.g. helping toads reach their breeding ground, campaigning for tunnels under roads or railway tracks so that ducks, badgers, toads or deer can cross safely. Do the children know about any local community projects?

## SUGGESTED ACTIVITIES

### Poster Design (link with Art and Design)

Ask the children to design a poster that informs people about the dangers of litter to plants and animals.

### Litter Enquiry (link with Numeracy)

The children could carry out an enquiry to find out how serious a litter problem there is in their local area. Results can be displayed using different methods (graphs, photographs, videos etc). Can they come up with some solutions to solve the litter problem?

### School Grounds Audit

The children could carry out an audit of what is being done to protect wildlife in their school grounds. Do they have a bird box, a school pond or a wildlife area? They could put together some suggestions for creating habitats and protecting wildlife in their school grounds.

### Research

Ask the children to choose an event that has had either negative (e.g. cutting down an area of woodland to build new houses) or positive (e.g. a local community campaign to protect wildlife) effects on the environment. This could be restricted to the local area or they could look at things that have happened further afield. They should carry out some research and produce a short report on their findings - what effects have there been for living things?

### Debate (link with Literacy: persuasive writing)

A class debate would be a great way of exploring different viewpoints and understanding the pressures there are on the environment.

- **Start with a motion.** Try to use a scenario that the children can relate to e.g. the local council is planning to fill in the local pond in order to build a new skate park or the school is considering filling in their pond to build a new adventure playground.
- **Brainstorm ideas** for and against the proposal.
- Divide the class into groups and **allocate sides of the argument** to each group. You may choose to ask the children to represent a particular person e.g. local council member, young person, parent, teacher.
- The children should **carry out some research** before writing their speech.
- After writing their speeches, they should **practise reading them out loud**.

- **Hold the debate.** After the speeches, there could be time for questions and discussion. Ensure there are clear rules e.g. no shouting out, listening to each other's views.
- If you have an audience, you may choose to have a **vote** at the end. Or you may ask the children to vote with their own personal views.

Issues that could be considered:

**For proposal:** Benefits of extra play space e.g. physical exercise, opportunities for social interaction, eliminates the risk of drowning.

**Against proposal:** Ponds are essential habitats for many species of animals and plants (can they name some?), the number of ponds in the UK has been in serious decline for many years, what will happen to the plants and animals if their habitat is taken away?

## **We value your feedback!**

Let us know what you thought of this lesson plan by completing this Google Form <https://forms.gle/cGAwi9AWXfSZgrYa9>. **Thank you!**