

# ALL ABOUT DRAGONFLIES FOR KS1

## LINKS TO NATIONAL CURRICULUM

- Notice that animals, including humans, have offspring which grow into adults (Animals including humans, Year 2).
- Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other (Living things and their habitats, Year 2).
- Identify and name a variety of plants and animals in their habitats, including microhabitats (Living things and their habitats, Year 2).
- Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain (Living things and their habitats, Year 2).
- Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) (Animals including humans, Year 2).

## LEARNING OBJECTIVES

1. What is a dragonfly?
2. Where do dragonflies live?
3. What is the life cycle of a dragonfly?
4. What makes dragonflies such amazing fliers?
5. How do dragonfly eyes work?
6. How old are dragonflies?

## NOTES TO TEACHERS

- 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.
- The content of these lesson plans is aimed at Key Stage 1 (Year 2), but could be adapted for use by Key Stages 1 or 2. It may be necessary to tailor the resources to the group of children being taught, by selecting particular slides and information to be included.

## KEY WORDS

**Insect** – any of a group of small and often winged animals that are arthropods having six jointed legs and a body formed of a head, thorax, and abdomen.

**Habitat** – the natural home or environment of an animal or plant.

**Life cycle** – the series of changes in the life of a living thing, from birth to death.

**Nymph** – the young form of an insect that does not change greatly as it grows. A dragonfly nymph lives in water.

**Larvae** – an early form of any animal that at birth or hatching is very different from its parents.

**Metamorphosis** – the process of transformation from a young form to an adult form in two or more distinct stages.

**Prey** – an animal that is hunted and caught by another animal for food.

**Predator** – an animal that lives by hunting other animals for food.

**Compound eyes** – eyes made up of many tiny lenses, giving almost 360-degree vision.

**Thorax** – the middle section of an insect's body, between the head and abdomen, where the wings and legs are attached.

**Abdomen** – the back section of an insect's body.

**Wingspan** – the distance from the tip of one wing to the tip of the other.

**Prehistoric** – relating to the time before written records, often millions of years ago.

**Food chain** – a sequence of organisms in which each depends on the next and usually lower member as a source of food.

# ALL ABOUT DRAGONFLIES

## SUGGESTED STARTER ACTIVITIES

### Mind Map

Using the children's ideas, create a mind map showing their starting knowledge of dragonflies. It could include:

- Have you ever seen a dragonfly? Where?
- What do dragonflies look like?
- Where do dragonflies live?
- Do dragonflies bite or sting?

### What Am I?

**Slide 2:** Show the children the close-up image of a dragonfly and ask them if they can guess what the animal is. Can they explain what clues helped them work it out?

## TEACHER INPUT

### Introduction to Dragonflies

#### Slides 3–5

**Slide 3:** Dragonflies are insects. Like all insects, their body is divided into three main parts:

1. The **head** with the eyes, mouthparts and antennae
2. The **thorax** with two pairs of wings and six legs
3. The **abdomen** – the long, thin tail section

Dragonflies are some of the fastest flying insects in the world! There are around 30 different species of dragonfly in the UK. They come in lots of different colours – blue, green, red, yellow and brown.

**Slide 4:** Dragonflies are often found near water – ponds, lakes, rivers and streams. This is because they need water to complete their **life cycle**. They are also found in gardens, meadows and woodlands, especially when hunting for food.

**Slide 5:** Dragonflies are **predators** – they are brilliant hunters! They catch and eat other small insects such as mosquitoes, midges and flies, often catching them while flying. This makes them very useful because they help control the number of biting insects.

### The Dragonfly Life Cycle

#### Slides 6–12

The dragonfly **life cycle** is one of the most amazing in the animal world. Unlike butterflies, dragonflies do not go through a pupal (cocoon) stage. Their life cycle has three stages: egg, **nymph** and adult.

**Slide 6:** A female dragonfly lays her eggs in or near water – sometimes on the stems of water plants, sometimes directly into the water. She can lay hundreds of eggs at a time.

**Slide 7:** After a few weeks, tiny **larvae** (called **nymphs**) hatch from the eggs. Dragonfly nymphs live underwater and look completely different from the adults – they are small, brown or green, and have no wings.

**Slide 8:** The nymph is a fierce underwater **predator**! It eats tadpoles, water fleas and even small fish. It has an amazing extendable jaw that shoots out to grab its **prey**.

**Slide 9:** The nymph lives underwater for a very long time – usually one to two years, but some species can spend up to five years as nymphs! During this time, the nymph moults (sheds its skin) many times as it grows bigger.

**Slide 10:** When the nymph is finally ready to become an adult, something magical happens. On a warm day, usually in spring or summer, the nymph crawls out of the water and up a plant stem. This photo shows a common clubtail dragonfly that has just emerged from its nymph, which can be seen on the right of the photo.

**Slide 11:** The nymph's skin splits open along its back and the adult dragonfly slowly pulls itself out. Its wings are crumpled and soft at first. The dragonfly must wait for its wings to dry and harden before it can fly – this can take an hour or more. This incredible transformation is called **metamorphosis**. Again, here's a common clubtail dragonfly waiting for its wings to dry, having shed its nymph casing.

