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OUR TIME ON EARTH

ANIMAL LIFESPANS FROM THE MAYFLY
TO THE IMMORTAL JELLYFISH



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MAYFLY

LIFESPAN: 5 MINUTES TO 24 HOURS

Fast, fleeting and fascinating... the adult mayfly's lifespan is one of the shortest in the animal world. From the moment a mayfly emerges in its adult form, it is in a race against time to find a mate and breed.

A mayfly's life begins in the water. For up to two years, a young mayfly lives out its nymph (or larval) stage at the bottom of ponds, lakes and rivers, feeding on algae and plants. When a nymph reaches its adult stage, it floats to the surface. There, its outer layer splits open and it is reborn, with wings.

At first, an adult mayfly is dull-coloured and seeks shelter in the vegetation along the bank. But a few hours later, it sheds its skin one last time, and transforms itself into its final, delicate form, with shiny body and translucent wings.

The clock is now ticking. Most mayflies have under 24 hours to fulfil their purpose. For one species, *Dolania americana*, there is only a brief five minutes.

The males gather above the water in huge swarms. Females join them in the search for a mate. This is feast time for predators. Birds swoop through the air with open beaks, frogs flick out their sticky tongues while fish leap from the water.

After mating, the female falls back down to the water, dipping her abdomen below the surface to lay her eggs. When she is spent, she dies in the water, while the males fly to ground nearby to die. The eggs sink to the bottom, where they stick to plants and stones. A few days to a few weeks later (depending on the species), the eggs hatch into tiny nymphs, and the life cycle begins again.

An adult mayfly's life may be short, but mayflies have been on Earth for more than 300 million years. Today, they survive only in unpolluted water, where the adults still haze the air with their fleeting day-long dance.

HONEY BEE

LIFESPAN: 5 TO 7 WEEKS

A worker honey bee born in the spring only lives for five to seven weeks, but not a day of her life is wasted. While it is the role of the queen bee to lay eggs, and the male drone bees to mate with a queen, it is the workers who keep the hive running. Throughout her life, a worker will take on an astonishing number of tasks, changing her roles as she ages.

DAYS 1 TO 3

A worker bee emerges from her cell. She is around 15mm in length and weighs just 100mg. One of her first tasks is to clean out her cell to make sure it is spotless and polished, ready to receive new eggs or to store pollen and nectar.

DAYS 7 TO 12

A select few of the workers become the queen's attendants, feeding and grooming the queen. While attending her, they are covered in her scent, known as the queen mandibular pheromone (QMP). The attendants then spread QMP throughout the hive, which ensures all the bees remain loyal to their queen.

DAYS 3 TO 16

During the first two weeks of her life, a worker bee may take on the role of a mortuary bee. It is her job to remove any dead bees and larvae that have failed to develop.

A worker bee may also act as a nurse bee, caring for the developing larvae by keeping them clean and feeding them a mixture of honey and pollen, known as 'bee bread'. Nurse bees will check on a single larva around 1,300 times a day.

DAYS 12 TO 18

By day 12, young worker bees will become pollen packagers, taking nectar and pollen from foraging bees that are returning to the hive, and placing them in cells. The pollen will then be mixed with honey and stored as food for the colony.

During this time, worker bees will also take turns as fanning bees, using their wings to keep the hive cool.

DAYS 12 TO 35

At around twelve days old, a worker bee is able to produce waxy flakes from her abdomen, which are used to build new wax combs in the hive. The wax is also used to cap the cells of pupae (bees at the stage between larvae and fully-grown), and cells filled with ripened honey.

DAYS 18 TO 21

The last task of a worker bee within the hive is to protect it from intruders. By day 12, her glands have filled with venom, so that she can defend the hive from attack. She stands guard at the hive entrance, checking each bee that returns for its familiar scent.

DAYS 22 TO 42

The worker bee is now halfway through her life, and her time outside the hive is about to begin as she takes on the role of forager bee.

As a forager, she will visit up to 40 flowers a minute, and may visit more than 1,000 flowers a day. As she flies, she will fill the pollen baskets on her back legs and suck up nectar, storing it in a special honey stomach.

At the end of her time, she will probably die in the field, to be seamlessly replaced by the new worker bees emerging from their cells.



MONARCH BUTTERFLY

LIFESPAN: 5 WEEKS TO 8 MONTHS

Most monarch butterflies spend their lives on a journey they will never finish. Each year, the butterflies wake from their winter sleep in Mexico, to fly north along the coast of America, all the way to Canada. As these butterflies only live for two to six weeks, their journey is one that will take two to three generations to complete. But for the last generation of monarchs, it is a very different story...

Over winter, monarch butterflies sleep in clusters in oyamel fir trees, high in the Mexican mountains. They wake from their hibernation in February and March, taking to the air in search of a mate, before flying a few hundred kilometres north, in search of milkweed plants on which to lay their eggs.

