Spring Block 3

Life cycles

Small steps

Step 1	Life cycles of mammals
Step 2	Life cycles of amphibians (frogs)
Step 3	Life cycles of insects
Step 4	Life cycles of birds

Life cycles of mammals

Notes and guidance

In the previous block, children learnt about the life cycle of humans. In this block, they will build on this knowledge by exploring the life cycles of different animal groups, starting with mammals. Children have learnt that humans are classed as mammals and that mammals are warm-blooded vertebrates, have fur or hair on their bodies, give birth to live young and produce milk to feed their young. By the end of this small step, they will understand that a mammal has a similar life cycle to a human, which begins as a foetus in the mother's womb.

Children should explore the four main stages of the life cycle of a mammal – foetus, young, adolescent and adult. In this block, children complete a research enquiry. Encourage children to start thinking about the enquiry question by discussing similarities and differences between the life cycles of humans and other mammals. Highlight to children that some mammals, called "monotremes", lay eggs instead of giving birth to live young.

Things to look out for

- Children may think that humans are not animals and therefore are not classed as mammals.

Key questions

- What are some key characteristics of mammals?
- Why is a _____ classed as a mammal?
- What are the main stages of the life cycle of a mammal?
- Why is a human classed as a mammal?
- Which mammals do not give birth to live young?
- In which stage of the life cycle do mammals reproduce?
- How is the life cycle of a _____ similar to/different from the human life cycle?

Enquiry question

- How are the life cycles of animals similar and how are they different?

National curriculum links

- Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.
- **Working scientifically** – Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas' (non-statutory).

Life cycles of mammals

Key vocabulary

- **monotreme** – a mammal that lays eggs, such as the platypus and the spiny anteater

- **offspring** – the young of a living thing

- **mammary gland** – the organ of female mammals that produces milk

- **mammal** - an animal with a spine and with fur or hair on its body, which gives birth to live young and feeds its young on milk

- **life cycle** – a series of stages a living thing goes through during its life

Practical ideas

- Give children cards with stages of the life cycles of different mammals.

  Children could work in groups to put the stages of the life cycles into the correct order.

- Encourage children to use secondary sources to research the life cycles of different mammals, such as a kangaroo and a platypus.

Factual knowledge

- The life cycle of a mammal has four main stages: foetus, young, adolescent and adult.
- Most mammals give birth to live young.
- Most mammals have mammary glands that produce milk to feed their young.
- When mammals become adults, they are able to reproduce.

Life cycles of amphibians (frogs)

Notes and guidance

In the previous small step, children learnt about the life cycle of mammals. In this step, they explore the life cycle of amphibians, with a focus on frogs. Children learnt about amphibians in previous year groups and should be able to describe an amphibian as an animal that lives both on land and in water. Remind children that amphibians lay eggs, which usually hatch and develop in water before emerging onto land when reaching the adult stage of the life cycle.

Children should explore the metamorphosis of a frog, looking at frogspawn, tadpoles, froglets and adult frogs. Continue to encourage children to think about the enquiry question by discussing similarities and differences between the life cycles of mammals and amphibians.

Things to look out for

- Children may think frog eggs (frogspawn) have a hard outer covering like bird eggs. Explain that frogspawn has a soft jelly-like covering for protection instead of a hard shell.

Key questions

- What are some key characteristics of amphibians?
- What is metamorphosis?
- What are the main stages of the life cycle of a frog?
- What is frogspawn/a tadpole?
- How is a froglet different from a frog?
- In which stage of the life cycle do amphibians reproduce?
- How is the life cycle of an amphibian similar to/different from the life cycle of a mammal?

Enquiry question

- How are the life cycles of animals similar and how are they different?

National curriculum links

- Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.
- **Working scientifically** – recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.

Life cycles of amphibians (frogs)

Key vocabulary

- **amphibian** – a cold-blooded vertebrate that lives on land and in water and usually lays eggs

- **frogspawn** – the eggs of a frog

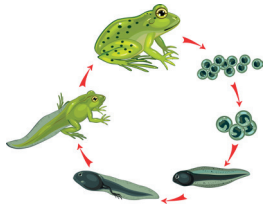
- **tadpole** – a baby frog that has a long tail and no legs

- **froglet** – an adolescent frog with a tail and legs

- **metamorphosis** – the process by which the young form of an insect or amphibian changes into a distinct adult form

Practical ideas

- In groups, give children pictures of different stages of the life cycle of a frog.



  They should order the pictures correctly and describe what happens at each stage.
- Children could explore their local area to see if they can identify a small pond or body of water containing amphibians. They are more likely to observe frogspawn in the spring.

Factual knowledge

- Amphibians are small vertebrates that need water or a moist environment to survive.
- The life cycle of a frog has four main stages: frogspawn, tadpole, froglet and adult frog.
- Tadpoles have gills to help them to breathe under water, a tail to help them to swim and a mouth to feed.
- Tadpoles take around 14 weeks to transform into frogs.
- An adult frog has no tail and is fully equipped to live both on land and in water.

