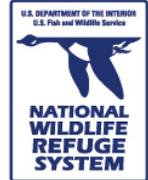


# Animal Families



**Grade:** 1<sup>st</sup> Grade  
**Group Size:** 1 class

**Season:** Spring    **Time:** 1½ hours  
**Ratio:** 1 adult: 5 children

## For the Teacher:

<b>Overview</b>	During an investigation, students make predictions as well as ask and answer their own questions about animal families. They search for animals in the prairie and a wetland to observe parents and offspring. Using a checklist, they track which parents and which offspring they find. Back inside, students compare their results to their predictions and share other discoveries.
<b>Subjects Covered</b>	Science
<b>MN Science Standards Supported</b>	Helps support two standards. See section “Minnesota Academic Standards in Science”
<b>Skills Used</b>	Observation, matching, listening and following directions, examining, socializing, cooperation, exploration, asking and answering questions, critical thinking
<b>Performance Objectives</b>	After completing this field investigation, students will be able to... <ul style="list-style-type: none"> <li>• Identify and match two prairie wetland parents with their offspring</li> <li>• Differentiate between geese/goslings and ducks/ducklings</li> <li>• Give an example of offspring and parents that look similar to each other and that look different from each other</li> <li>• Recognize that not all life cycle stages look like the adult</li> </ul>
<b>Vocabulary</b>	Family, gosling, duckling, life cycle, offspring, sibling

## For the PWLC Instructor:

<b>PWLC Theme</b>	The Prairie Pothole Region
<b>Primary EE Message</b>	The prairie pothole region is valuable and in need of restoration and protection.
<b>Sub-message</b>	Wildlife: The prairie pothole region is home to a variety of resident and migratory wildlife.
<b>PWLC EE Objectives</b>	<ul style="list-style-type: none"> <li>• Use scientific methodology to explore the environment (ask questions, hypothesize, collect data, analyze data, form conclusions, make recommendations). (Wildlife and Habitat)</li> <li>• Identify the components and functions of a given ecosystem by observing, counting, and describing the animals and plants in that ecosystem. (Wildlife and Habitat)</li> </ul>
<b>Materials</b>	Dragonfly life cycle boards, clipboards, pencils, check lists, life cycle photo sets, pond nets and tubs, laminated copies of “Ducks and Geese” for chaperones
<b>Location</b>	Mallard Marsh Trail or trail to Adams Pond platform

## Background Information

The purpose of this program is to introduce 1<sup>st</sup> graders to animal families and give them an enjoyable first-hand experience searching for and watching prairie and wetlands animals. Using the KWL model, students design an investigation based upon their own questions about animal families. Their field work helps answer those questions and allows for additional discovery.

Members of animal families may include parents, offspring, siblings, and other relatives. Animal families are part of the elaborate realm of animal behavior. “All species of animals have intricate and purposeful patterns of behavior. Some behaviors are

learned while others are inherited... Animal behavior refers to the way in which an animal responds to its environment. The behavior takes many forms including communication, courtship, caring for young, territorial disputes, finding and consuming food, and for some species, migration or hibernation.” (Wildlife Forever) Many offspring are not parented but are genetically programmed for survival, such as insects, reptiles, and amphibians. Offspring living in the family social unit, such as mammals and birds, learn many of their behaviors from siblings, parents, and/or relatives.

Among most animals, it is the mother who typically cares for the young.

- Female birds incubate the clutch of eggs and warm the brood after hatching. Some mother birds provide more care than others, depending upon the type of bird. *Precocial* birds like prairie chickens and waterfowl, for example, hatch with eyes open and with downy feathers. They can walk, run, and feed themselves right away. *Altricial* species like bobolinks and red-winged blackbirds, however, hatch with eyes closed and without feathers. They cannot walk or run yet. Their parents must provide food in order for their offspring to survive. Both Canada goose parents care for the young. The father’s role in this case is to watch for and alert the family to danger, defend the territory, and protect the family from harm.
- Adult females are usually the primary care provider amongst mammals as well. Raccoons are ready to leave their tree den to explore at about 10 weeks of age and are fully independent at four to six months of age. Gray squirrels and striped skunks wean at about two months of age but stay with their mother for two more months. The young of cottontails, muskrats, and meadow mice leave their mother at about four weeks of age. Both coyote parents help raise their young by regurgitating food for them to eat, and the pups are independent of their parents by six to nine months of age.

