

Grade 3: Animal Lifecycles Presentation

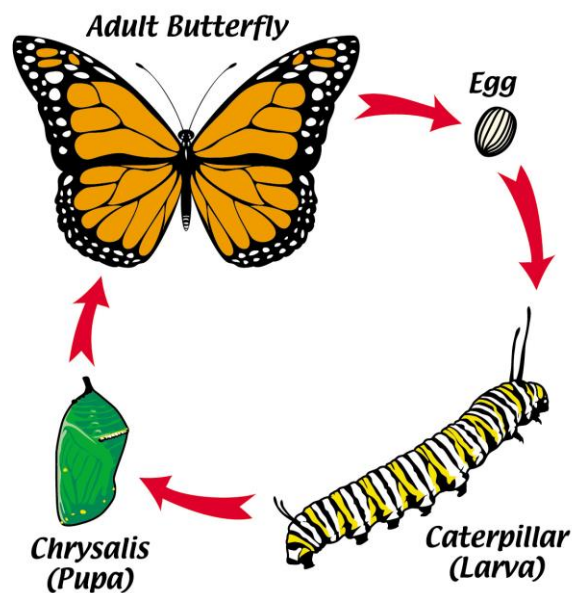


Table of Contents:

Learning Objectives & Curriculum Connections	2
Lesson Plan Script	3
Extra Activities.....	9
Appendix A: Lifecycle Match-up Cards	11
Appendix B: Marsh Monsters Supply List & Identification Sheet	15

INTRODUCTION

Students will learn about animal lifecycles and the growth and development of different animals.

The following presentation and activities will develop skills for description and classification of boreal forest animals, the lifecycles of those animals, and how parental care varies among different lifecycles. Students will also learn to identify requirements for life and about their own responsibility in caring for living things.

LEARNING OBJECTIVES:

By the end of this lesson, students will:

- Be able to differentiate between kinds of animals based on physical characteristics
- Predict stages of growth and development, and how an animal's adaptations and relationship with the environment can change during its lifecycle
- Identify similarities and differences in developmental sequences
- Identify different forms of parental care
- Recognize that animals require different habitats to meet their basic needs

LOCATION:

This PowerPoint can be taught in any classroom with a projector.

SET UP:

Download the PowerPoint presentation from www.lsfes.org. Print and cut out cards for lifecycle match-up activity. You may wish to print parent cards in one colour and baby cards on another colour to distinguish the two groups. Laminate the cards.

SAFETY PLAN:

For extra activity, Marsh Monster Hunt, leader must carry a first aid kit and be aware of their surroundings (i.e., bear safety). Ensure any students with bee, wasp, or other severe allergies carries their Epi-pen.

GRADE: 3

TEACHER PREPARATION TIME: 15 minutes

LESSON DURATION: 60 Minutes

PREREQUISITE: None

WORKSHEETS: Attached

CONNECTIONS TO SCIENCE CURRICULUM

TOPIC E:

E-1 Classify animals based on observable characteristics

E-2 Describe the growth and development of an animal from early to advanced stages

E-3 Identify stages in development of an animal, similarities and differences in development sequences between animal groups, and changes in ways animals obtain food during lifecycle

E-4 Differences and examples of parental care

E-6 Recognize adaptations of a young animal to its environment and identify changes in relationship with its environment through lifecycle

E-7 Recognize environmental conditions that threaten animal survival and how habitat preservation can maintain animal populations

MATERIALS

Attached Worksheets

- Lifecycle Match-up Cards

Extra Activity

- Marsh Monster supplies (See Appendix B)
- Invertebrate Identification Sheet

PROCEDURE:

To start the lesson plan download the animal lifecycles PowerPoint presentation from www.lsfes.org. Follow the script below as you present the PowerPoint. This script may also be found in the speaker notes of the PowerPoint presentation.

Slide 1. 'What is the name of the biggest forest in Alberta?' Answer: Boreal forest!

(If you don't live in Northern Alberta, ask a question about the forest you live in)

'The Boreal forest is one of the biggest on Earth; it goes around the whole globe and is an important habitat for many species of animals. It is really important so I want to make sure you all learn the name. Let's say it again together.' Answer: Boreal Forest!

