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THE HUMMINGBIRD

This presentation aims to teach you about the hummingbird.

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What is a Hummingbird?

Hummingbirds are the smallest bird, averaging only 7.5 -13 cm in length. At just 5 cm long, the bee hummingbird is the smallest of the hummingbirds.

Hummingbirds' wings can flap at speeds of up to an incredible 80 beats per second, which allows them to hover in mid-air. This rapid wing movement causes a humming sound, which is how the hummingbird got its name.

The hummingbird's metabolism is the highest of any animal that maintains a stable body temperature regardless of the temperature of the surrounding air. Such animals are called "homeothermic." An animal with a high metabolism requires a lot of calories. That's why hibernation (torpor, in hummingbirds) is critical to their conservation of energy and their very survival.

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Habitat

Hummingbirds live only in the Western hemisphere. Between 325 and 340 different species of hummingbird can be found throughout the Americas and the Caribbean. They are most common in tropical regions, but some hummingbirds live in North America during the summer and migrate to the tropics for the winter.

Hummingbirds reside in a variety of ecosystems including woodlands, mountains, meadows, rainforests and deserts. Whatever the habitat, a readily available abundance of flowers is critical.

In addition to flowers, hummingbirds require shelter for nesting and resting. This shelter provides a protected place for hummingbirds to go into a state of what is known as “torpor” or hibernation.

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Adaptation

Hummingbirds are uniquely adapted to thrive in a variety of climates. They can live in both tropical and temperate environments. Their anatomy has also contributed to their survival.

Beak and Tongue: The beak of the hummingbird is long and narrow, helping them reach into flowers to obtain nectar. They also occasionally feed on insects, using their flexible lower beak to grab insects in flight.

Brain: Hummingbirds have an exceptional memory that enables them to recall the locations of food sources. Their brain accounts for as much as four percent of their body weight.

Eyes: Hummingbirds have large eyes located on the sides of the head. They are able to see in front of them and to the sides at the same time. They can also see colours.

Body Temperature: Hummingbirds are unique among birds in that they are able to reduce their metabolism and enter a state of torpor (hibernation). This allows them to survive in cold weather with limited caloric intake.

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Life Cycle: Mating and Nesting

Hummingbirds that live in the northern latitudes migrate to the south during the winter and begin returning north to breed in late March. The males return before the females. Upon the arrival of the females, the male birds attract them with an incredible display of flight, climbing as high as 15 meters and then diving back down in various patterns, The chirping of the males and the humming of their wings attract the females, which choose their own mates.

The female hummingbird builds a cup-shaped nest with tree branches and shrubs. She gathers spider silk to secure the nest and then hides the nest with moss and plants. Most nests are about the size of a golf ball.

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Life Cycle: Egg-Laying and Raising Young

Egg-Laying: The female hummingbird lays the smallest eggs of any bird; usually, two white eggs per female laid on different days. Occasionally, a female hummingbird lays only one egg. The female sits on the eggs for approximately 19 days. She leaves her nest for just five minutes every hour during this time. Though the eggs are laid on different days, they will hatch on the same day.

Raising Young: The mother hummingbird feeds her young by gathering nectar and insects and inserting her bill into the bill of each baby, placing the food in the chick's throat. At eight days old, the baby hummingbird begins to produce its first feathers. They begin to fly at around three weeks, and the mother will show them where to find food before they leave the nest, never to return.

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Pollination and Torpor

Pollination: Plants need animals to transfer pollen from flower to flower. The hummingbird plays a vital role in this process. Flowers attract pollinators by offering nectar and an array of colours and fragrances. The nectar of flowers that hummingbirds pollinate has a high amount of sucrose (sugar).

Torpor: To conserve energy and increase their chances of survival, hummingbirds go into a state of torpor (a short hibernation period). During this period, their metabolism lowers, their body temperature drops, and their heart rate decreases. This saves up to sixty percent of their energy. The female hummingbird will stay with their nest during hibernation. Hummingbirds sometimes hibernate hanging upside down. They may appear to be dead during hibernation, as they may not even respond to touch during this time.

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Aerodynamics

The motion of the hummingbird has always amazed people. Their unique wing design allows them to move forward, backward, and even upside down. Their wings beat in a figure-eight pattern rather than up and down. Hummingbirds produce lift in both upward and downward wing strokes, creating vortices that help with hovering and maneuverability. Experts say this should make them awkward and inefficient in flight. However, they move gracefully and with incredible speed. Researchers continue to study the mysterious aerodynamics of the hummingbird.

