Comparing Life Cycles

Image from Wikimedia Commons

Specific Learning Outcomes

2-1-01: Use appropriate vocabulary related to the investigations of growth and changes in animals.
2-1-09: Compare the appearance of young and mature animals of the same type.
2-1-11: Identify and describe constant and changing characteristics of an animal as it grows and develops.
2-1-14: Describe changes in the appearance and activity of various animals as they go through a complete life cycle.
2-1-15: Compare the life cycles of animals that have similar life cycles and those that have different life cycles.

General Learning Outcomes

2-0-1a: Ask questions that lead to the investigations of living things, objects, and events in the immediate environment.
2-0-4e: Respond to the ideas and actions of others in building their own understandings.
2-0-4g: Verbalize questions, ideas, and intentions during classroom activities.
2-0-7a: Purpose an answer to the initial question based on their observations.
2-0-8a: Recognize that learning can come from careful observation and investigation.

Vocabulary

wetland, sun, light, soil, plant, water, colour

Summary

Students are introduced to wetlands by exploring the life cycles of three animals, where they learn to identify and describe the changes between the different growth stages.

Materials

- *Print 1 to 2 copies of the Mosquito, Mallard, and Dragonfly life cycle pictures (the version without labels)*
- *Enlarge and print the 3 life cycle images (with labels) or project image on a screen*

Procedure

Warm Up

Introduce the activity by stating that all animals experience some kind of life cycle process. When we talk about a life cycle, we are talking about the different changes that occur in the life of a living thing. Some life cycles are quite simple while others are more complex.

The Activity

Explain that today students will be exploring life cycles in preparation for your field trip where they will be visiting a wetland at Oak Hammock Marsh Interpretive Centre. Wetlands are special homes for living things where there is shallow, slow moving water with lots of water plants. The life cycles you will be exploring are the Mallard, Dragonfly, and Mosquito. These animals all need wetlands.

Divide your class up into three or six groups (depending on class size, and learners). Give each group one of the life cycle images (the version without labels). Ask the students to look at the image, and describe what they think might be happening.

A wetland is an area of land that holds shallow water, with a maximum depth of two metres. The water makes the soil very moist, so plants who need moist soils will grow in and around the water; this is why a wetland can not be deeper then two metres, because otherwise these kinds of plants drown and do not receive enough sunlight. The water moves slowly across because there are so many plants that slow the water down, absorbing some of the water like a sponge and filtering it as it moves through.

Have students identify when the animal is very young, when the animal is older, and to describe the changes they see between the different stages of the animal's growth. Discuss the different activities and abilities each animal may or may not be able to have or do during each part of their life cycle (Can they eat by themselves? Can they find food? Can they swim? Fly? Walk? etc.).

While students are still in groups, project or hold up picture of each animal (without labels), having each group take turns summarizing their answers for their particular animal. Ask students to go back to their desks, and project or hold up picture of each animal (with labels). Encourage note-making or have students create their own drawings of the life cycles. Describe the life cycle of the Dragonfly, Mosquito, and Mallard, referring to information sheet (included).

Extension: Project or create an enlarged version on an easel pad or the board of the triple Venn diagram. As a class, have a discussion on what is similar and different between each animal, what do they all have in common, and what is unique about each animal. Write down students' observations and comparisons onto the Venn diagram. If there are incorrect observations, provide the correct answer.