Mammal families remain intact for varying periods of time depending upon the species.

During their spring visit, 1<sup>st</sup> graders are encouraged to notice if parents and offspring look alike or completely different. For example...

- Parents and offspring of aquatic mammals like mink and muskrats look nearly identical except for differences in size. Prairie mammal parents and offspring also look similar, such as 13-lined ground squirrels and plains pocket gophers, especially the older they become.
- Offspring of ducks and geese are the same shape but different sizes. Both parents and offspring have feathers, swim, and search for food. They are less identical looking than aquatic mammals but more so than some insects.
- Also, parents and offspring of insects which undergo simple metamorphosis (grasshoppers for instance) look nearly identical except for differences in size. They begin life as an egg. The nymph hatches from the egg and looks like a miniature adult. The nymph sheds its skin several times to accommodate the growth and development of its body until it reaches adult size and maturity.
- However, parents and offspring of insects which undergo complete metamorphosis (butterflies) look entirely different from each other. These insects also start life as an egg from which the larva (caterpillar) emerges, grows, and

sheds its skin several times. The caterpillar makes a chrysalis within which the pupa transforms into the adult form and emerges.

Although students likely will not witness each and every life cycle stage of the animals they observe, they can search for and find as many as possible. Classroom follow-up can help fill in the gaps.

A complete animal family 1<sup>st</sup> graders can expect to see in spring are Canada geese. Before ice out on the ponds, adult pairs fly by or circle over, searching for a suitable nest site. At first they will only visit but soon they will stay and protect their nesting territory from other pairs, using their voice, body language, and even aggression. Nest building begins and eventually it is only the male goose (the gander) seen and heard defending the site while the female goose (the goose) sits on the nest incubating their eggs. Typically in mid- May (depending upon the year), the whole family may be seen swimming in the ponds and walking through tall grasses.

Another complete animal family they are likely to see is the scud, which reproduces in wetlands in spring. Scuds apparently mate in a piggyback like fashion with the female usually on top. Females carry and brood 15 to 50 eggs in a protected pouch beneath the thorax, called a marsupium. Pregnant females have a pink or orange colored spot in the middle of their body. The orange spot is the marsupium. The eggs hatch after one to three weeks but the young remain within the marsupium for about one more week. The mother scud releases her young from the pouch the first time she sheds her skin after mating. Juveniles look like adults but smaller. As they grow, they shed their exoskeleton, becoming mature adults after the eighth or ninth time. After each molt, the young scud looks blue-gray in color.

In addition, the chart below lists other animals by habitat as well as the name used for their young.

### Animals Commonly Observed in Spring at the PWLC

Habitat	Animal	Offspring Names (Life Cycle)
Prairie	Killdeer and sparrows	Egg, hatchling, chick, fledgling, juvenile, brood
Prairie	13-lined ground squirrels	pup
Prairie	Grasshoppers and crickets	Egg in egg pods, nymph
Prairie	Millipedes	Egg, larva/nymphs
Prairie	Ladybugs and ants	Egg, larva, pupa
Wetland	Egrets and herons and red-winged blackbirds	Egg, hatchling, chick/nestling, fledgling, juvenile
Wetland	American coots	Egg, chick, fledgling, juvenile
Wetland	Mallards	Egg, duckling, brood, fledgling, juvenile
Wetland	Muskrats	kit
Wetland	Turtles	Egg, hatchling
Wetland	Frogs and Toads	Frog spawn, egg, tadpole, polliwog, froglet
Wetland	Scuds	Egg, juvenile
Both	Swans	Egg, hatchling/cygnets, fledgling, brood

