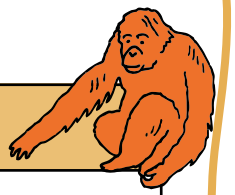
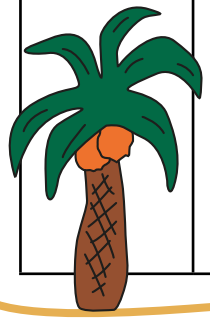
Sustainable palm oil

Conservation **Term:** Autumn/ Spring/ Summer **Subject:** Science **Topic:** Comparing and contrasting the life cycle of mammals, amphibians, insects and birds **Year:** 5



	National Curriculum Links	Overview	Assessment / Questions	Resources
LESSON	**Science** **Living things and their habitats** • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. **Working Scientifically -** • Pupils might work scientifically by observing and comparing the life cycles of animals in their local environment with other animals around the world (in the rainforest, in the oceans, in desert areas and in prehistoric times), asking pertinent questions and suggesting reasons for similarities and differences. **Learning Objective(s)** • To compare and contrast the life cycle of mammals, amphibians, insects and birds. **Success Criteria** For animal life cycles, I can: • Name major stages within specific groups. • State major similarities and differences between specific groups. • Give details related to specific animals. • Explain differences between animals within the same group.	**Prior learning** In year 4, the children should have covered work to recognise that living things can be grouped in a variety of ways. In year 4, the children should have explored classification keys to help them group, identify and name a variety of living things in their local and wider environment. The children may have undertaken a KS2 KWL (Know, Want Learn) impact activity sheet in which they would have discussed or recorded what they already knew about life cycles and reproduction within plants and animals. The children may have been given work to describe the life process of reproduction in some plants and may have looked at life cycles of plants prior to this lesson. Both could also be taught after this lesson. **Introduction** The PowerPoint: 'Comparing and contrasting the life cycle of mammals, amphibians, insects and birds' shall be used to guide the teaching of this lesson. See slide 2. Review the children's understanding of a life cycle. Ask the children: *'What is a life cycle?'* Respond positively to feedback from the children, correcting any misconceptions. *'Can you explain the human life cycle? How do humans change in life?'* The children are to quickly draw out the main stages of a human life cycle on whiteboards. Review and show the main stages on the board. Very basically: Baby → child → adult → gives birth to baby (shown as a circular life cycle). More detail can be given. Reveal slide 3, showing the human life cycle in more depth.	• What is a life cycle? • Can you explain the human life cycle? How do humans change in life? • What is similar about both life cycles in the same animal group? • What are differences between each life cycle? • Can you name a specific stage within a group e.g. in a bird life cycle? • What happens in the fledgling stage of the bird life cycle?/ What happens to tadpoles? • Can you name a significant similarity between animals within the same animal group? • Can you state a difference(s) between specific animals within the same group e.g. the common toad and Wallaces' flying frog? • Can you name what happens in a specific stage within a life cycle you have been learning about? • Can you describe the major changes for e.g. amphibians/ insects etc.? • Why are there 2 types of insect life cycles?	**Prior learning resources:** • KS2 KWL (Know, Want Learn) impact activity sheet. **For lesson:** • The PowerPoint: 'Comparing and contrasting the life cycle of mammals, amphibians, insects and birds' • Life Cycle Cards: 'Life Cycle of a Cat Cards'. 'Life Cycle of an Orangutan Cards' 'Life Cycle of a Common Toad Cards' 'Life Cycle of Wallace's Flying Frog' 'Life Cycle of a Robin Cards' 'Life Cycle of a Rhinoceros Hornbill Cards' • 'Chester Zoo Life Cycle Posters' This will involve the following life cycles: 'Mammal Life Cycle' 'Amphibian Life Cycle' 'Bird Life Cycle' 'Incomplete Metamorphosis Insect Life Cycle' 'Complete Metamorphosis Insect Life Cycle' • Create document: 'Chester Zoo Life Cycle Posters' document. Include the following images of the life cycles from the documents below: 'Mammal Life Cycle' 'Amphibian Life Cycle' 'Bird Life Cycle' 'Incomplete Metamorphosis Insect Life Cycle' 'Complete Metamorphosis Insect Life Cycle'



See slide 4. Introduce the learning objective and success criteria.