Wrap Up

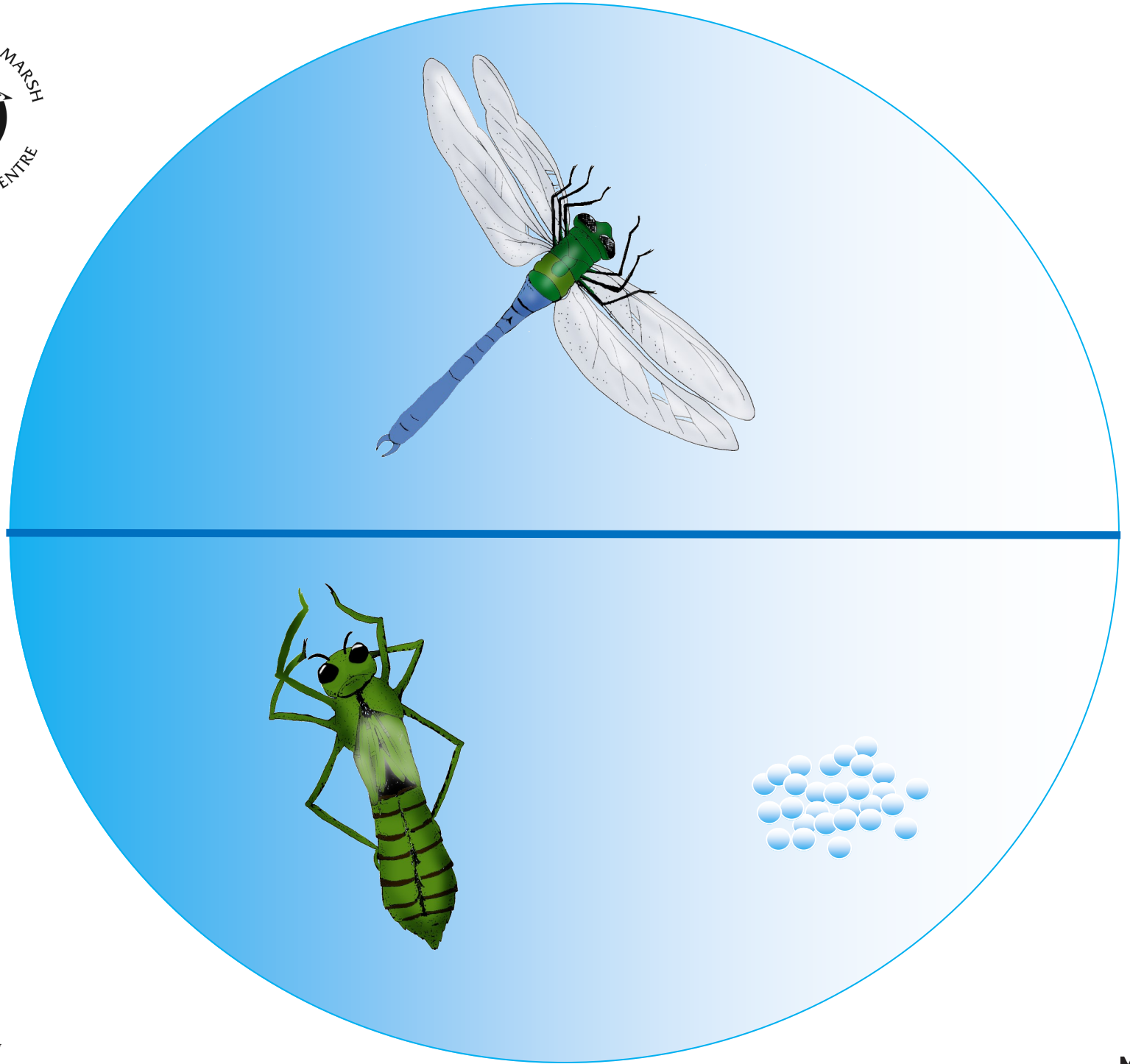
Finally, conclude the activity with a summary of what you discussed, then conclude by explaining that they will be learning more about life cycles, wetlands and the many animals that call wetlands home when they explore the Oak Hammock Marsh Interpretive Centre.

Naturalist Note:

Terminology for the various stages in a Mallard's maturity can vary depending on the resource used. We use the term 'juvenal' to describe the stage between duckling and adult because it is the specific term used when speaking about birds.

Although some resources will use the term 'juvenile' to reference this stage in a bird's life, generally this term is used when speaking of young humans not birds.