Both	Canada geese	Egg, hatchling, gosling, juvenile, fledgling, brood
Both	Purple martins, swallows	Egg, hatchling, chick/nestling, fledgling, juvenile, brood
Both	Hawks	Egg, hatchling, nestling/eaglet, fledgling, juvenile, brood
Both	Eagles	Egg, hatchling, nestling/eyas/hawkling, fledgling, juvenile, brood
Both	American white pelicans	Egg, hatchling/chick, nestling/chick, fledgling, juvenile
Both	Gulls	Egg, hatchling, chick/nestling, fledgling, juvenile
Both	Garter snakes	Egg, hatchling, juvenile
Both	Dragonflies	Egg, larva/nymph, teneral
Both	Damselflies	Egg, larva, teneral
Both	Butterflies and Moths	Egg, larva or caterpillar, pupa in chrysalis/cocoon
Both	Snails	Egg, hatchling
Both	Spiders	Egg, spiderling

As spring continues and summer begins, the PWLC continues to be a great place to observe animal families, especially ducks and geese. The PWLC is part of the Fergus Falls Wetland Management District, which emphasizes waterfowl production and ensures the preservation of habitat for migratory birds, threatened and endangered native species, and resident wildlife. The District encompasses land within five counties of western Minnesota: Otter Tail, Wilken, Wadena, Douglas, Grant. In this area, freshwater prairie wetlands and associated northern tallgrass prairie join to form a zone of transition with the northern hardwood forest. Wetlands offer a buffet of aquatic invertebrates which waterfowl consume to refuel their energy reserves during migration, produce eggs, and fuel rapid growth of their offspring. Grasslands and woodlands provide nesting habitat for various species including blue-winged teal, mallards, and wood ducks. This blend of habitats provides for an impressive diversity of over 290 bird species observed within the District. About 54% of them nest here (156 species). Agricultural changes to the landscape include the loss of most native prairie and the drainage of over 80% of the small wetlands. Nonetheless, the area remains a critical waterfowl production and migration area - the highest waterfowl nesting density in Minnesota was recorded here (3.5 nests per acre).

The PWLC is located on the eastern edge of North America's Prairie Pothole Region, 300,000 square miles in size, also known as the "duck factory." Over 50% of the continent's ducks hatch from the Prairie Pothole Region. It is the complex of prairies and wetlands that makes the Prairie Pothole Region the most important breeding and nesting site for the North American population of dabbling ducks (such as mallard, wood duck, and blue-winged teal). First graders visiting the PWLC in spring have the first-hand opportunity to view and witness this phenomenon as they search for animal families.

## Teacher Preparation

- When booking with the PWLC, teachers should inform staff if students will receive photocopies of the “Ducks and Geese” page while at the PWLC.
- We highly recommend conducting one or more of the suggested extensions before your visit in order to integrate this field investigation into the classroom study of families, animals, life cycles, prairie, wetlands, habitat, or other topics. We believe such integration enhances student motivation for learning in other curricular areas. See section, “Teacher-Led Extensions/Adaptations/Assessment Ideas.” For suggested literature launchers, see section, “References and Resources.”

## PWLC Instructor Preparation

Prepare and organize materials, and select field location, either the Mallard Marsh Trail or the trail to the Adams Pond platform.

## Field Investigation Procedure

1. In the amphitheater or classroom, welcome students, teachers, and chaperones to the Prairie Wetlands Learning Center. Review rules for the trail.
2. Organize the class into smaller groups with one chaperone for every five children. The role of the chaperones will be to manage their small group of children and make sure they are following through with directions given by the PWLC staff instructor. Their job is not to provide the answers but to guide students to make their own discoveries. The PWLC staff person's job is to manage and guide the entire large group, distribute equipment to chaperones, and provide trail leadership.
3. Explain to students that they will have the chance to search for animals and animal families when they go outside. Ask them to tell you some things that they already know about animal families. (This is the K part of the KWL model; what do students already know?)
4. Ask them what they would like to find out about animal families when they are outside. What questions do they have about prairie and wetland animal families? Jot down their questions on a clipboard. (This is the W part of the KWL model; what do students wonder or want to find out?)
5. Ask the class what kinds of animal families they think they might see? Write down their predictions on the clipboard.
6. Provide students with clipboards, checklist, and pencils. Tell them to write their name and the date at the top. See student materials, “Animal Families Checklist,” at the end of this lesson. When they find an animal outside, they can write the name of the animal and make a check mark in the appropriate column.
7. Before heading out on the trail, review the rules of respect for the trail – just the same as at school, plus special trail rules (such as no picking plants, follow the leader, be kind to animals, stay on the trail, etc.)
8. Explore a wetland and a prairie together outside, searching for animal families. Suitable locations include the Mallard Marsh Trail or the trail to the Adams Pond

