Lesson #4: Drama in the Refuge

Focus questions

1. What characters, settings and environmental characteristics define the Arctic National Wildlife Refuge (the Refuge)?
2. What larger ideas about society or the world can we communicate using what we've learned about the Refuge?
3. Why is storytelling important to our education and the education of others?

What students do in this activity

Students work to create and perform a dramatic piece communicating the ecology or cultures of the Refuge. As a culminating activity, their dramatic performance could be intended for younger audiences (e.g. elementary school) or parents to give students the responsibility of sharing what they've learned with others. The direction and magnitude of this drama will be up to the students and/or teacher.

Estimated teaching time

Depending on teacher and student interest, one or two classes to one or two weeks.

General supplies to complete this lesson plan

Depends on drama format.

Materials to construct

Props, backdrops, costumes or puppets may be needed.

Learning goals

Students will:

1. Learn to collaborate in the creation and performance of a dramatic piece.
2. Learn to communicate their ecological and/or cultural understandings of the Refuge to others.
3. Learn to relate storytelling to the teaching of others.

Advance preparation

Consider a duration of time you may be able to spend on this activity, as well as if you would like a particular focus for the performance (e.g. seasonal lives of mammals). Decide whether or not your class should perform for younger students or other classes. Depending on the dynamics of the class, students could collectively decide upon many of the details for the performance(s).

Introducing the activity

1. Ask students what they have learned by studying the Refuge. What have they learned about the natural history, environmental implications and cultures of the Arctic? A student volunteer could list class ideas on the board.
2. Tell students that it is now time to communicate what they have learned through the art of drama. Specifically, the class will create and perform a dramatic piece that displays the life of the Refuge.

Seasons of Life and Land

THE ARCTIC NATIONAL WILDLIFE REFUGE

Facilitating the activity

1. Introduce any guidelines or limitations for the dramatic performance(s).

2. Share the list of possible formats, settings, characters, topics and plots (see end of lesson plan). Students should consider these as possibilities and be encouraged to develop their own ideas.

3. Assist the students in a brainstorming session for their performance. What characters should there be? Do they want to create street puppets or do the acting themselves? Explain the ground rules for a brainstorming session: no ideas are "bad," the more ideas the better, etc. Perhaps break the class into smaller groups to list ideas.

4. Assigning roles helps keep everyone involved. Possibilities include directors, script writers, actors and actresses, prop and set designers, sound effects creators and stage manager, for example. The class could create a list of roles.

5. If performing for an outside audience, be sure to make arrangements for a show time and venue with your guests.

Summarizing and reflecting

Lead a class discussion after the performances, using a few of these guiding questions:

- In our performances, were we telling stories?
- Can you teach people through stories?
- What is the role of storytelling in your education?
- Is teaching what you've learned important to you? To others?
- If we were to create a dramatic performance about our own habitat or place on Earth, what would it look like?
- What would our stories tell people about where we live?

Extensions

Taking the messages and experiences of their performances outside of the school can be important for students. A student media team could document the performances — from planning to completed performance — and produce a school video, Web site or booklet for the public.

As a class field trip, see a play that also depicts the life of a certain people and place. Students could write a self-reflective paper on what ideas the play stirred in them or a comparative essay on their performance and the one they saw.

Resources

"Crow and Weasel," by Barry Lopez. An engaging story about two animals in the north. This short book provides images, characters and a story line that might help students think about possible ways to create their own story.

Also see Additional Resources pages for longer list of Web sites and books about politics, people and environment of the Refuge.

Possibilities for the Dramatic Performance

Formats

Street puppets — Paper or cloth puppets mounted on long sticks perform the play above a screened stage. Students maneuver and supply voices for the puppets from behind the stage.

Costumed play — The traditional format for plays, with an assigned cast performing roles in plain view of the audience. Costumes, props and backdrops are usually incorporated.

Backlit, screened silhouette — A white sheet is hung in front of the staging area. With backlighting, actors and props show their forms only through silhouettes. Voices and sounds are supplied from behind the screen.

Improvisational (or developed) short skits — To be performed individually by small groups while the rest of the class serves as audience. Cues or background cards are supplied for each skit. A time limit may be given for preparation of developed skits.

Settings

Mountains
Coastal plain
Boreal Forest
Tundra

Characters (examples, many more possible)

Caribou
Long-tailed jaeger
Snowy owl
Snow goose
Gwich'in Indian
Willow
Bowhead whale
Oil reservoir
Arctic fox
Mosquito
Cottongrass
Lichen

Topics

- Survival in extreme environments
- Interdependence between humans
- Connections between people and animals and the environment
- Respect for the natural world
- Fate of the Refuge
- Diversity of life

Plots

A) Three characters travel from the coastal plain to the tundra to spread word of an especially early and harsh winter. They meet and learn the ways of different peoples in their journey.