OAK HAMMOCK MARSH INTERPRETIVE CENTRE



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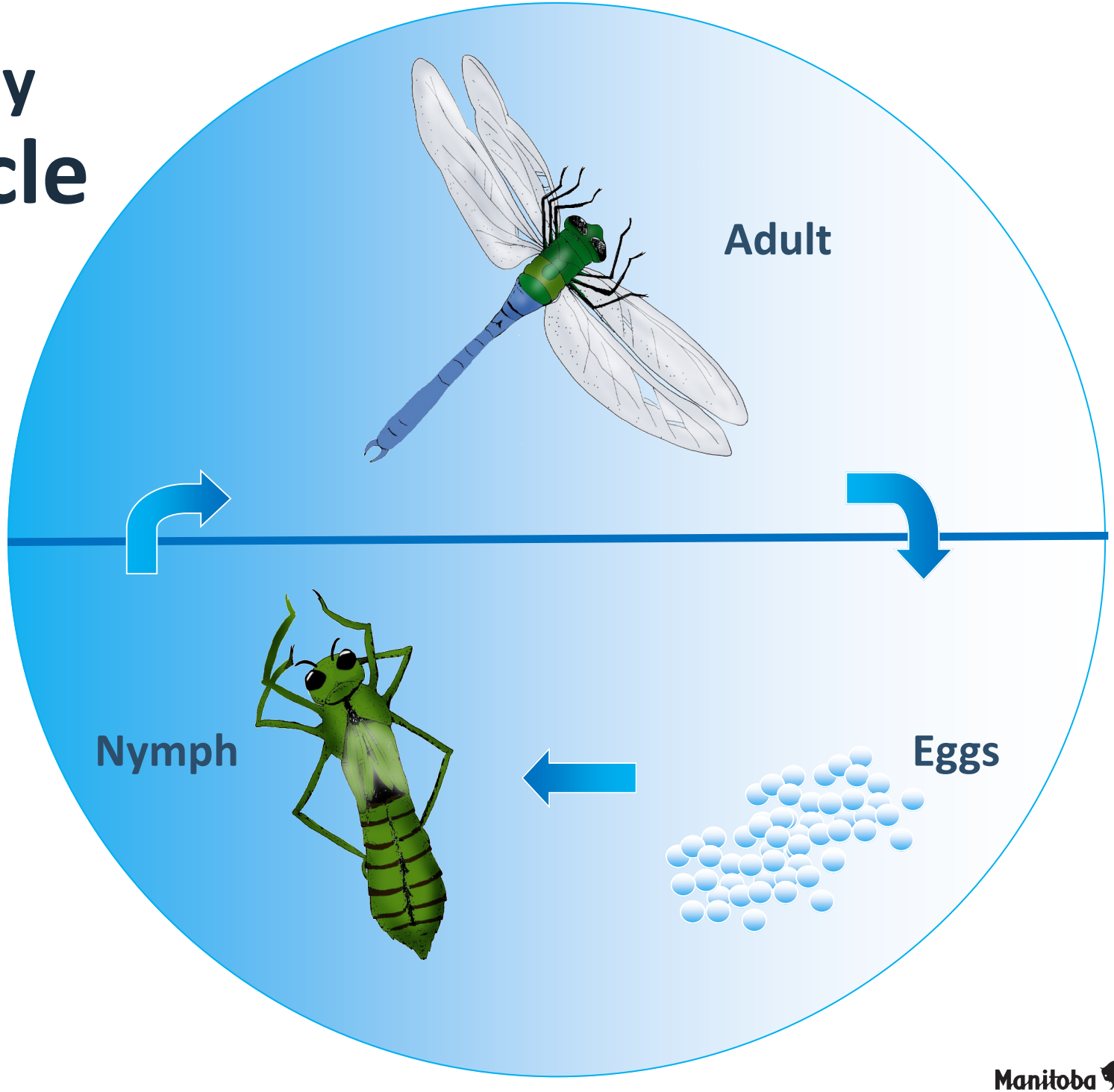
Manitoba

