Alberta Parks

Animal Life Cycles

Field Study Planning Guide

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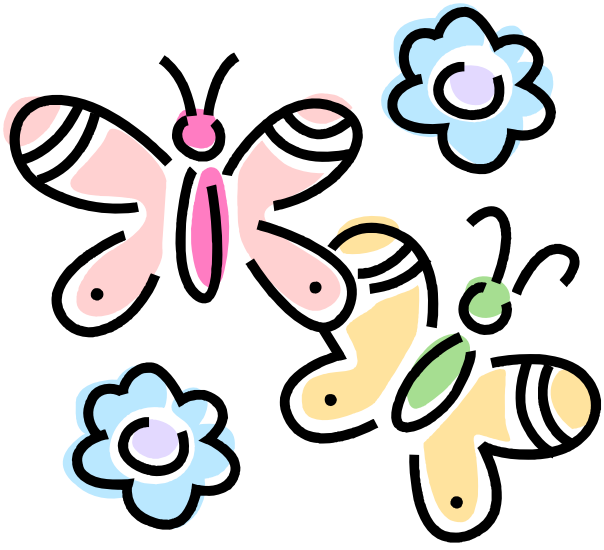


1.0 Introduction

Welcome to the teacher's planning and activity package for **Animal Life Cycles**. This half-day program was developed to offer students a natural environment experience that supports both the Grade 3 Alberta Elementary Science Curriculum Topic E: Animal Life Cycles and the goals of Alberta Parks:

- **Preservation** – *to preserve in perpetuity a network of parks and protected areas that represent the diversity of the province's natural heritage as well as related cultural heritage.*
- **Heritage appreciation** – *to provide opportunities to explore, understand and appreciate the natural heritage of Alberta, and enhance public awareness and our relationship to and dependence on it.*
- **Outdoor recreation** – *to provide a variety of natural landscape dependent outdoor recreation opportunities and related facilities and services.*
- **Heritage tourism** – *to encourage residents and visitors to the province to discover and enjoy the natural heritage of Alberta through a variety of outdoor recreation and nature based tourism opportunities, facilities and accommodation services.*

1.1 Program Outline

Animal Life Cycles is a guided program that consists of three components:

- Multidisciplinary preparatory activities to be completed at the school.
- A half-day field study conducted in a protected area that takes students through experiential activities focused on invertebrates and interdependencies within forests.
- Post-visit activities, to be done at the school, that are intended to reflect on and apply what the students have learned.

Note: Checklists, which will help you organize your field study, are provided in this package.

1.2 Program Objectives and Curriculum Fit

This field study program and the preparatory and post field study activities that complement it, have been designed to address specific learner expectations from Topic E: Animal Life Cycles in the Elementary Science Program of Studies.

- Classify a variety of animals, based on observable characteristics; e.g. limbs, teeth, body covering, overall shape and backbone.
- Predict the next stages in the growth and development of at least one animal from each of the following groups: mammals, birds, fish, reptiles, amphibians, and insects, and identify similarities and differences in their developmental sequences.

- Identify the food needs of at least one animal from each of the following groups: mammals, birds, fish, reptiles, amphibians, and insects; and describe changes in how each animal obtains food through different stages of its life.
- Demonstrate awareness that animals require different habitats in order to meet their basic needs of food, water, shelter and space.
- Recognize adaptations of a young animal to its environment, and identify changes in its relationship to its environment as it goes through life; e.g. tadpole are adapted for life in an aquatic environment; adult frogs show adaptations to both terrestrial and aquatic environments.
- Identify examples of environmental conditions that may threaten animal survival, and identify examples of extinct animals.
- Recognize that habitat preservation can help maintain animal populations, and identify ways that student actions can assist habitat preservation.

2.0 Planning Your Visit

Alberta's provincial parks and protected areas are ideal "outdoor classrooms". Our education staff provide direct programming and support materials to schools and youth groups in various sites. These services are aimed at increasing environmental awareness, understanding and stewardship of the natural world.

To provide your groups with the best experience possible, please review the following section thoroughly.

2.1 Safety in the Park
Your role…
School groups need to be prepared for the possibility of accidents. We strongly recommend that teachers and/or chaperones have a recognized and current first aid certification.

Our role…
In the event of an emergency, there are existing emergency response programs in place at our sites. On-site personnel have basic first aid and CPR certification. As well, they can access emergency services such as local emergency medical services, STARS Air Ambulance and R.C.M.P, by cellular and satellite telephone and radio. Depending on location, time of response is approximately 20 minutes.

Teachers can also access these resources by dialing 911where satellite reception is available. If you are guiding your own field study, please check with park personnel to verify your access to local communication sources.