'Lots of different types of animals live in the boreal forest. Today we're going to talk about the lifecycles of some of these animals.'

Slide 2. 'Today we're going to talk about various critters at different stages of their lifecycles. What does the term lifecycle mean?'

Answer:

- Growth & development of animals

'Different animals have different lifecycles. Many animals look a lot different in their baby stages than in their adult stages.'

Slide 3. 'Some lifecycles require animals to go through a metamorphosis. What does this mean?'

Answer: Change during growth.

Click once to show the breakdown of the word metamorphosis. 'The word metamorphosis is made up of three Greek words. 'Meta' means change, 'morph' means shape, and 'osis' means process. So altogether they mean the process of changing shape. Many insects change shape as they go through the stages of their lifecycle.'

'Can anyone tell me the lifecycle of a butterfly?' Answer: Egg, larva/caterpillar, pupa/cocoon/chrysalis, adult butterfly.

'Is it going through metamorphosis – is it changing during growth?' Answer: Yes.

Slide 4. 'Here you can see the lifecycle of a butterfly – it starts off as an egg when an adult butterfly lays her eggs on a leaf.'

'When the egg hatches it turns into a caterpillar, or larva. The larva is very hungry so it starts eating the leaf. It eats and eats until it gets really big and turns into a pupa. Another term for pupa is cocoon, or chrysalis. This is the stage where it starts to go through metamorphosis and changes into an adult butterfly. Then the whole process starts all over again.'

'Do you think butterflies take care of their young?' Answer: No, they leave them on the leaf to fend for themselves.

'Do the young stages of butterflies look like the adult stages?' Answer: No. 'As we can see in this picture, the caterpillar looks very different from the adult butterfly. In animals that undergo metamorphosis the babies look very different from adults.'

Slide 5. 'Let's look at the lifecycle of a mosquito.'

'It starts off with a raft of eggs on the water. The eggs hatch and turn into larvae. Another name for mosquito larva is wriggler, because of the way they wriggle around in the water. Larvae are always hungry; they love to eat. They will eat and eat until they get so big their skin gets too tight and they shed their skin. Sometimes you can see mosquito skins that have been shed in the water of a pond or marsh.'

'Once they have eaten enough food they turn into a pupa. Another name for mosquito pupa is tumbler, because they tumble in the water. Notice the two tubes coming from the pupa head that stick out of the water. What do you think they are for?' Answer: To breathe.

'The larva likes to stick its butt out of the water. Why?' Answer: To breathe.

'When the pupa has finished metamorphosis, the pupa will crack open and out will come an adult mosquito.'

'Do you think mosquitoes take care of their young?' Answer: No, they lay their eggs on the water and fly away.

'Do young mosquitoes look like adult mosquitoes?' Answer: No, the young look very different than the adults because they go through metamorphosis.

Slide 6. 'Let's look at the lifecycle of an ant.'

'Ants start off as eggs, hatch into larvae, then become pupae, and then adult ants.'

'What is an ant's home called?' Answer: A nest. 'Where do ants make their homes?' Answer: In soil or sand.

'Each nest contains hundreds of ants. One is called the queen and she lays all the eggs. The others are called workers, and they have different jobs such as feeding the larvae or gathering food.'

'There are many rooms in a nest that are used for different things. For example, the larvae have a room, and there's another room for the pupae.'

'Do ants take care of their young?' Answer: Yes. 'Ants feed their young and take care of them as they grow up.'

'Do the ant larvae in the picture look like the adult ant?' Answer: No, they look very different because they go through metamorphosis.

Slide 7. 'What is the lifecycle of a dragonfly?' Answer: Dragonflies have three life stages: egg, nymph, and adult.

'Dragonflies lay their eggs on plants or in the water, which then hatch into fierce nymphs. Nymphs are very good hunters and will eat almost anything that moves in the water, such as mosquito larvae, other dragonfly nymphs, and even tadpoles if they can get them. They will keep hunting and eating as nymphs for up to four years before they are ready to climb up out of the water and turn into an adult dragonfly.'

'Do adult dragonflies take care of their young?' Answer: No, they lay their eggs in the water and fly away.

'Do dragonfly nymphs look like the adults?' Answer: The nymphs slightly resemble the adults.