Dragonfly
Life Cycle

OAK HAMMOCK MARSH INTERPRETIVE CENTRE



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Dragonfly Life Cycle

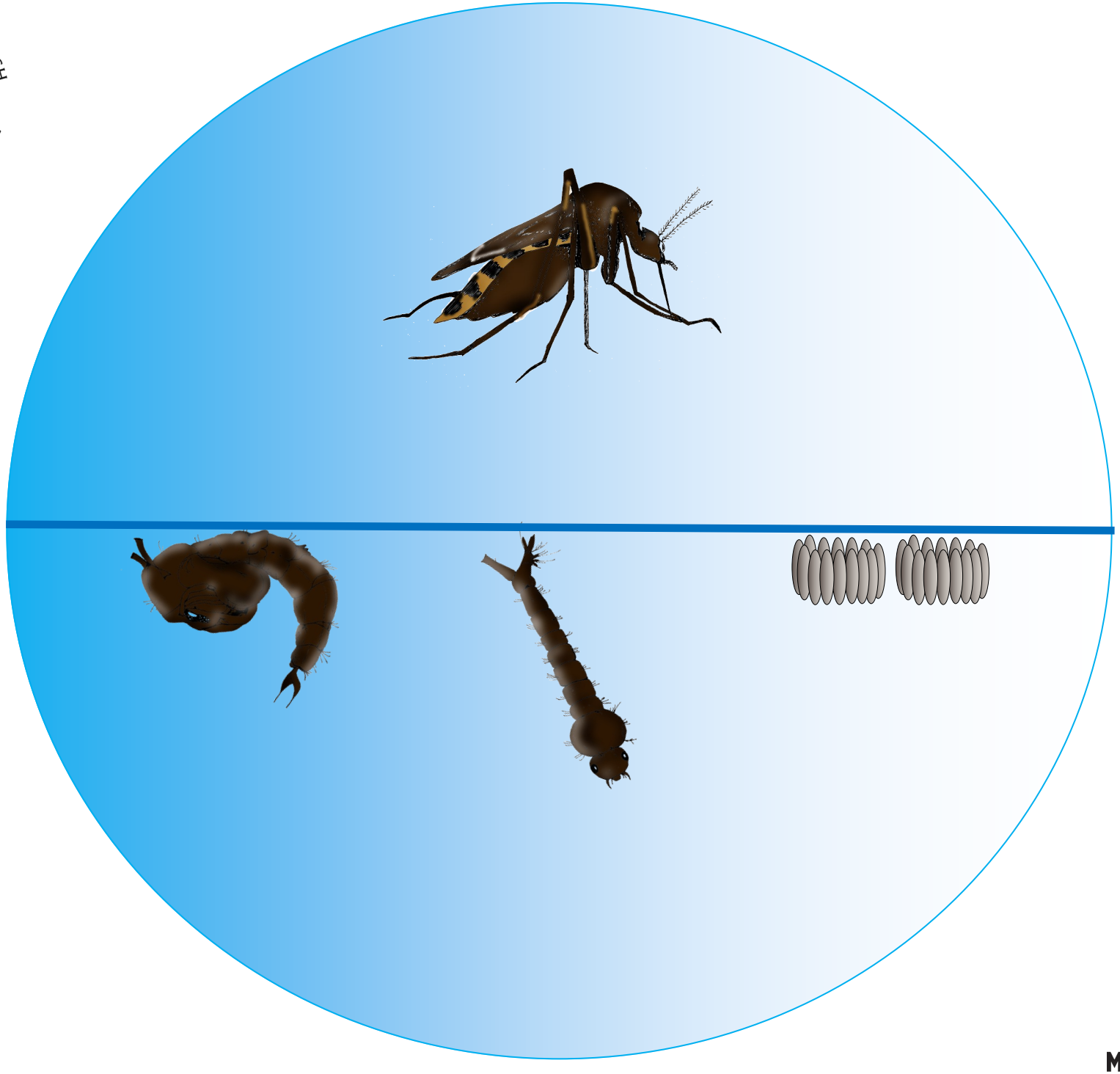
Dragonflies go through a three-stage life cycle process called **incomplete metemorphosis**. These stages include the **egg**, the **larva (nymph)**, and the **adult**.

An incomplete metamorphosis is a type of metamorphosis where an insect hatches from an egg, then goes through several nymphal stages. During these nymphal stages, the insect looks like a small version of its adult self, getting bigger and bigger, moulting its skin several times as it grows.

For dragonflies, the eggs are laid in the water by the female. After hatching, the dragonfly nymph will moult (change its skin) several times in the water as it grows before it becomes an adult.

A dragonfly will live in the water as a nymph for one to three years (or more) before it goes through the transformation from swimming to flying insect. Breeding occurs in the adult stage, continuing the life cycle. As an adult, a dragonfly may live for up to twelve months.