2.2 Park Facilities
Many parks and protected areas offer groups the following facilities and services:

- A professional interpreter to guide you on your discovery (and to answer any questions about the visit package).
- All equipment needed for the field study (unless specified in this package).
- Staging/day use areas equipped with a shelter, water pump, pit toilets, and firepits.

2.3 Planning Checklist for Your Field Study

Did you remember to…

☐ arrange for transportation to and from the park?

☐ confirm the meeting location with your interpretive guide?

☐ prepare student material (if required) and complete pre-visit activities at school with students?

☐ divide your students into small groups and select a volunteer leader for each group? We recommend 1 adult for every 5 students

☐ arrange for and prepare adult volunteers? We appreciate their help and they will be expected to participate in the program. It would be beneficial to:

- clarify what their roles and responsibilities will be during the field-study
- provide volunteers with any information they may need for the day
- orient them to any specific health or student concerns

☐ ensure that students have lunches (if you are not preparing a BBQ) and that they are appropriately dressed for the weather?

☐ encourage students to reduce garbage in the park by bringing garbage-free lunches such as: reusable lunch bags and containers, drinks in cans or bottles?

☐ review and discuss the park rules and behavioural expectations found in the Class Preparation Checklist for Your Field Study on pages 7 and 8?

2.4 Class Preparation Checklist for Your Field Study

Here is a checklist of things to review at school prior to your field study.

☐ Discuss the roles and importance of provincial parks and protected areas.

- Alberta contains many different natural landscapes and is home to numerous plant and animal species. Our parks and protected areas network helps to ensure that this environmental diversity is preserved for future generations. For more information on the parks and protected areas network, visit our web site at www.albertaparks.ca.

☐ Discuss how behaviour can affect the natural environment in a protected area. Have the class make a list of things they can do that show respect for living things and a commitment to their care. This list can include:

- Leave ant hills, nests and rotting logs alone. These are homes for small animals.
- Walk carefully around bushes and trees, rather than through them.
- Stay on trails; do not pick or remove anything in a protected area, unless it is garbage.

☐ Discuss outdoor safety by creating an outdoor classroom safety plan. This plan could include:

- Have a buddy that you spend the day with.
- Always be in view of your teacher or adult leader.
- Don't approach wild animals.
- Wear appropriate clothing for the season and for the activities of the day.

☐ Discuss behavioural expectations while in the park. Teachers are responsible for the behaviour and discipline of the student during our programs.

- Explain that they are ambassadors for their school.
- Review appropriate behaviour, both indoors and out.
- Discuss the facility or the part of the park they will be visiting. Explain that the field study is a school, just a different location. All the school rules apply. Other schools will be using the park to work as well.

☐ Discuss the Park rules:

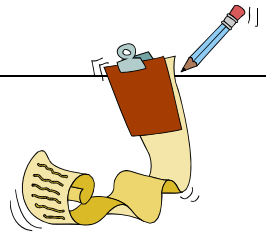
- Wildlife live in parks and protected areas because they are able to meet their needs for food, water, shelter and space. Feeding them is not necessary. In fact, it can create significant hardships for them because they become dependent on this food and the learned behaviors associated with this can also be dangerous for them**. Do not feed or harass wildlife**. Observe them quietly from a distance.

- Thousands of people visit parks and protected areas each year. If each person took only one cone or picked one plant, it would still have a very significant impact on the natural environment**. Cutting, defacing, picking or removal of any plant, fossil, rock or other Park material is prohibited.** Take only pictures and leave only footprints.

- If those same thousands of people threw their garbage on the ground, it would be difficult to clean up and dangerous for wildlife that could mistake the litter for food**. Litter should be placed in garbage cans or in your pocket** if no garbage cans are available.

- Parks and protected areas should remain a natural place. Wildlife are not accustomed to pets chasing them or threatening them with noise. For these reasons, **pets must be on a leash** in the Park. This not only protects wildlife, it also protects people and their pets as well.

- Open fires are a threat to park habitat and human safety. For these reasons, **fires are permitted only in designated firepits** located in picnic area. When using a firepit, please provide your own roasting sticks and kindling. DO NOT USE BRANCHES OR DEADFALL FROM THE PARK for the fire, and remove all garbage from the firepit area. Ensure your fire is out completely before leaving.



3.0 Pre-visit Activities

The following pages contain a variety of pre-visit and post-visit activities that complement your field study and provide students opportunities to practice the skills that they will be using during and after their trip. If possible, invite the adult volunteers into the classroom to also experience these activities.

Feel free to use your own activities or the ones described in this package. Choose activities that reflect each specific learner expectation from the curriculum that will be addressed on the field study day (see **Section 1.2 *Program Objectives and Curriculum Fit)***.