'In animals like the dragonfly where there's only one middle 'nymph' stage, the young may slightly resemble the adults. They still must undergo metamorphosis to grow their wings and become adults.'

Slide 8. 'We've looked at the lifecycles of different types of insects, now let's talk about some other types of animals.'

'What are the life stages of a frog?' Answer: Egg, tadpole, froglet, frog.

'Frogs lay their eggs in a clump in the water. Once the eggs hatch they swim around as tadpoles feeding on algae. They slowly grow limbs and become a froglet, or metamorph, and eventually develop into an adult frog.'

'Do frogs take care of their young?' Answer: Some do, some don't. 'Some species of tree frog will carry their babies around on their back. Most of the frogs in Alberta's boreal forest do not take care of their young.'

'Does the tadpole look like the adult frog?' Answer: No, the tadpole looks very different from the adult.

'Do frogs go through metamorphosis?' Answer: Yes.

Slide 9. 'In the boreal forest of Alberta we have a few different species of frogs and toads.'

'The boreal chorus frog is very tiny and their call sounds like the sound you make when you run your finger down the edge of a comb.' Follow this link to hear what a boreal chorus frog sounds like: https://www.youtube.com/watch?v=uOQ_dehNgnw

'The wood frog can get a bit bigger in size, and their call sounds like a duck's quack.' Follow this link to hear what a wood frog sounds like: <https://www.youtube.com/watch?v=Xe1Q0FPw0-8>

'Boreal toads are also found in the Boreal Forest.'

'What is the difference between a frog and a toad?'

Answer:

- Frogs spend more time in water than toads do
- Toads have bumps on their skin, while frogs do not
- Their eggs look similar, but frogs lay their eggs in a clump, while toads lay theirs in a line

Slide 10. 'What is the lifecycle of a bird, such as this bald eagle?' Answer: Egg, young, adult.

'Do birds go through metamorphosis?' Answer: No. 'Once birds hatch from their egg, they look like mini versions of their parents. They will grow in size over the course of their life, and the colour of their feathers may change, but they won't undergo a drastic physical change between the stages of their lifecycle.'

'Do adult birds take care of their young?' Answer: Yes. 'Birds are very good parents to their young, and often both parents will participate in protecting the nest and feeding their babies.'

Slide 11. 'Next we're going to look at the lifecycle of a mammal, such as this black bear. What is a mammal?' Answer: Mammals are warm-blooded animals with hair or fur that feed their babies milk when they are young. 'What is the lifecycle of a mammal?' Answer: Baby, young, adult.

'Do mammals go through metamorphosis?' Answer: No. 'When mammals are born they look like a smaller version of their parents. They will grow bigger over the course of their life, but they won't undergo a dramatic change in body structure.'

'Do mammals take care of their young?' Answer: Yes. 'Baby mammals need a lot of care. Mother bears will take care of their cubs for 1-2 years.'

Slide 12. 'Let's review. Different types of animals have different lifecycles. Insect lifecycle stages can either be egg, larva, pupa, adult, such as the mosquito, or egg, nymph, adult, such as the dragonfly. Frog lifecycles have four stages: egg, tadpole, froglet, and frog. Bird and mammal lifecycles each have three stages: egg, young, adult for birds, and baby, young, adult for mammals. While insects and frogs go through metamorphosis, birds and mammals do not.'

Slide 13. 'Now that we've discussed the lifecycles of lots of different types of animals, we're going to do a metamorphosis challenge. I'm going to show an animal from the boreal forest, and you need to guess if that animal undergoes metamorphosis or does not undergo metamorphosis during its lifecycle.'

Optional Add-on: Challenge your students to see if they can guess the life stages of the animals as well.

Slide 14. 'Does a mallard duck undergo metamorphosis?' Answer: No. Birds do not go through metamorphosis.

Lifecycle of a duck: Egg, young, adult.

'What's another name for a young duck?' Answer: A duckling. Click once to show a picture of a duckling.

'Does the duckling look like the adult duck?' Answer: Yes.

Slide 15. 'Does a bumblebee undergo metamorphosis?' Answer: Yes.

Lifecycle of a bee: Egg, larva, pupa, adult.

