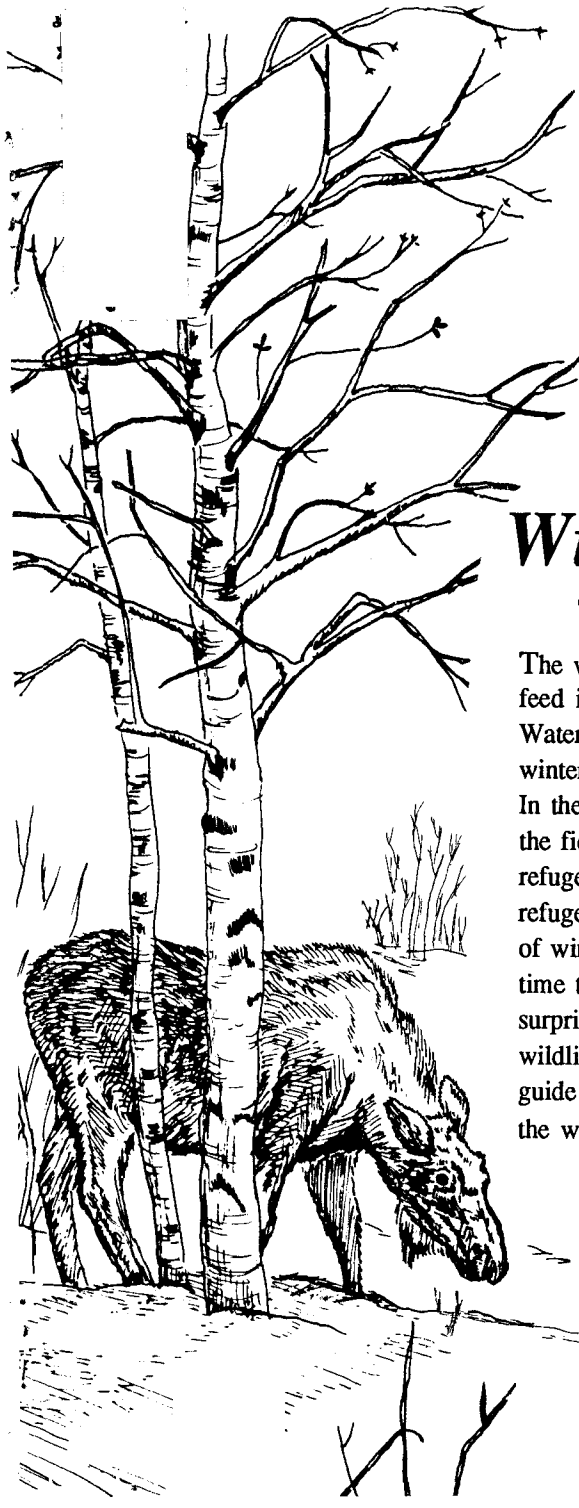


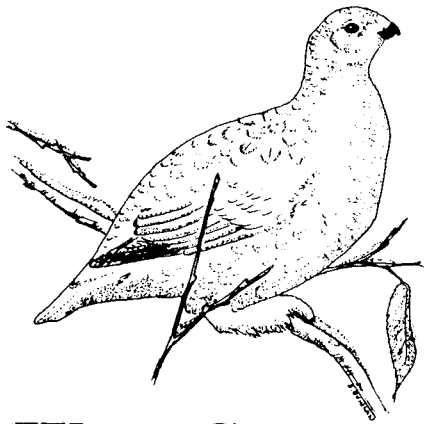
Creamer's Field Migratory Waterfowl Refuge

Winter Guide

The waterfowl that stop to rest and feed in Creamer's Field Migratory Waterfowl Refuge each spring spend winter thousands of miles to the south. In their absence, snow and ice blanket the fields, ponds, and forests of the refuge. But life continues on the refuge through the darkest and coldest of winter nights. For those who take time to look, winter days offer surprising opportunities to observe wildlife and enjoy the outdoors. This guide is intended to help you discover the winter life of Creamer's Refuge.

Resident Birds

A good day of searching by an expert birder will rarely turn up more than 15 of the 30 species of resident birds of the area. Some, like common ravens, are hard to miss, but predatory birds like shrikes, owls, and hawks are encountered rarely.



Look...

Each species of bird prefers certain habitats, so you will see a greater variety of birds if you spend time looking in different forest types. Look for boreal chickadees, spruce grouse, three-toed woodpeckers, black-backed woodpeckers, and white-winged crossbills in spruce forests. Ruffed grouse, black-capped chickadees, hairy and downy woodpeckers, redpolls, and pine grosbeaks are more often found in aspen and birch woodlands. Forest edges, tall shrub thickets, and areas of scattered spruce are good places to look for willow ptarmigan and sharp-tailed grouse.

Winter Survival...

The resident birds of subarctic Alaska have adaptations for surviving the extreme weather conditions of winter. All have two layers of dense feathers that provide them an insulative coat. Willow ptarmigan even have a dense covering of feathers on their feet, providing both warmth and "snowshoes." Redpolls and ptarmigan get extra insulation by roosting in snowbanks. Woodpeckers and chickadees seek shelter in cavities in trees. Several birds may share warmth by roosting in a single cavity.