- dock. Help the class notice when they are entering a new habitat (prairie, wetland, oak savanna).
9. In each habitat, look and listen carefully for animals. Most of the class visit to the PWLC should be spent outside with the exact amount of time at the discretion of the PWLC instructor.
    - Look in soil, muck, and water for invertebrates. Use tubs and nets to collect and examine aquatic invertebrates.
    - Watch the water, grasses, and sky for perching, singing, and flying birds and flying and skating insects.
    - Search grasses for insects and other invertebrates on leaves and stems.
    - Check the mowed lawn around the barn for 13-lined ground squirrels.
    - Check the water surface for a swimming muskrat or turtle.
    - Listen for singing frogs near the wetland and insects in the prairie.
    - On or near the barn, listen and watch for swallows and purple martins.
    - In the prairie, look for large *Formica* ant mounds.
  10. Provide chaperones with laminated copies of “Ducks and Geese” to use as a visual aid if needed within their small groups. Assist with identification of animals by name (such as goose) and by family role (such as gosling). If possible, help students differentiate between ducks and geese and ducklings and goslings.
  11. When offspring of any animals are observed, students may write down the name of the offspring on their checklist with the check mark.
  12. When animals are observed, prompt students with questions as appropriate to encourage thinking and discussion.
    - Which family member are they observing? (parent or offspring)
    - What stage of life are they observing? (for example, egg, larva/caterpillar, pupa/chrysalis, or adult butterfly?)
    - Do the parents and offspring look the same or different? In what ways?
    - Do the parents raise their young or not? How can they tell?
  13. If students do not see many animal families, suggest that they flip over their paper and sketch one of the families they saw. Sketching provides a chance to ask them the same questions as in step 11, above.
  14. To wrap-up, sit together as a whole class back inside and ask the class to share what they discovered outside. Answer the questions that students generated as recorded on the clipboard. (This is the L part of the KWL model; what have we learned?) Review the kinds and numbers of different animals and families observed as recorded on their check lists and compare to their predictions. How do they think animal families might be important? Provide them with a handout to take home depicting duck and goose families (see section, “Ducks and Geese”). Thank them all for coming!

## Weather Alternatives

Field investigations take place rain or shine. Everyone should dress appropriately for the weather. In the event of unsafe weather (lightning, high winds) or pouring rain, everyone must come indoors. PWLC staff make every effort to make your travel worthwhile despite the weather and prepare indoor, age-appropriate plans. PWLC staff

welcome teacher input into these plans. Some possible alternatives might include:

- Go outside for a very short amount of time, even if only under the deck, to search for animals and their families. Look up for bird nests constructed on the tops of the pillars. Look down for invertebrates and look out for other birds.
- Tour the exhibit area and watch prairie wetlands seasonal video footage with the objective of finding examples of animal families. Complete the checklist accordingly. In which seasons do most animals raise their families at the PWLC? Which kinds are present?
- Read one of the stories available at the PWLC. See section, "References and Resources," for possibilities.
- Conduct the activity, "Are You Me?" from Aquatic Project WILD, steps one and seven through nine.
- Provide sets of life cycle photos of different animals that people observe in spring at the PWLC. Challenge students to sequence them correctly. (See separate file, "1<sup>st</sup> Animal Life Cycles.") Use some of the same question prompts as in step 11 above.
- Provide Canada goose and mallard mounts. Help students study their similarities and differences. Provide crayons and paper so students can draw them.