'Do bees take care of their young?' Answer: Yes.

Slide 16. 'Does a grey wolf undergo metamorphosis?' Answer: No. Mammals do not go through metamorphosis.

Lifecycle of a wolf: Baby, young, adult.

'What is a baby wolf called?' Answer: A pup. Click once to show a picture of a wolf pup.

'Does the pup look like the adult wolf?' Answer: Yes.

Slide 17. 'Does a caddisfly undergo metamorphosis?' Answer: Yes.

Lifecycle of a caddisfly: Egg, larva, pupa, adult.

Fun fact: 'When caddisflies are in their larval stage, they use sticks and leaves to build themselves a home that they carry around with them in the water. It helps them to blend in with the plants in the water and hide from predators. Here is a picture of a caddisfly larva.' Click once to show a picture of a caddisfly larva.

'Does the caddisfly larva look like the adult?' Answer: No.

Slide 18. 'Does a grasshopper undergo metamorphosis?' Answer: Yes.

Lifecycle of a grasshopper: Egg, nymph, adult.

'Why are grasshoppers green?' Answer: It helps them to camouflage, or blend in, with the green grass around them.

Slide 19. 'Does a white-tailed deer undergo metamorphosis?' Answer: No. Mammals do not go through metamorphosis.

Lifecycle of a deer: Baby, young, adult.

'What's another name for a baby deer?' Answer: A fawn. Click once to show a picture of a fawn.

'Does the fawn look like the adult deer?' Answer: Yes.

Slide 20. 'Does a boreal chorus frog undergo metamorphosis?' Answer: Yes.

Lifecycle of a frog: Egg, tadpole, froglet, frog.

Fun Fact: 'An easy way to tell that this is a boreal chorus frog is because it has three stripes on its back and a dark stripe through its eye.'

Slide 21. 'Does a damselfly undergo metamorphosis?' Answer: Yes.

Lifecycle of a damselfly: Egg, nymph, adult.

Click once to show a picture of a damselfly nymph. 'Here is a picture of a damselfly nymph. It is similar in body shape to the damselfly but lives underwater and does not have wings.'

Slide 22. 'Does a grass spider undergo metamorphosis?' Answer: No.

Lifecycle of a spider: Egg, young, adult.

Fun fact: 'Another name for a young spider is a spiderling.'

Slide 23. 'Does an American robin undergo metamorphosis?' Answer: No.

Lifecycle of a robin: Egg, young, adult.

'What is a baby robin called?' Answer: A chick. Click once to show a picture of a robin feeding her chicks.

'Do the chicks look like the adult robin?' Answer: Yes.

Slide 24. The cards for the following activity can be found in Appendix A of this lesson plan.

'Next we are going to play a game. Each of you will get a card with a picture of an animal on it. Half of you will get a card with a baby animal. You will stand on one side of the room. The other half will get a card with an adult animal. You will stand on the other side of the room. When I say go, you have to try to find the person with the card that goes with yours (either your baby or your parent) as fast as possible. When you have found your partner, link arms and move to the front of the class until everyone is done.'

Conclusion Questions:

Once the students have found their partner, ask them questions about their animal such as:

- 'Does your animal undergo metamorphosis?'
- 'Do adults take care of their babies with your animal?'
- 'Do the babies look like the parent animals?'

'Some animals look like their parents when they are born and other animals do not.'

'Thank you for being such a great class for our presentation. We sure learned a lot today!'

The lesson plan is now complete but if you still have extra time you can do the extra activity below.

EXTRA ACTIVITIES:

1. Marsh Monster Hunt (Approx. 20 minutes)

If you have an easily accessible marsh or pond nearby this additional activity can be done to give your students an up-close look at aquatic invertebrates at different stages of life. To select a pond/marsh safe for dipping, ensure it does not have steep banks but has flat ground where students may stand by the water's edge to look for critters, is easy to move around the outside edges of the water body, and has clear visibility to supervise your students as they explore.