**Slide 12:** Once the adult dragonfly can fly, it leaves the water behind and spends its time hunting insects in the air. Adult dragonflies only live for a few weeks or months – just long enough to find a mate and lay eggs to start the cycle all over again. This video shows a dragonfly taking off from a leaf.

## Amazing Dragonfly Flight

### Slides 13–16

**Slide 13:** Dragonflies are some of the most incredible fliers in the natural world. They have four wings that can each move independently. This means they can fly forwards, backwards, sideways and even hover in one spot – just like a helicopter!

**Slide 14:** Some dragonflies can fly at speeds of up to 30 miles per hour. That's faster than most people can ride a bicycle! They use their speed to catch other insects in mid-air.

**Slide 15:** Dragonflies are such good hunters that they catch their **prey** about 95% of the time. That makes them one of the most successful predators in the entire animal kingdom. By comparison, lions only catch their prey about 25% of the time!

**Slide 16:** A dragonfly's wings are so special that scientists and engineers study them to help design better helicopters and drones. The wings are very thin and light, but incredibly strong.

## Dragonfly Eyes

### Slides 17–19

**Slide 17:** Dragonflies have the most amazing eyes in the insect world! Their huge **compound eyes** take up most of their head and contain up to 30,000 tiny lenses. Humans have just one lens in each eye.

**Slide 18:** Because their eyes are so big and wrap around their head, dragonflies can see almost everything around them at the same time – they have nearly 360-degree vision. This makes it very hard for other animals to sneak up on them! It also means that they can react to movements of their prey in less than 500 milliseconds!

**Slide 19:** Dragonflies can also see more colours than humans. We see three primary colours (red, green and blue), but dragonflies can also see ultraviolet light, which is invisible to us. They can also see many more shades of colour than humans. This helps them spot other dragonflies and find their way around. The AI-created image in the slide attempts to show the enhanced colours visible to a dragonfly.

## Dragonflies and Dinosaurs

### Slides 20–22

**Slide 20:** Dragonflies are one of the oldest types of insect on Earth. They first appeared about 300 million years ago – that's long before the dinosaurs! Dinosaurs appeared around 230 million years ago, so dragonflies were here about 70 million years before them.

**Slide 21:** **Prehistoric** dragonflies were much, much bigger than the ones we see today. The largest, called Meganeura, had a **wingspan** of up to 70 centimetres – that's about the same as a seagull! Scientists think they could grow so large because there was more oxygen in the air at that time. The image in the slide is created by AI to give the children the idea of meganeura's size – it's not an actual photo!

**Slide 22:** The fact that dragonflies have been around for so long tells us they are very well adapted to their environment. They survived the event that wiped out the dinosaurs 66 million years ago and are still thriving today. The dragonflies we see in our gardens are the descendants of those ancient giants! The AI-created image shows a dragonfly surviving in the devastation caused by the extinction event.

## Why Are Dragonflies Important?

**Slide 23:** Dragonflies are an important part of the **food chain**. As nymphs, they help control mosquito larvae and other water creatures. As adults, they eat huge numbers of flies and midges. Dragonflies are also food for birds, frogs and fish. In the photo, a European bee eater (an increasingly frequent visitor to the UK) is munching on a freshly-caught dragonfly. If we look after ponds and wetlands, we help dragonflies – and if we help dragonflies, we help the whole ecosystem.

## SUGGESTED FOLLOW-UP ACTIVITIES

### 1. Life Cycle Sequencing

Give the children a set of cards or pictures showing the stages of the dragonfly life cycle (egg, nymph in water, nymph climbing out, adult emerging, adult flying). Can they put them in the correct order? They could also draw a life cycle diagram with labels.

### 2. Draw and Label a Dragonfly

Ask the children to draw a dragonfly and label the key body parts: head, thorax, abdomen, wings, legs and compound eyes. Annotate the drawing with interesting facts, e.g. “can fly backwards” or “30,000 tiny lenses in each eye.”

### 3. Dragonfly vs Butterfly Life Cycles

Compare the life cycle of a dragonfly with that of a butterfly. How are they similar? How are they different? Children could draw both life cycles side by side. Key difference: butterflies have a pupa (chrysalis) stage; dragonflies do not.

### 4. Creative Writing – A Day in the Life of a Dragonfly Nymph

Ask the children to imagine they are a dragonfly nymph living at the bottom of a pond. What can they see, hear and feel? What do they eat? What happens when they finally crawl out of the water and become an adult dragonfly?

### 5. Prehistoric Size Comparison

Using a ruler or tape measure, ask the children to measure out 70 cm (the wingspan of the prehistoric Meganeura) and compare it to the wingspan of a modern dragonfly (about 10 cm). They could also compare it to their own arm span!

### 6. Pond Dipping

If your school has a pond area or can visit a local pond, organise a pond-dipping session to look for dragonfly nymphs and other water creatures. **Note:** Ensure all children are closely supervised near water.

### 7. Research Task

Can the children find out about different species of dragonfly found in the UK? The British Dragonfly Society website has some great identification resources and photographs that are suitable for young learners.

### 8. Create a dragonfly food chain

Ask the children to create simple illustrated food chains showing how dragonflies play an important role in the ecosystem, keeping down the numbers of flies and midges and serving as food to birds. As an extension, they could create food chains for both larval and adult stages of the dragonfly life cycle.

**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!**