All of the resident birds eat diets of energy-rich foods. Overwintering insects nestled under tree bark are eaten by chickadees and woodpeckers. Buds, berries, and seeds are winter staples for grouse, ptarmigan, redpolls, and crossbills. Raptors and shrikes feed on small birds and mammals. Most winter birds, excepting owls, are diurnal and must obtain all the energy they need during the brief hours of daylight. Redpolls stretch out their feeding time by storing food in a throat pouch. They eat their stored seeds during the long winter night.

Listen...

Tap. Tap, tap. The sound of a feeding woodpecker travels far in the silence of winter. You may also hear the mewing and twittering calls of redpolls as a flock passes overhead. Chickadees call their name, "chick-a-dee-dee-dee," as they search the forest for insects and seeds. Redpolls, chickadees, and other birds call to keep their flocks together, to communicate the whereabouts of food, or to warn of a predator. If you hear several birds chipping, look around carefully. They may be mobbing an owl, a goshawk, or a fox.

By listening to the songs and calls of winter birds, you will sense spring long before snow melt. At night in February and March, you may hear the hoots of a great horned owl, or repetitive whistles of a boreal owl. These owls begin courtship and nesting in late winter. Common ravens engage in a repertoire of gurgles, cackles, and clucks, as they too select mates. As the days lengthen, woodpeckers start drumming, chickadees begin giving melodious courtship calls, and pine grosbeaks herald winter's end with sweet whistled songs.

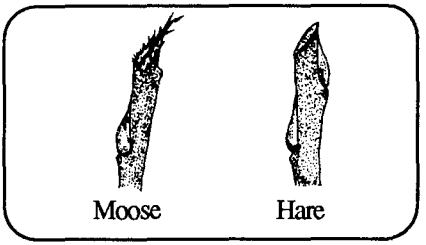
A Winter Checklist

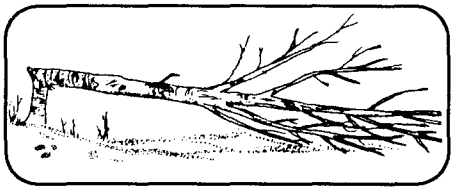
Northern Goshawk
Ruffed Grouse
Spruce Grouse
Sharp-tailed Grouse
Willow Ptarmigan
*Rock Ptarmigan**
Great Horned Owl
*Snowy Owl**
Northern Hawk Owl
*Great Gray Owl**
*Short-eared Owl**
Boreal Owl
Rock Dove (Pigeon)
Downy Woodpecker
Hairy Woodpecker
Three-toed Woodpecker
Black-backed Woodpecker
Gray Jay
Common Raven
Boreal Chickadee
Black-capped Chickadee
*Brown Creeper**
Bohemian Waxwing
Northern Shrike
*Dark-eyed Junco**
Snow Bunting (March)*
Pine Grosbeak
White-winged Crossbill
Hoary Redpoll
Common Redpoll

**Rare or uncommon*

Look closely to find...

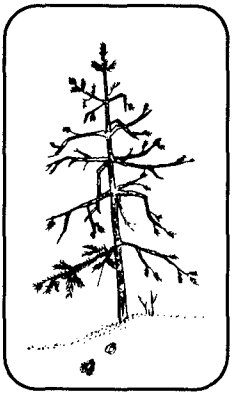
Moose and Hare Browse—Willow, birch, and aspen are favorite foods of moose and snowshoe hare. Look closely at stems of these plants to find out which animal last took a bite. Moose leave a torn, frayed twig, while hares leave a cleanly clipped branch.





Fallen Trees—When an aspen or birch tree is knocked to the ground by wind or snow, the upper branches fall within reach of hares and moose. They soon gnaw away the bark and clip off the small branches.

Moose Rubbings—Small spruce trees with stripped, broken branches are sign of moose. In fall, bull moose thrash small trees with their antlers to rub off the velvet and female moose rub trees with their foreheads.



Piles of Cones—Red squirrels gather 3,000 to 12,000 cones for winter food. They store these in large piles, or middens. During winter, squirrels eat the tiny seeds, but scatter the cone cobs and bracts.

Unusual Growths, called galls, occur on the tips of willow and spruce branches. The eggs or larvae of certain aphids, midges, or sawflys may be inside. Hormones injected into plants by these insects cause the plants to form galls. The insect's eggs and larvae live inside. (Certain fungi also cause plants to form galls.)