3.1 Vocabulary

Review the following vocabulary with the class. This can be done in a number of ways:

- The words could be incorporated into the spelling program by using them in a weekly quiz.
- Students could be given a copy of the vocabulary list and asked to create poems or a crossword puzzle using the words on the list.

This terminology is used throughout the field study program. The more familiar students are with this vocabulary the more successful their field study experience will be.

Abdomen – The part of an animal's body that contains the digestive system and all the organs of reproduction.

Adaptation – Physical characteristics or behaviour, which helps a plant or animal live successfully where it does.

Antennae – Delicate sense organs on an insects head which it uses to smell, touch, taste, or hear the world.

Camouflage – Body colour or markings that help an animal hide from its predators.

Cephalothorax – The head and thorax of arachnids that are combined in this body region.

Complete Metamorphosis – A life cycle that has 4 stages of growth: egg, larva, pupa, and adult.

Decomposer – Any plant or animal that gets its energy by feeding on and breaking down dead plants or animals into smaller pieces that will become part of the soil.

Exoskeleton: The hard, outer skeleton of an arthropod, which supports the muscles and soft internal organs

Habitat – The home of a plant or animal.

Incomplete (simple) Metamorphosis – A life cycle that contain 3 stages: egg, nymph, and adult.

Invertebrate – A small animal that has no backbone.

Larva – The worm-like, immature stage of some insects.

Metamorphosis – The transformation of a juvenile insect into an adult.

Molt – The process in insects and spiders of shedding the exoskeleton to grow or change into adults.

Nymph – A life stage of some insects. Nymphs are similar to adults, but do not have fully developed wings.

Pollinate – To transfer pollen from the male reproductive organs of a plant to the female organs of the same plant.

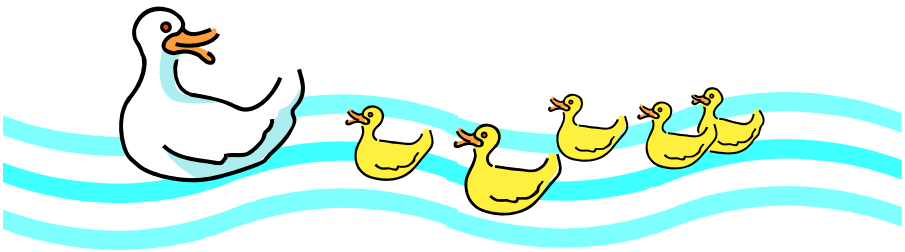
Predator – An animal that hunts another animals for food.

Pupa – The inactive, non-feeding stage between larva and adult in complete metamorphosis during which the larva undergoes a complete transformation within a protective cocoon or hardened case.

Scavenger – An animal that feeds on rotting organic matter such as: scraps, dung, and dead animals.

Simple (Incomplete) Metamorphosis – A life cycle that contain 3 stages: egg, nymph, and adult.

Thorax – The middle section of an insect's body.

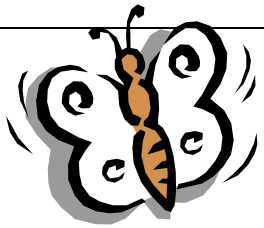


3.2 Basic Needs

1. Have a class discussion about basic needs. What do humans need to survive? Are the students clear about the difference between needs and wants? Humans need food, water, shelter, space and air. They may want a Play Station 2 or an Ipod but we do not need them to survive. Do the student's pets need the same things? What do house and garden plants need to survive? Do wild plants and animals need the same thing?
2. Pick an animal that your students are familiar with (e.g. chickadee, squirrel, rabbit) and discuss with your class how this animal meets each of its basic needs.
3. Spend some time in the schoolyard looking for places that offer animals (including invertebrates) opportunities to meet their basic needs.

3.2 Are You Me? Activity

1. Ask the students to bring two pictures (copies) from home. One should be a recent school picture and the other should be a picture of the student as an infant.
2. Divide the class into small groups of three to four students. Have the students hold their own set of paired pictures in their hands. Assign each group a single table or station. Ask them to stand in a circle around that station.
3. Have the students place the pairs of pictures on the table and mix them randomly. Have the entire group move to another table. At the new table, have the group try to match the pairs of photos.
4. When the students have completed their task, they can return to their original tables – where they left their own pictures. Are the matches correct? Ask the students to change any pair that are not matched correctly.
5. Discuss the challenges associated with matching the pairs.
6. Introduce the concept that many animals look remarkably different when they are older than when they were babies. Tell the students that they are going to match young and adults of different kinds of aquatic animals.
7. Have pairs of aquatic animal cards prepared prior to doing this activity. The animals in the pair should be the same species. For example, one pair might be beavers; another might be a pair of Canada geese. One animal in the pair should be an adult; the other should be at a younger stage of development. The pairs might include adult, larval, nymph, hatchling, juvenile, infant, and/or egg forms of aquatic animals.
8. Introduce the aquatic animal cards and divide the class in two groups. One group will be designate as "adults" and the other group will be designated as "young". Give each student in the "young" group a "young animal" card and vise versa with the "adult" group. Instruct the students to look for their "match". That is, they must pair the appropriate adult with juvenile forms.
9. When all the students have made their choices, check to see if the matches are correct. Some are more difficult than others and may be confusing.
10. Have all the students look at all of the correctly matched pairs. Look at similarities and differences in how a variety of aquatic animals grow and change. (This activity can be repeated several times to familiarize students with a wider array of animal life stages.)