B) A great feast brings animals from very different places, with different talents for survival. Through the sharing of stories, the animals see for the first time the depth of their connections.

C) A polar bear stalking seals on the icy flats meets a seal he has never before met — a wise, golden seal that can never be caught. With the help of an arctic fox, raven and native hunter, the bear learns a great truth of life in the Arctic.

Background for Drama in the Refuge

Settings

Mountains — The Brooks Range, which dominates the Refuge, runs east-west across the middle half of the area. The hundreds of bare and jagged peaks and lush valleys of the range are stark and beautiful. The highest peaks only top 9,000 feet, but because they are so close to the sea, (under 50 miles) they seem especially tall. Numerous rivers flow out of the mountains, some fed by glaciers and others by snow melt. Much of the ecosystem of the mountains is tundra, either Arctic (latitude) or alpine (elevation). Twenty-five species of land mammals inhabit the range, including grizzlies, caribou and marmot, known to the natives as *sik-sik put* (big squirrel).

Boreal forest — Trees live at their northernmost points in Alaska at the south end of the Brooks Range in what is known as the boreal forest, or *taiga*, in Russian. Dominant species include black spruce, white spruce, white birch and aspen. It is a rich landscape of birds, fish and mammals, including wolverine, merlin and whooping cranes. The Porcupine caribou herd, which summers on the coastal plain, winters in the boreal forest of either the United States or Canada. The boreal forest covers almost 12 percent of the Earth's surface.

Coastal Plain — The coastal plain makes up the northern third of the Refuge. It is a vast, open landscape where over 100 bird species, 120,000 caribou and 300,000 snow geese find critical resources. Cottongrass is the dominant plant, forming *tussocks* (small mounds) that stretch to the horizon in tawny covered tundra carpet. A thick layer of frozen ground, known as permafrost, underlies most of the plain and creates numerous surface features, such as *pingoes* (ice mounds) and *tundra polygons* (geometric patterns on the land surface). The coastal plain in the Refuge is only about 40 miles wide, between sea and mountain, much narrower than most other coastal plain regions in the Alaskan Arctic.

Tundra — Two types of tundra are found in the Refuge: Arctic and alpine. *Arctic tundra* is the treeless zone north of a certain latitude. *Alpine tundra* forms above a certain elevation. Both types of tundra vary with aspect and climate. Plants depend upon summer warmth, with trees requiring a minimum temperature for photosynthesis, which is not reached in tundra landscapes. Despite the lack of trees, tundra landscapes can be rich zones of life, with plants adapted to short growing seasons and animals adapted to consuming these generally low-stature, often ground-hugging plants. Plants include several willows, cottongrass, Arctic poppy, louseworts and valerians. Tundra adapted animals include snowy owls, Arctic fox and caribou.

Characters

Caribou — The best known and most controversial animal of the Refuge, 120,000 caribou migrate annually across the Brooks Range to their calving grounds on the coastal plain. The coastal plain is critical to caribou at calving time because it has good food resources, such as willow and cottongrass, and is relatively free of predators, such as bears and wolves, and insects, such as mosquitoes, nose bots and warble flies. Unlike all other deer species, both male and female adult caribou have antlers. They eat a wide range of food, including lichen, berries, mushrooms and grasses.

Snowy Owl — One of the few birds to remain year-round in the Refuge, snowy owls look like no other bird in the region. Their all-white bodies stand out brilliantly in the straw-colored tundra. Superb hunters, they feed primarily on lemmings, so much so that in low lemming years, few owls are to be found. They have fully feathered legs and feet, to protect themselves from the cold, which can reach -40°F in winter. They build their nests on low mounds on the tundra and, like all owls, they consume their meal whole and regurgitate out the fur, bones and feathers in a tidy pellet.

Seasons of Life and Land

THE ARCTIC NATIONAL WILDLIFE REFUGE

TEACHER BACKGROUND

Native Gwich'in (Gwhich-chin) — The Gwich'in are the northernmost Indian Nation, distantly related to Navajo people, which share a similar language. About 9,000 people live in 15 small villages spread across Alaska and Canada's Northwest and Yukon Territories. All aspects of the Gwich'in life are oriented toward caribou. The tie between people and animal is so strong that the Gwich'in call themselves the "caribou people" and believe that "caribou have a piece of Gwich'in heart in theirs, and in the Gwich'in heart is a piece of caribou's," says Gwich'in Luci Beach. As much as 80 percent of their diet is caribou. Other important foods include sheep, moose, birds and fish.