Standing in a circle

- 'We are going to be going on a marsh monster hunt to find out what kinds of critters live in this pond/marsh and see what stages of their lifecycle they are in. Each of you will get a container that you can use to scoop up critters in the water. Dip your container into the water to scoop up critters, then let the water settle while you look to see what you've picked up; it's easier to see the critters when the water is still. You can use the marsh monster ID sheet to see what you've collected. If you've found something you want to share with the class, bring it over to the main container.'
- Set up a main container that students can bring their findings to. Put an adult in charge of the main container.
- Set boundaries for the marsh monster hunt (i.e. the students have to be able to see you, or set two objects they can't go past)
- Set safety rules for the marsh monster hunt (i.e. students may go no further than ankle deep into the water, be careful where they step as it may be slippery, do not lean out too far into the water where they may fall)
- 'Remember when we are looking for critters to be gentle with them. When you are returning critters to the water, don't drop them from high above the water surface, lower your container to the water's edge first. If you find a frog, do not touch it with your bare hands. Frogs breathe through their skin and the oils and residues on our hands could hurt them. Use your container only.'
- Let the students search for critters for a bit, then call them back in. Give them a chance to see what everyone collected.

Conclusion Questions:

Sitting or standing in a circle

1. Talk about what everyone found, see what creatures were found the most.
2. Talk about the future populations of certain creatures like the mosquito depending on what you found in the water.
3. 'Do you think this is a healthy ecosystem? Why or why not?' (i.e. if there are many different types of animals it may be a healthy ecosystem; if frogs are present it is likely healthy since frogs breathe through their skin, and are therefore sensitive to water quality changes).
4. Give the students time to inspect everyone's findings.
5. Explain that we need to put these critters back in a good place where they can find food, water, and shelter. If in a provincial park, reinforce that parks and protected areas are


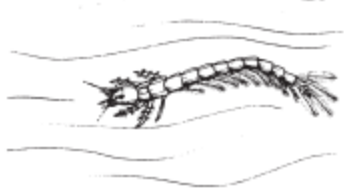


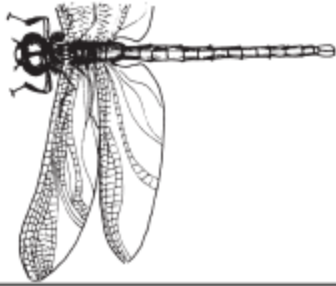





meant to protect all the animals and plants that live there. Ask the students to find a good home for their critters similar to where they found them.










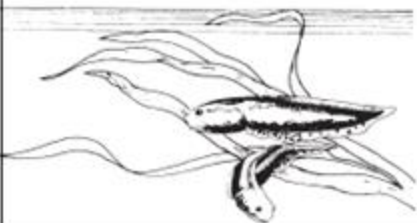
Curriculum Links: Topics E-2, E-7








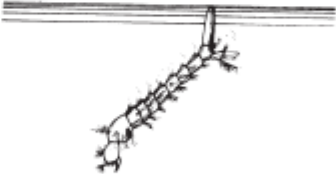


APPENDIX A:

Lifecycle Match-up Cards

This activity and cards are from Project Wild's Aquatic K-12 Curriculum Activity Guide. For this activity we have chosen to use only animals that live in the Boreal Forest. If you would like to include other animals or for more environmental educational activities, visit <http://www.projectwild.org/documents/ProjectWILDAquatic.pdf> or www.projectwild.org

<p>Whirling Beetle</p> 	 <p>Whirling Larva</p>
<p>Caddisfly</p> 	 <p>Caddisfly Larvae</p>
<p>Dragonfly</p> 	 <p>Dragonfly Nymph</p>
<p>Stonefly</p> 	 <p>Stonefly Nymph</p>
<p>Osprey</p> 	 <p>Osprey Hatchlings</p>

<p>Mayfly</p> 	 <p>Mayfly Nymph</p>
<p>Pelican</p> 	 <p>Pelican Nest and Eggs</p>
<p>Butterfly</p> 	 <p>Butterfly Larvae</p>
<p>Duck</p> 	 <p>Ducklings</p>
<p>Frog</p> 	 <p>Tadpoles</p>

<p>Crane fly</p> 	 <p>Crane fly Larva</p>
<p>Black Fly</p> 	 <p>Black Fly Larva</p>
<p>River Otter</p> 	 <p>Young River Otters</p>
<p>Mosquito</p> 	 <p>Mosquito Larva</p>
<p>Adult Beaver</p> 	 <p>Young Beavers</p>