Wings and Muscles: Hummingbirds are the only bird that can fly both forward and backwards and quickly change direction.

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Diet and Behaviour

Hummingbirds have been called the “sugar addicts” of the bird family. They eat half of their body weight in sugar each day. While they consume an incredible amount of nectar from flowers, they have also been known to eat insects. Because of their high metabolism, the hummingbird must consume a significant amount of food to survive. They eat half of their body weight in sugar each day. They usually eat every ten minutes.

The hummingbird has a huge brain in relation to the size of its body. With an incredible memory, hummingbirds can remember food sources from the previous day, and they use landmarks to guide them. Hummingbirds will sometimes defend their food sources from other birds.

Hummingbirds live solitary lives other than for breeding. They are territorial birds, and the male hummingbird can be very aggressive in defending its turf. The females chase away the males to keep their bright colours from attracting predators. Hummingbirds are also very clean birds. They groom themselves frequently and love to splash in water. Hummingbird nests are amazingly clean because baby hummingbirds instinctively do whatever they can to toss their own waste over the side.

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Threats

Every hummingbird species now listed as endangered or vulnerable is threatened due to habitat loss. Climate change and shifting weather patterns are a growing threat to the hummingbird's migration pattern.

Domestic cats love to chase hummingbirds because of their quick, darting moves. Some species of birds and rodents find hummingbird eggs very appetising. Hawks and other raptors like hummingbirds as a mid-air snack to go. Low-flying hummingbirds can be snatched up by fish, frogs, snakes, lizards, or even large insects like dragonflies and praying mantises.

Hummingbirds may also be stunned or killed by flying into humanmade objects like buildings or cars. Males are attracted to reflective surfaces like windows and car mirrors because they think their own reflection is another male invading their territory. Crashing full-speed into a window or mirror can be fatal for a hummingbird.

Hummingbirds have benefited from the many people who find them fascinating. The hummingbird feeder is a popular feature of many gardens and yards. Some people grow flowers specifically to attract hummingbirds so that they can watch their mid-air acrobatics.

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Case Study – The Bee Hummingbird

The Bee Hummingbird is the world's smallest living bird. It is native to the main island of Cuba. Females are slightly larger than males. Females average 2.6 g in weight and 6.1 cm in length. Males weigh, on average, 1.95 g and 5.5 cm. They are not much bigger than a large bumblebee. A bee hummingbird's nest is only about 2.5 cm in diameter, and the female lays two eggs that are approximately the size of peas or coffee beans.

The bee hummingbird's daily food consumption equals about half of its body mass. It drinks up to eight times its body mass in water every day.

The male hummingbird grows spectacular iridescent breeding plumage guaranteed to attract females but sheds it shortly after the breeding season ends. Outside of breeding season, its feathers are comparatively drab.

While the bee hummingbird's wings can beat at approximately 80 times per second in flight, during a courtship display that rate can increase to about 200 beats per second.

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Hummingbird Facts

- Hummingbirds can remember every flower they have fed from and how long it will take the flower to refill with nectar;
- Hummingbirds can hear better and see farther than humans;
- Hummingbirds can see ultraviolet light;
- Hummingbirds have little to no sense of smell;
- The tiny hairs on the tip of a hummingbird's tongue help the bird lap up nectar;
- A hummingbird's heart beats up to 1,260 times per minute in flight and approximately 250 times per minute at rest;
- A hummingbird's metabolism is approximately 100 times faster than an elephant's;
- Hummingbirds' weak feet make it very hard for them to walk;
- An average-sized hummingbird has approximately 940 feathers;
- Hummingbirds have an average life-span of three to five years, but many don't survive their first year. The oldest known hummingbird lived to the age of 12;
- Migrating hummingbirds will travel over 3,200 km, twice a year.

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Australian Curriculum Mapping

GRADE 5 SCIENCE (ACSSU043): Living things have structural features and adaptations that help them to survive in their environment.

GRADE 6 SCIENCE (ACSSU094): The growth and survival of living things are affected by the physical conditions of their environment.

YEAR 7 SCIENCE (ACSSU112): Interactions between organisms, including the effects of human activities can be represented by food chains and food webs.

YEAR 9 SCIENCE (ACSSU176): Ecosystems consist of communities of interdependent organisms and abiotic components of the environment; matter and energy flow through these systems.

YEAR 10 SCIENCE (ACHGK070): Human-induced environmental changes that challenge sustainability.

SUSTAINABILITY (01.2): All life forms, including human life, are connected through ecosystems on which they depend for their well being and survival.

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