Bowhead whale — Bowheads are central to the lives of the *Iñupiat* (in-YOOP-ee-at) who live in Kaktovik (kack-TOE-vick), the only town in the Refuge. They can reach lengths of 60 feet with an insulating layer of blubber that weighs 30 tons. Migratory, bowheads summer off the coast of the Refuge in the Beaufort Sea. They feed on *krill* — red, shrimp-like crustaceans — through baleen, fibrous plates that filter out the krill from sea water. Orcas and humans are their only known predators. Bowheads produce double, V-shaped spouts.

Arctic fox — Another year-round resident, Arctic fox are superbly adapted to the cold climate of the north. Their fur, which completely covers their feet, provides some of the best insulation of any mammal. In winter they are white, but change back to reddish, grey in summer. Arctic fox use the same den site, usually a den dug into river bank or sand dune, year after year. Their varied and seasonal diet includes bird eggs, lemmings and ptarmigans, and carrion scavenged from polar bear kills.

Cottongrass — Not a true grass but a member of the sedge family, cottongrass (or cotton grass) is the dominant plant of the coastal plain. It covers mile upon mile of the plain, forming tussocks that can make travel across the tundra difficult. Cottongrass gets its name from the cottony flowers at the top of the plant. They add a beautiful splash of light to the tundra, often making it look as if snow has just fallen. Cotton grass is an essential food for the 300,000 snow geese, who eat underground stem bases before they fly 1,200 miles non-stop to Alberta in early autumn.

Long-tailed jaeger — Flying low over the tundra, long-tailed jaeger are a striking reminder of the beauty of flight and the perils of being a small mammal. Jaegers are skilled hunters, either hovering or diving down on voles and lemmings. They also eat eggs, fish and carrion, and often steal food from other predators. Like owls, they regurgitate a pellet of hair and bones. Fiercely protective, jaegers have been known to dive bomb and even hit people who approach too closely to their nests.

Snow goose — One of the great sights of the coastal plain is the annual migration of 300,000 snow geese. They come from nesting spots in Canada to fatten up on cotton grass, feeding up to 16 hours a day. This provides the energy they need to migrate south. Almost driven to extinction in the early 1900s, their population has boomed to over six million, which in some environments has led to habitat degradation because of their tearing up the ground for food. They mate for life. Many thousand snow geese overwinter in Washington in the Skagit River delta. Washington state snow geese summer on Wrangell Island in Russia, north and west of the Bering Strait.

Willow — Many different willow species grow in the Arctic Refuge. Several are low growing, although in some riparian areas on the coastal plain they may be six feet tall or more. Shallow roots help them grow in the permafrost, and wooly leaves and catkins help plants "warm up." Willows are commonly eaten by caribou and moose. If a willow stand is tall enough, animals may not be able to reach all of the branches and a lone branch will stick up like a flagpole. During the growing season, some willows form a pesticide to prevent insects from feeding.

Oil Reservoir — Several different rock layers within the Refuge have been identified as potential petroleum reservoirs. This means that underlying oil has moved upward through many layers of rock and has become concentrated in one particular layer, which has a porous structure that allows oil to collect. The rocks in the Refuge that fit this characteristic are generally between about 70 and 40 million years old and were deposited as shallow marine, deltaic and fluvial (river) sands and silts. Source rock for the oil is

a mid-Cretaceous (144 to 65 million years ago) age, deep-marine deposited layer known as the Hue Shale.

Mosquito — Numerous and pesky, mosquitoes are centrally important to life in the Refuge. They are a food source for shorebirds, a pollinator of wildflowers and a pest of caribou. Part of the reason that so many caribou end up on the coastal plain is that during calving season wind on the flats is often strong enough to blow away mosquitoes. Arctic mosquitoes have several adaptations for their cold climate. They can crawl to find nectar. Females don't need blood to reproduce and can lay eggs using accumulated food reserves. Mosquitoes can be so numerous and aggressive that they can sound like raindrops bouncing off one's tent.

Lichen — Low and slow-growing, lichens grow abundantly on many surfaces in the Refuge. Lichen are a combination of fungus and algae (cyanobacteria), and grow in a variety of colors. One common species, reindeer lichen, looks like caribou antlers and in fact, is an important food source for caribou, who produce an enzyme that allows them to break down and digest normally inedible lichens. Other lichens resemble pixie cups, lettuce or hairs.