3.4 Metamorphosis Game:

From Knee High Nature: Spring in Alberta; 1991

The purpose of this game is to move from one stage to another of a butterfly's life in the proper sequence and not to be caught by the predator.

1. Review the two types of metamorphosis: ***complete*** and ***incomplete***.
2. Divide the students into four equal sized groups. Each group spreads out to four different stations: butterflies, eggs, caterpillars and ***pupae***. Students will role-play each stage of a butterfly's life. Butterfly – skips about, arms flapping. Egg – huddled into a small ball. Caterpillar – crawling around on hands and knees, pretending to eat leaves. Pupa – hiding under a towel or blanket. Have the students practice at each station.
3. When the children are ready, call CHANGE. Each group moves to the next stage. That is, the eggs crawl to the caterpillar station and crawl around like caterpillars. The caterpillar group crawls to the pupa station and hides under the blanket. The hatched pupae fly to the butterfly station and continue to fly around. The butterflies fly on to the egg stage and huddle into a ball.
4. Continue to say CHANGE until the children are familiar with their roles. Introduce a predator like a robin. The robin can only eat caterpillars and the robin must walk and flaps his or her wings like a bird. Continue the game. If a caterpillar is caught, it becomes a robin as well.

4.0 Post-visit Activities

4.1 Creature Comparison

Select two aquatic animals that most students found during their field experience. Have the class compare and contrast these two animals as both adults and young. For example, compare and contrast, diet, habitat, adaptations (how do they move, breath, escape predators, etc.)?

4.2 Growing Up – Life Cycles

1. Photocopy a class set of the activity sheet provided on the next page.
2. Have the student match the adults with their young.
3. Extension: Students could research the food requirement of insects at different stages of their life cycles:

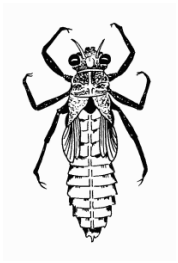
Where is my Baby?

Draw a line from the adults to their baby.

1. Mosquito

2. Black Fly

3. Canada Goose



4. Wood Frog

5. Dragon Fly

6. Beaver

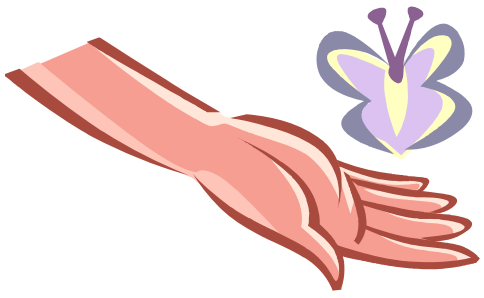
4.3 Loss of Habitat Challenge

1. Have a class discussion on the loss of habitat. As discovered during your field study, many animals return to the place where they were born to start their own families. Sadly, development and economic growth affect animals in many ways. For example, if a goose heads south for the winter, by the time it returns to the pond that it left behind; the pond may have been filled in and replaced with something very different – like a new residential area. The goose is now under a great deal of confusion and stress. Image going to the store and when you returned, you found your home, your street, your whole community gone? How would that make you feel?
2. With no homes, chances are, no families get started that year. This means an entire generation of young is missing from that group. What might that be like?
3. Some people believe that humans and wildlife can share the same space. Others say that there will be conflict and the animals and plants will lose out.
4. Challenge: Ask the students what they would do if they were in charge of building a new residential area where a wetland (pond) currently exists. They must consider all the necessary things humans and wildlife need to live (food, water, shelter and space).
5. Have the students write their answers in a journal or draw a picture of what you would do.

4.4 Getting Involved

By helping students understand the important preserving our landscapes, they will gain a better understanding of how it affects them as individuals and how they can affect the variety of life on earth or ***biodiversity***. Have the students complete a web search on how they can become involved in preserving our landscapes.

There are a number of parks and protected areas in need of volunteers. Visit our website at http://www.cd.gov.ab.ca/involved/parks/volunteer/index.asp for current opportunities.



Alberta Parks

Animal Life Cycles

A field study program for Grade 3

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