### *Teacher-Led Extensions/Adaptations/Assessment Ideas*

- Search the school grounds. Can you find any animal families, or evidence of them? (such as squirrel and bird nests, bird houses, ant hills)
- Visit other habitats where animals raise their young such as a local lake, river, stream, prairie, or forest. Compare and contrast what you find there with your discoveries at the PWLC.
- Conduct the activity, "Are You Me?" from Aquatic Project WILD, steps two through six. (Students bring in photos themselves as a child and baby or of relatives as a child and adult.)
- Draw a picture of your own family and an animal's family. How are they the same? How are they different?
- Sing an adaptation of the song, Under One Sky, original © by Ruth Pelham. See section, "Family Under One Sky."
- Introduce the concept of mass. Compare your newborn baby weight and current weight. Can you find something in the classroom or at home which weighs the same? How much have you grown? Compare your own baby weight to that of a baby animal. Who is larger/smaller? Who grows to an adult size first?
  - For example, a mallard hatchling weighs about 32 grams (1.13 ounces or 0.07 pounds). By about 56 days or almost two months of age when it is first able to fly, it weighs about 740 grams (26.10 ounces or 1.63 pounds). In two months it gains 708 grams of weight, a 2,300% increase in weight. A human baby weighing 7 pounds at birth and growing at the same rate would weigh 116 pounds by two months of age. Many humans would not reach that weight until they were in high school, after much more time, about 15 years. Ducks grow much slower than humans because ducks

must be large enough and strong enough to disperse and migrate by late summer through mid-fall.

- Act out the stages of complete and incomplete metamorphosis of two different insects (such as ants and grasshoppers).
- Make up a card game where the object is to get cards with the complete life cycle of an animal.
- Make and play concentration or a memory game, matching adult animals and youngsters together.
- Mentor students in entering the Minnesota Junior Duck Stamp contest. This dynamic art and science program teaches wetlands habitat and waterfowl conservation to students in kindergarten through 12<sup>th</sup> grade. For more information, please visit <http://www.fws.gov/juniorduck/About.htm#Overview>

## Minnesota Academic Standards in Science

This lesson supports the following state standards...

### Strand IV. LIFE SCIENCE

#### Substrand B. Organisms

**Standard** The student will observe plant and animal life cycles.

**Benchmark 1.** The student will observe and describe how plants and animals grow and change.

#### Substrand D. Heredity

**Standard** The student will understand that there is variation among individuals of one kind within a population.

**Benchmark 1.** The student will describe ways in which many plants and animals closely resemble but are not identical to their parents.

**Benchmark 2.** The student will match adult animals and plants to their offspring.

## References and Resources

### For Children

- [A Monarch Butterfly's Life](#) by John Himmelman
- [An Egg is Quiet](#) by Dianna Aston and Sylvia Long
- [Animal Babies in Towns and Cities](#) by Editors of Kingfisher
- [Animal Families](#) by Colin Threadgall
- [Animal Families](#) by DK Publishing
- [Animal Families, Animal Friends](#) by Gretchen Woelfle
- [Baby Animal Families](#) by Gyo Fujikawa
- [Baby Bear Discovers the World](#) by Marion Dane Bauer
- [Canada Goose, Life Cycles](#) by Jason Cooper
- [Carry Me! Animal Babies on the Move](#) by Susan Stockdale
- [Creepy, Crawly Caterpillars](#) by Margery Facklam
- [Duckling at Home on the Pond](#) by Sarah Toast
- [From Tadpole to Frog](#) by Kathleen Weidner Zoehfeld

- Have You Seen My Duckling? By Nancy Tafuri
- Hop Frog by Rick Chrustowski
- Little Lost Fox Cub by Louis Espinassous and Claudine Routiaux
- My Little Book of Painted Turtles by Hope Irvin Marston
- See How They Grow, Frog by Angela Royston, a Dorling Kindersley Book
- Starting Life, Butterfly by Claire Llewellyn and Simon Mendez
- The Very Hungry Caterpillar by Eric Carle
- Watch Me Grow, Duckling by Lisa Magloff
- “Under One Sky” by Ruth Pelham, <http://cdbaby.com/cd/gentlewind10>
- Scud Life Cycle, [http://www.kidfish.bc.ca/scud\\_cycle.htm](http://www.kidfish.bc.ca/scud_cycle.htm)