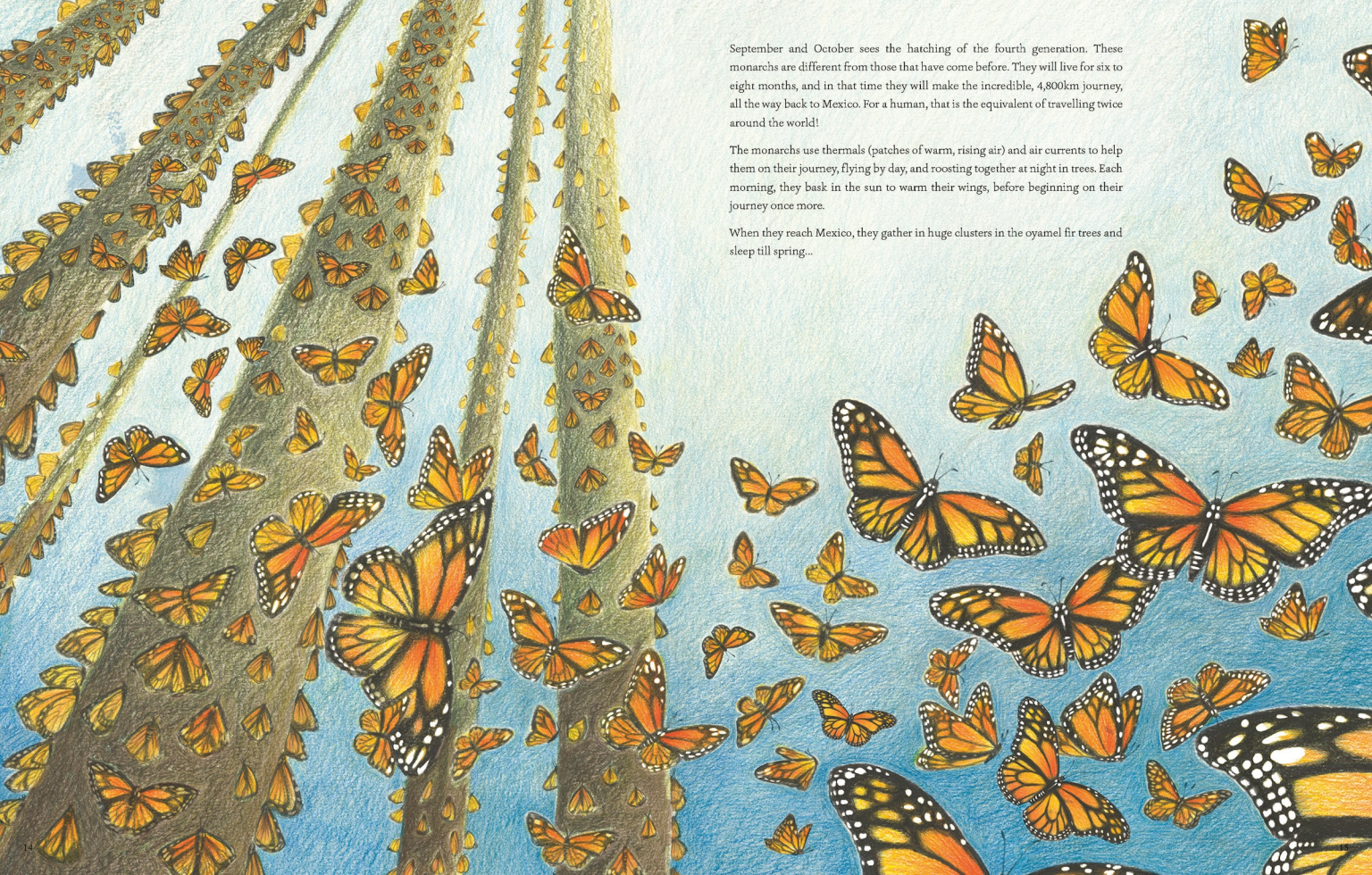
By April, the females have laid their eggs (up to 500), dying soon after. The eggs take around four days to hatch into tiny, pale green, shiny caterpillars. The caterpillars begin by eating their own eggshells, before feasting on the leaves of the milkweed plant.

It takes just ten days for a new monarch butterfly to emerge from its chrysalis. It then flies on, always heading north, feeding on flowers along the way. After five to six weeks, the females lay their eggs, giving way to the next generation of monarchs.

For the next three months, the cycle continues. In May and June, the second generation are usually born, and the third in July and August. Like the monarchs before them, these butterflies will hatch, mate and fly north, laying their eggs before they die.

Two weeks later, and the caterpillars are fully grown. By now, they are covered in vivid gold, black and white stripes. They begin to move further away from the milkweed plants, then attach themselves to a stem or leaf using silk, and envelop themselves in a chrysalis - a hard, protective outer layer.





September and October sees the hatching of the fourth generation. These monarchs are different from those that have come before. They will live for six to eight months, and in that time they will make the incredible, 4,800km journey, all the way back to Mexico. For a human, that is the equivalent of travelling twice around the world!

The monarchs use thermals (patches of warm, rising air) and air currents to help them on their journey, flying by day, and roosting together at night in trees. Each morning, they bask in the sun to warm their wings, before beginning on their journey once more.

When they reach Mexico, they gather in huge clusters in the oyamel fir trees and sleep till spring...