Activity 1
See slide 5. Explain to the children that groups of children (in 2s or 3s) will be given a set of cards to share of different stages that make up the life cycle of specific animals within the following groups of animals:

- Mammals
- Amphibians
- Birds

N.B. The two types of insect life cycles will be viewed later in the session.

(See 'Life Cycle Cards' in resources).
Explain that there are two different sets of cards for each group, one set will involve an animal found in the UK and one will be an animal found in South-East Asia i.e. Borneo or Sumatra. The following table (also shown on slide 5) shows where their animals are found.

UK animal	South-east Asia animal
Mammal - domestic cat Amphibian - common toad Bird - robin	Mammal - orangutan Amphibian - flying frog Bird - Rhinoceros hornbill

Explain that the orangutan and the rhinoceros hornbill are endangered animals, largely due to deforestation e.g. for unsustainable palm oil plantations.

The children will be given two sets of life cycle cards, both within a specific group i.e. one that creates a life cycle for a UK animal and one for a South-east Asian animal. The children should spend a few minutes organising each of the two sets of cards into separate life cycles. They can use blu-tack to stick the life cycles into two circular life cycles on to card or paper to present to the class or to enable them to discuss the life cycles with the class.

The children should be asked to answer the following question on a whiteboard:

'What is similar about both life cycles?'

- Also incorporate into slides 7 to 11 of the PowerPoint document on the relevant slides.
- 'Compare and Contrast Life Cycles' worksheet.
- 'Comparing two different animals within the same animal group'
- Secondary resource e.g. books and the internet related to animals within specific groups.
- 'Chester Zoo Animal Fact Files' (that relate to endangered animals in South East Asia')
- Paper for life cycle cards activity.
- Paper, pens and pencils.

They should quickly write down what is similar between the animals within their specific group, to find out general stages within the life cycle for their animal group to feedback to the class.

Mini Plenary
See slide 6. Review the life cycles created and deal with errors or misconceptions. Compare and contrast each of the life cycles from within the same group of the Animal Kingdom (e.g. the domestic UK cat and the orangutan).

Ask the question:

'What is similar about both life cycles in the same animal group?'

Review what the children in their groups have identified as similar within the same group (i.e. mammals in the above example) and record the children's thoughts, if relevant on the class whiteboard.

You could ask:

'What are differences between each life cycle?'

These are generally what is specific to a particular animal.

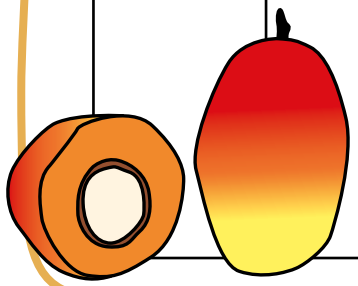
Show the relevant PowerPoint slide that indicates the general life cycle for the group e.g. mammals. N.B. The general life cycle for insects will be discussed with the children (despite the fact they have not created insect life cycles).

PowerPoint slides showing the general life cycle for each group are on slides 7 to 11 and are in the following order:

- Mammals
- Amphibians
- Birds
- Insect (with incomplete metamorphosis)
- Insect (with complete metamorphosis)

For each of the Bornean (South-east Asian) example life cycles that the children create with cards, emphasise how animals are being endangered in the rainforests of Borneo and Sumatra, partly due to the deforestation caused by the production of unsustainable palm oil. Emphasise the need for more sustainable farming methods creating sustainable palm oil.

See slide 12. Introduce the next activity.



Activity 2
Give the children the posters of the images shown on slides 7 to 11 of the life cycles for the groups: mammals, amphibians, birds and insects (showing full and incomplete metamorphosis). (These can be printed out using the worksheets entitled: 'Chester Zoo Life Cycle Posters'. See 'Resources').

The children will need to compare and contrast the main differences using the worksheet: 'Compare and Contrast Life Cycles'. The work could be differentiated as follows:
*The children could complete most of the worksheet using 'Yes' or 'No' answers, although with support, they could give more detail, at times.

**The children could add some more specific details related to the general life cycles and could give specific examples related to the specific animal life cycle cards they put together in Activity 1.

***The children could add information using secondary resources e.g. the internet.

Model how to complete the worksheet together with the children, prior to their completion of the worksheet.