### For Adults

- A Guide to Common Freshwater Invertebrates of North America by J. Reese Voshell, Jr.
- A Season with Eagles by Dr. Scott Nielson
- Aquatic Project WILD, Aquatic Education Activity Guide by the Western Association of Fish and Wildlife Agencies and the Western Regional Environmental Education Council
- Damselflies of the Northwoods by Bob DuBois
- Dragonflies of the Northwoods by Kurt Mead
- Early Themes: Life Cycles: Butterflies, Chicks, Frogs, and More! (Grades K-1) by Maria L. Chang
- Wildlife Forever CD ROM Curriculum for Elementary Grades 3-6 by Ann E. McCarthy
- Animal Families, <http://www.caldwellzoo.org/programs/animalfamilies.pdf>
- “Capture, care, and captive breeding of 13-lined ground squirrels, *Spermophilus tridecemlineatus*,” Lab Animal, by Dana K. Vaughan, PhD, et al. <http://www.uwosh.edu/projects/squirrel/docs/LabAnimal2006proof.pdf>
- Ant life cycle, <http://storeforknowledge.com/Nature-Games-Puzzles-C208.aspx>
- Grasshopper life cycle, <http://www3.telus.net/conrad/docs/entorders.html>
- Centipede, Millipede, <http://insects.tamu.edu/fieldguide/cimg379.html>
- Lady bug life cycle, [http://www.countrybrookfarms.com/Beneficial\\_Insects.html](http://www.countrybrookfarms.com/Beneficial_Insects.html)
- Millipede nymphs, <http://www.ipm.ucdavis.edu/PMG/D/I-DO-DIPL-NM.004.html>
- Names of Animals, Babies, and Groups, <http://www.enchantedlearning.com/subjects/animals/Animalbabies.shtml>
- Scuds, a Stillwater Staple, <http://www.bcadventure.com/adventure/angling/protalk/rowley/scuds.phtml>
- Snail life cycle, [http://www.applesnail.net/pestaalert/management\\_guide/pest\\_management.php](http://www.applesnail.net/pestaalert/management_guide/pest_management.php)
- Weight of Wild Mallards and Blue-winged Teal During the Breeding Season, <http://www.npwrc.usgs.gov/resource/birds/duckwght/results.htm>

### Credits

This field investigation was developed and written by Prairie Wetlands Learning Center

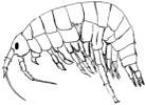
Staff, U.S. Fish and Wildlife Service. Thanks to Prairie Science Class naturalist Deb Strege for reviewing this lesson plan. Thanks to the following teachers for reviewing this lesson plan: Angela Nord, home school parent/educator, Fergus Falls; Sarah Collins, kindergarten and home school parent/educator, Deer Creek/Hewitt; Renee Fedderson, Breckenridge Elementary; and Jill Damrau, Adams School, Fergus Falls.

*Student materials follow.*

# Animal Families Checklist



Your Name \_\_\_\_\_ Date \_\_\_\_\_

Name of Animal	Mom <input checked="" type="checkbox"/>	Dad <input checked="" type="checkbox"/>	Parent <input checked="" type="checkbox"/>	Baby <input checked="" type="checkbox"/>
Goose 				
Duck 				
Ant 				
Butterfly 				
Scud 				
Dragonfly 				
Frog 				

# Ducks and Geese



**Canada goose**  
Mom or Dad (goose or gander)



**Canada goose**  
Gosling



**Mallard duck**  
Mom or hen (top)  
Dad or drake (bottom)



**Mallard duck**  
Duckling

# Under One Sky

Original lyrics © by Ruth Pelham, adapted here

Hear the original song at <http://cdbaby.com/cd/gentlewind10>

Chorus:

We're all a family under one sky (family under one sky).

We're all a family under one sky (family under one sky).

We're little girls and little boys.

We're babies and big kids, too.

We're little girls and little boys.

We're babies and big kids, too.

Chorus

We're mammas and daddies.

We're grandmas and grandpas, too.

We're mammas and daddies.

We're grandmas and grandpas, too.

Chorus

We're people and animals.

We're flowers and birds in flight!

We're people and animals.

We're flowers and birds in flight!

Chorus