OAK HAMMOCK MARSH INTERPRETIVE CENTRE



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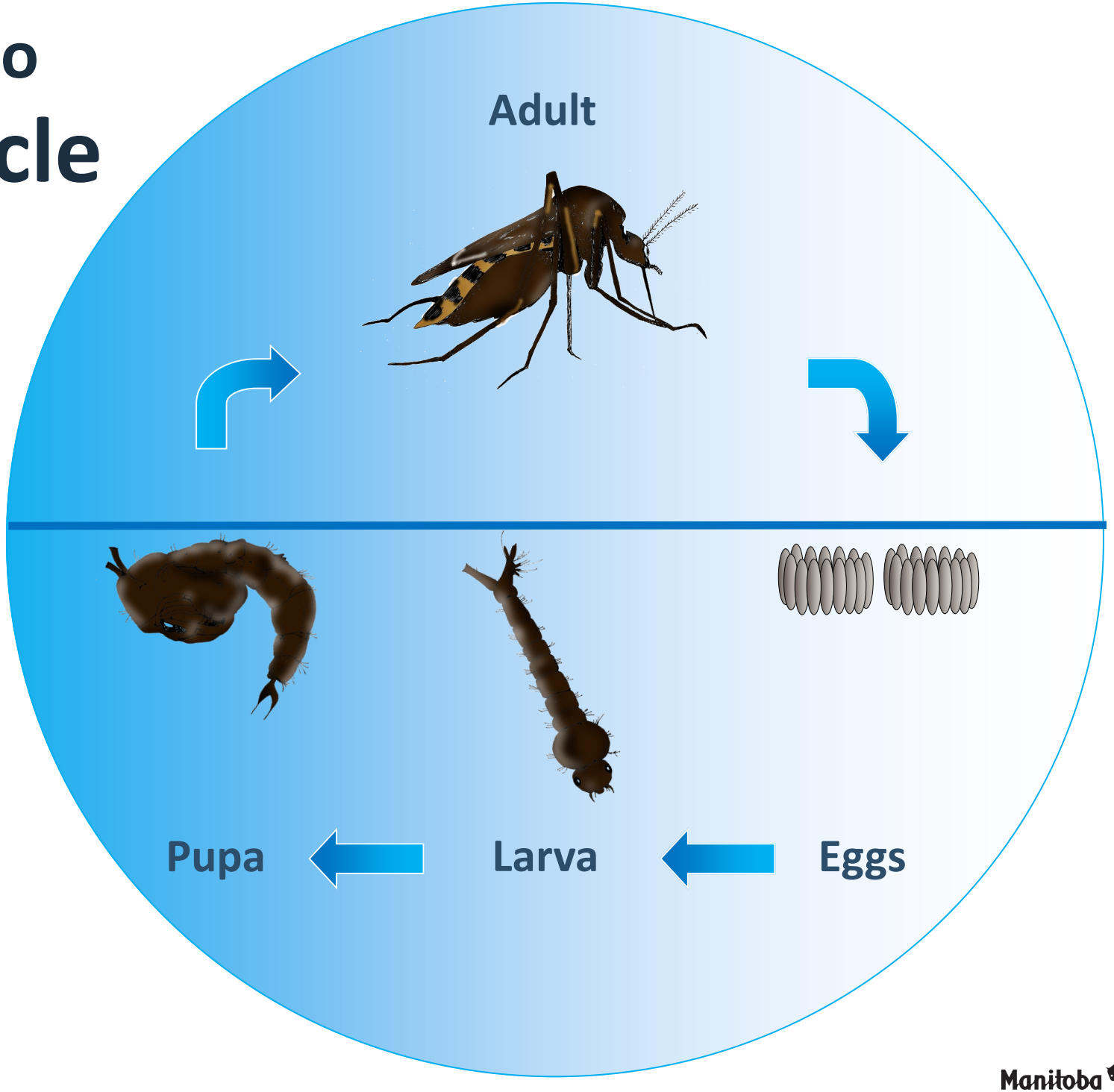
Mosquito Life Cycle