Life cycles of insects

Notes and guidance

In the previous small steps, children have studied the life cycles of mammals and amphibians. In this step, they explore the life cycle of insects. Children should be able to describe an insect as a small animal that has three body sections and six legs. By the end of this step, they should be able to describe the four stages of the life cycle of an insect – egg, larva, pupa and adult.

Children should explore the complete metamorphosis of different insects, such as a butterfly, honeybee and ladybird. Mention to children that some insects only go through three life stages (egg, nymph and adult) and this is called "incomplete metamorphosis". Continue to encourage children to think about the enquiry question by discussing similarities and differences between the life cycles of mammals, amphibians and insects.

Key questions

- What are some key characteristics of insects?
- Why is this animal classed as an insect?
- What is metamorphosis?
- What is incomplete metamorphosis?
- What are the main stages of the life cycle of an insect?
- What is the life cycle of a butterfly/honeybee/ladybird?

Enquiry question

- How are the life cycles of animals similar and how are they different?

Things to look out for

- Children may incorrectly classify spiders as insects. Spiders are classified as arachnids because they have eight legs and two body sections. Children do not need to be introduced to the term "arachnids" in Year 5 as this is introduced within the Year 6 curriculum.

National curriculum links

- Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.
- **Working scientifically** – Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.

Life cycles of insects

Key vocabulary

- **metamorphosis** – the process by which the young form of an insect or amphibian changes into an adult form

- **larva** – the young form of an insect

- **pupa** – an insect after it has been a larva and before it becomes an adult, usually enclosed in a cocoon or hard case

- **chrysalis** – a specific type of pupa that occurs in the life cycle of butterflies

- **insect** – a small animal that has three body sections, six legs and antennae

Practical ideas

- In groups, give children pictures of different stages of the life cycles of a butterfly, honeybee or ladybird.

  They put the pictures in the correct order and describe to the rest of the class what happens at each stage.

- Children could use butterfly kits to observe the transformation of a caterpillar into a chrysalis (the pupa) and then a butterfly.

Factual knowledge

- Insects are small animals that have three body sections, six legs and antennae, and usually lay eggs.
- There are four main stages of the life cycle of an insect: egg, larva, pupa and adult.
- Larvae are the young form of insects.
- Pupae are insects in the stage of development between larvae and adults.

Life cycles of birds

Notes and guidance

In this small step, children explore the life cycles of birds. Children should be able to describe a bird as a vertebrate with feathers, wings and a beak. Children identify that birds lay eggs. By the end of this step, they should be able to describe the life cycle of a bird, including the five different stages – egg, hatchling, nestling, fledgling and adult. Children should look at different examples of birds that can fly, such as owls, and birds that cannot fly, such as penguins.

At the end of this small step, children should have all the necessary knowledge to be able to answer the enquiry question. They will work scientifically by identifying similarities and differences between the life cycles of mammals, amphibians, insects and birds.

Things to look out for

- Some children may think that eggs hatch into fully formed birds.
- Children may think that all birds build nests in trees. Show children examples of birds that construct nests on the ground, on cliffs and in burrows.

Key questions

- What are some key characteristics of birds?
- What is an egg/hatchling/nestling/fledgling?
- What are the main stages of the life cycle of a bird?
- How is the life cycle of a bird different from that of a mammal/amphibian/insect?

Enquiry question

- How are the life cycles of animals similar and how are they different?

National curriculum links

- Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.
- **Working scientifically** – Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.

Life cycles of birds

Key vocabulary

- **bird's egg** – an oval object laid by a female bird

- **hatchling** – a baby bird that has just hatched from an egg

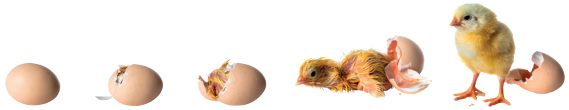
- **nestling** – a young bird that cannot fly yet and depends on its parents for food and protection

- **fledgling** – a young bird that has grown feathers and is capable of leaving the nest but is still dependent on its parents for food and protection

- **adult bird** – a fully grown bird that can reproduce and live independently

Practical ideas

- If possible, children could observe eggs hatching in school. This would give them an opportunity to observe the first part of the life cycle of a bird, including the egg, hatchling and nestling stages.



- Allow children to present their findings to the enquiry question from this block.

  Children could work in small groups to create a presentation to explore the similarities and differences between different life cycles.

Factual knowledge

- Birds are vertebrates with wings, feathers and a beak.
- The life cycle of birds includes five stages: egg, hatchling, nestling, fledgling and adult bird.
- Birds reproduce by laying eggs.
- Eggs are incubated by parents until they hatch.
- An adult bird is able to reproduce and will have all its feathers.