Appendix B:

Marsh Monster Supply List & Aquatic Invertebrate Identification Sheet

Marsh Monster Supply List:

- One large container/bin for class' findings
- One small container per student
- One aquatic invertebrate identification sheet per pair
- (optional) White ice cube tray & turkey baster to separate marsh monsters for a closer look
- One pair of rubber boots per student

The following aquatic invertebrate identification sheet is from Alberta Environment & Parks (AEP) Educational Resources. For a copy of this and other environmental education activities, visit <http://aep.alberta.ca/about-us/documents/WetlandsActivity12-Invertebrates-2009.pdf> or <http://aep.alberta.ca/about-us/education-resources/default.aspx>.

WETLAND INVERTEBRATES

Dragonfly Nymph

Brown in colour, it usually walks slowly on the bottom or among the vegetation. Eats plankton, worms and insects. About this long



Caddisfly Larva

Builds a tubular home using bits of plants, sand grains or even old snail shells. Walks slowly along the bottom and eats algae and small aquatic animals. About this long



Giant Water Bug

A large, flat, brown bug usually found among plants. Swims by kicking its hind legs. Eats a variety of aquatic animals. This drawing is about life size.



Whirligig Beetle

A small, shiny black beetle usually seen zooming around on the surface of the water. Feeds on small insects and is about this long



Predacious Diving Beetle

(larva) Also called a water tiger due to its voracious appetite for insects, minnows and tadpoles. Swims by 'dog paddling' with its legs. About this long



Predacious Diving Beetle

(Adult) A shiny black beetle sometimes marked with dull yellow or green. Swims by paddling with oar-like legs. Eats a variety of aquatic animals. About this long



Snails

Move around slowly on a muscular foot that extends out of a spiral or orb shell. Use a rough 'tongue' to scrape up algae and dead plant material. Size varies



Seed Shrimp

A tiny clam-like animal that is greenish in colour and motors about using its legs and antennae. Filters bacteria and dead plant material out of the water. About the same size as the water flea.



Leech

A flat-bodied, dark-coloured worm with a sucker at each end of its body. Moves along like an inchworm or swims in a ribbon-like fashion. Eats snails, insect larvae, worms and some suck blood. Size varies



Bloodworm

A dark red, segmented worm that spends its time moving about in the muck at the bottom of the marsh. Eats algae, tiny plants and other dead things on the bottom. About this long



WETLAND INVERTEBRATES

Water Flea

Pink or orange in colour, it moves up and down in short hops and feeds on algae and bacteria. About this long ↔



Water Boatmen

Black with fine yellow bars, it swims by paddling with its oar-like legs. Eats algae and dead plants and animals. About this long ↔



Copepod

Often called 'Cyclops', due to its single eye spot. Moves with a constant, jerky, swimming motion, eats dead plants and animals and is very tiny.



Phantom Midge Larva

Called a Phantom midge because this worm-like animal is transparent (see through). It moves by suddenly flicking its body. Eats plankton and is about this long ↔



Water Mite

Usually red, this tiny spider relative feeds on larvae and plankton and swims by wildly beating its 8 legs. About this long ↔



Backswimmer

Black and white in colour, with big red eyes. It swims along on its back by using its legs as oars. Preys on insects and small fish. About this long ↔



Sideswimmer

A freshwater shrimp that is grayish in colour and swims on its side by beating its many legs. A scavenger about this long ↔



Water Strider

With long skinny legs, it runs on the surface of the water and feeds on small insects. About this long ↔



Mosquito Larva

"Little black sticks" that float under the surface and feed on algae and protozoa. Wiggles wildly when disturbed. About this long ↔



Damselfly Nymph

Usually found on the bottom or on underwater plants. Notice the 3 leaf-like gills on the end of its body. Eats insects and plankton. About this long ↔



Mosquito Pupa

A tiny black "comma" floating just under the surface. It breathes through hollow tubes that stick out of the top of its head. About this long ↔



Mayfly Nymph

Similar to the damselfly nymph except that the projections at the end of its body are finer and more feather or hair-like. Eats algae and plant material. About this long ↔