OAK HAMMOCK MARSH INTERPRETIVE CENTRE



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Mosquito Life Cycle

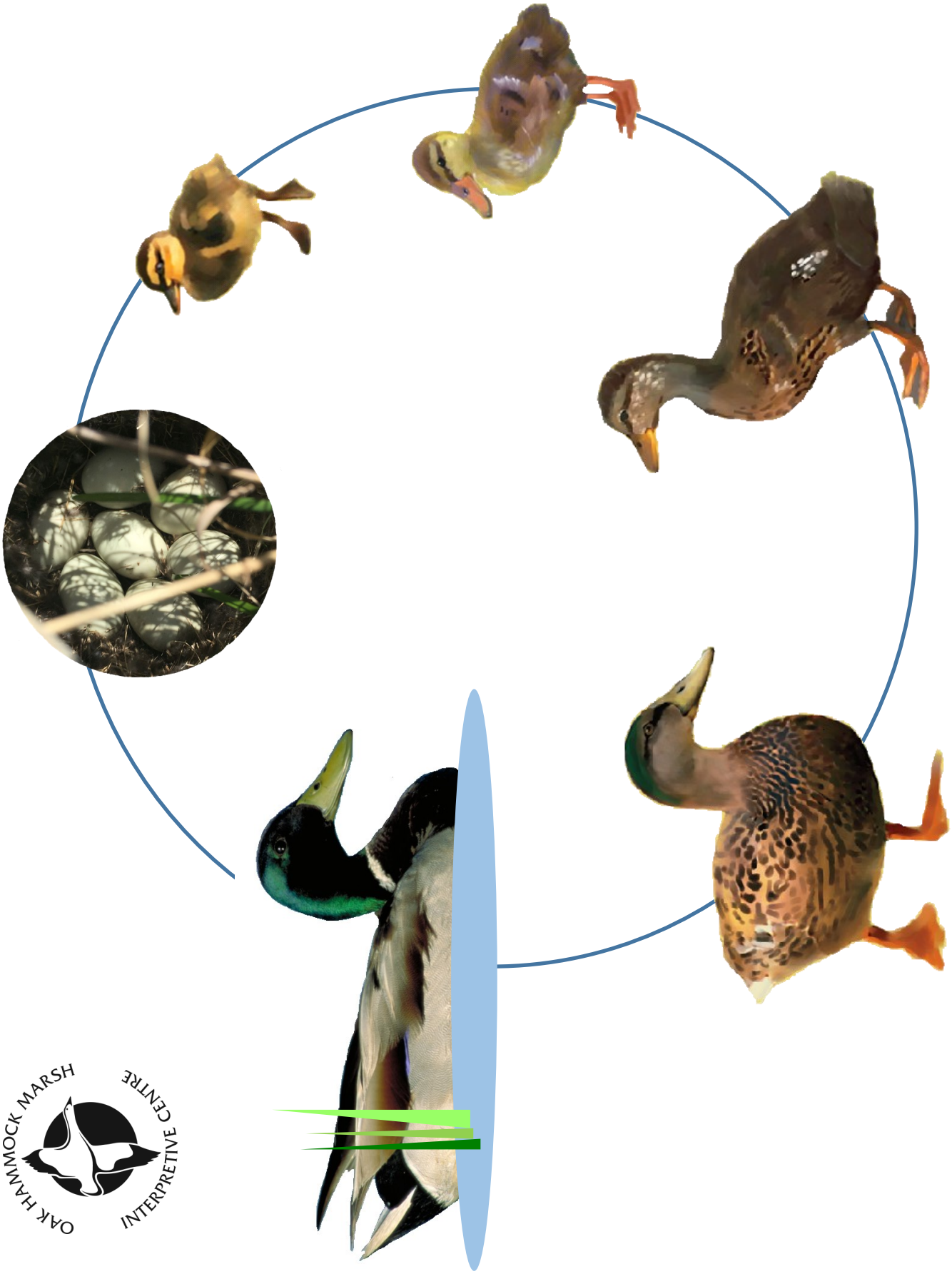
Mosquitoes go through a four-stage process called **complete metamorphosis**. These stages include the **egg, larva, pupa, and adult**.

A complete metamorphosis is a type of metamorphosis where an insect hatches from an egg then goes through three distinct stages, looking very different from the adult in the egg, larva, and pupal stage.