Plenary
Review the work carried out. The children will give feedback as to how they completed the worksheet 'Compare and contrast life cycles'.

Review the learning objective. Review the success criteria by reviewing the work achieved and asking differentiated questions:

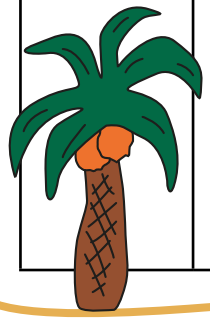
'Can you name a specific stage within a group e.g. in a bird life cycle?

'What happens in the fledgling stage of the bird life cycle?'/ 'What happens to tadpoles?'

'Can you name a significant similarity between animals within the same animal group?'

'Can you state a difference(s) between specific animals within the same group e.g. the common toad and Wallace's flying frog?'

'Can you name what happens in a specific stage within a life cycle you have been learning about?'



'Can you describe major changes for e.g. amphibians/ insects etc.?'

'Why are there 2 types of insect life cycles?'

Possible ongoing work
A suitable follow-up session, that involves the children researching specific animals in more depth, could involve the following differentiated work:
* The children can draw out an example life cycle using an animal with which they are very familiar. They can use the specific general life cycle for its animal group to support them. (See 'Chester Zoo Life Cycle Posters).

** The children are to use the relevant Chester Zoo life cycle posters and secondary resources (e.g. books, the internet, Chester Zoo animal fact files) to compare specific animals within the same group of the Animal Kingdom (i.e. out of mammals, amphibians, birds and insects). They should compare an animal from the UK with one found in a different country in the world e.g. Borneo, in South East Asia.

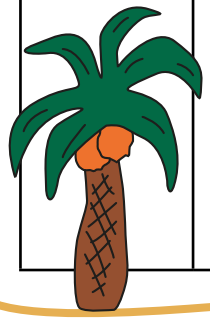
The children will include their information in the worksheet: 'Comparing two different animals within the same animal group' to structure their work. The children should compare a UK animal with one in the rainforest e.g. in Borneo, South-east Asia. (CZ to insert suitable images/ graphics)

*** The children could draw out 2 different life cycles for a UK animal and an animal from the rainforest (e.g. in Borneo) within the same group e.g. mammals. Annotate to show the similarities and differences. To make this easier, the life cycles could be drawn vertically, next to each other. The children should try to include specific information to answer these these questions:

- What is the difference between the animal life spans?
- Are the animals endangered?
- What is the gestation period? (How long are the animals developing in the womb, egg etc.?).

Ensure a range of secondary resources are available, including possible books, the internet and Chester Zoo animal fact files.

Other follow-up sessions:
The children could be given further work to compare and contrast animal lifecycles, for further consolidation e.g. the children could be asked to research an animal life cycle of their choice for homework.



		See lesson 'Reproduction for amphibians and most insects' which teaches the children about reproduction in these animal groups. The children will learn about sexual reproduction. The children can compare and contrast the life cycle of mammals and birds. They could look at specific animals endangered by unsustainable palm oil plantations (i.e. through deforestation of the rainforest) e.g. the orangutan or the Malayan sun bear). They could compare how they reproduce using Venn diagrams or tables. The children could research the impact of unsustainable palm oil plantations on the mammals. The children could observe changes in animals over a period of time (e.g. by hatching and rearing chicks). The children could visit e.g. Chester Zoo and observe specific animals of different ages within an animal group (e.g. chimpanzees) and their important roles within their animal community. The children should compare and contrast the life cycle of plants. (See also 'Prior learning'). They would need to compare and contrast example life cycles in their local environment and should also compare local plants with plants found in the rainforests of Borneo (or Sumatra). Teachers should focus on how plants in Borneo and Sumatra are affected by deforestation from unsustainable palm oil production. It is likely that the lessons on plant life cycles will involve long term projects involving e.g. planting the seeds of plants in the vegetable garden or a flower border and observing the plant changes over a period of time. The children should also be given lessons to find out about sexual and asexual reproduction in plants. (See also 'Prior learning'). The children might try to grow new plants from different parts of the parent plant e.g. seeds, stem and root cuttings, tubers and bulbs and could observe the life cycle of these plants over a period of time.