For mosquitoes, the eggs are dropped in pools of shallow water by the female. Hundreds of eggs are connected together to create a raft, allowing the eggs to float on the surface of the water. Once the eggs hatch, they enter the larval stage, feeding for approximately four days until they pupate. During the pupal stage, the mosquito does not feed. The mosquito morphes into an adult after two days as a pupa, then live as an adult for two to four weeks.

Breeding occurs during the adult stage. After breeding, most female mosquitoes find a blood meal before they can produce eggs (they are the ones who bite), while males

Images illustrated by Gary Cox. Images courtesy of Ducks Unlimited Canada.



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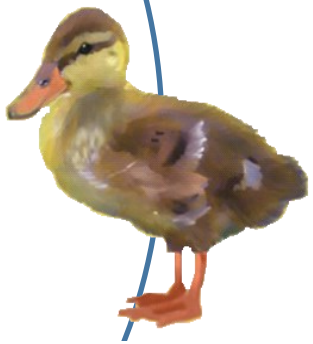
Mallard Life Cycle

Egg

23 - 30 Days in Egg

Duckling

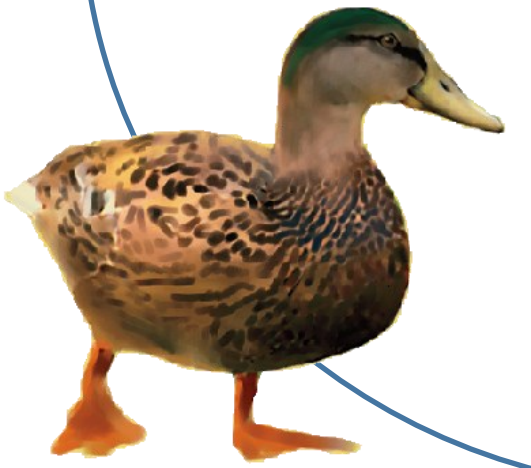
1 Day Old



3 Weeks Old

Juvenal

5 Weeks Old



8 Weeks Old

Adult

10 – 12 Weeks

Images illustrated by Gary Cox. Images courtesy of Ducks Unlimited Canada.

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Mallard Life Cycle

A Mallard's life begins in an **egg**, where it's mother incubates (sitting on the egg to keep it warm) the egg for 23 to 30 days, as the baby Mallard develops and grows. Once the Mallard has no more room in the egg, it hatches. The hatched Mallard is called a **duckling.**

After drying their feathers, ducklings are able to leave the nest and follow their mother. Ducklings are able to swim and feed on bugs about a day after hatching, while their mother keeps them safe and warm.

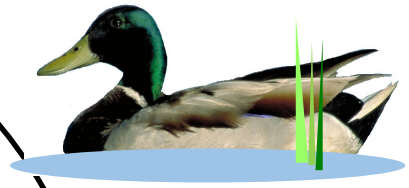
At around five weeks, the ducklings enter their **juvenal** stage as they begin to lose their fluffy feathers and begin growing in their adult feathers (also know as going from the downy stage to their first true feathers). At around eight weeks the juvenals begin to learn how to fly. At around 10 weeks, the juvenals will take short flights around their haibitat, and will eventually join other ducks for migration, as they fly south for the winter.

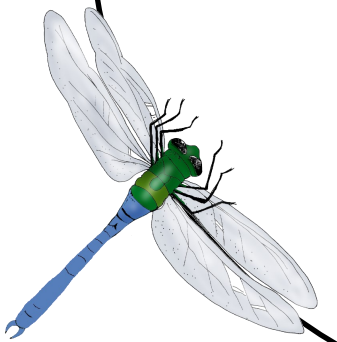
A Mallard can be considered an **adult** (based on its plumage) at around one year, but are independent at approximately 10 to 12 weeks of age. Mallards can live for three to five years.

Comparing Life Cycles

Are there any similarities between Mallards, Dragonflies, and Mosquitos and their life cycles? Are there any differences between these animals?

Write down what you think is similar and different between each animal, and what they all have in common with one another.





Mallard

Mallard & Dragonfly

Mallard & Mosquito

All

Dragonfly & Mosquito

Dragonfly

Mosquito

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Comparing
Life Cycles

- Teacher's Key -

The following provides some ideas for the similarities and differences that occur between the Mallard, Mosquito, and Dragonfly. By no means is this an exclusive list, and your class does not need to make all of these connections.