Winter's Secrets

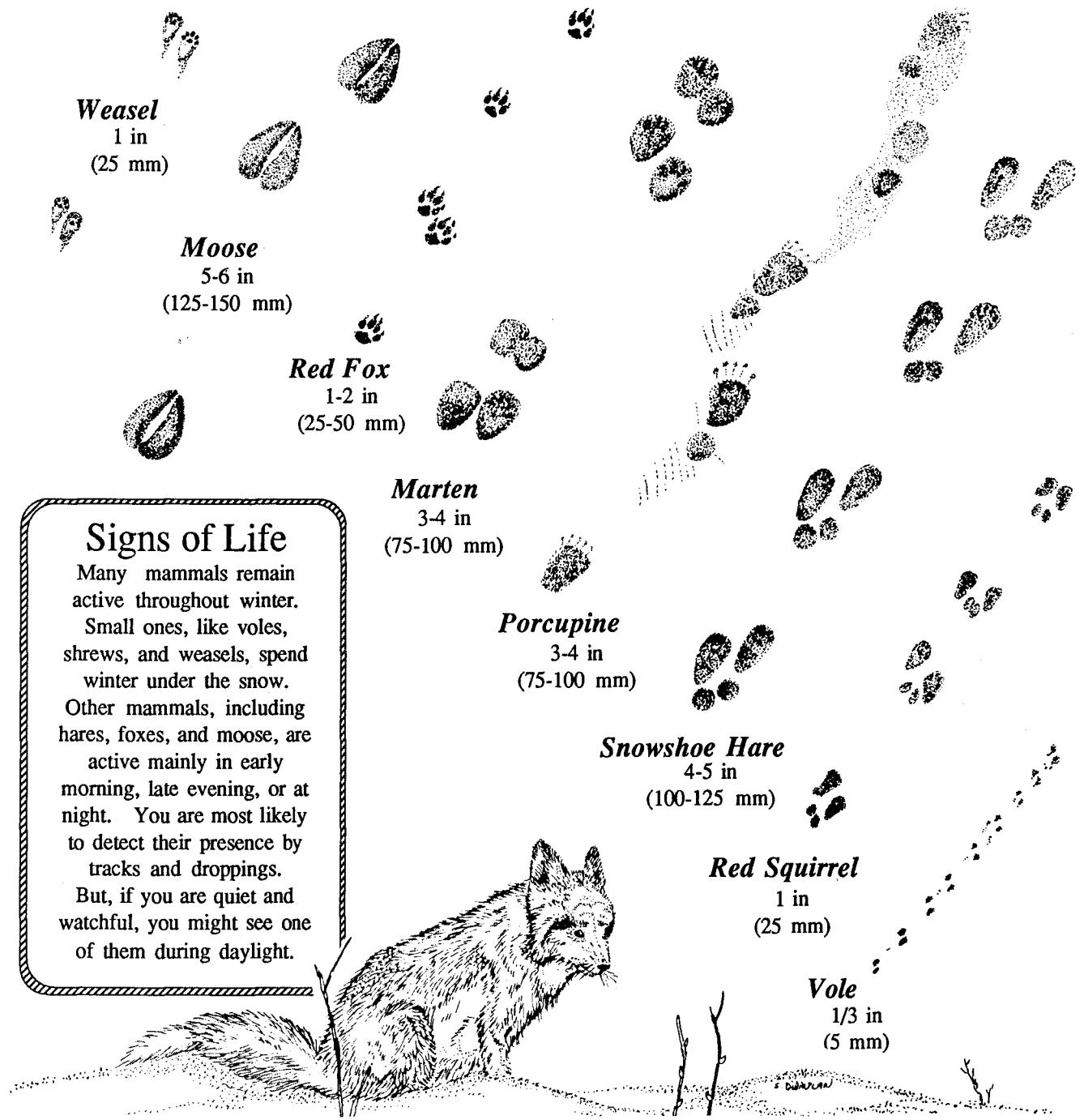
Over 20 species of mammals, 30 species of birds, and hundreds of kinds of plants, fungi, insects, and smaller organisms remain in the boreal forest through winter.

Dormancy—Most microscopic organisms, fungi, lichens, plants, and invertebrate animals remain alive, but do not eat, grow, move, or breathe during winter. For these *dormant* creatures, life is temporarily suspended. Even so, they cannot survive freezing or drying out. They must overwinter in sites insulated from cold and wind. Wood frogs move from ponds into the forest to spend their winter dormancy buried beneath a layer of leaves and snow. Soil and snow also shelter roots, seeds, and the eggs and larvae of many insects. Other insects find shelter inside tree trunks, in the cores of spruce cones, or in galls.

Many animals that are dormant in winter produce antifreezes — special chemicals that lower the temperature at which their cells and body fluids will freeze. These antifreezes allow dormant animals to survive severe cold. Wood frogs can withstand temperatures of 21° F (-3° C), and some beetles can survive temperatures of -76 °F (-61° C).

Hibernation—Some overwintering animals continue to breathe, move, and generate heat, but their lives are greatly slowed. These animals *hibernate*. As you ski or walk around the fields and barn, you won't hear the woodchucks snoring, but they are there sleeping in deep burrows under the snow. These 5-10 lb (2-4.5 kg) rodents waddle into their burrows to begin hibernation in late September and don't come out to see their shadows until late March or April.

Mammal Tracks

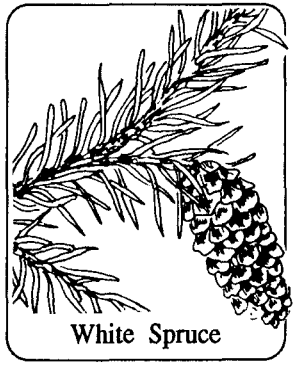


Signs of Life

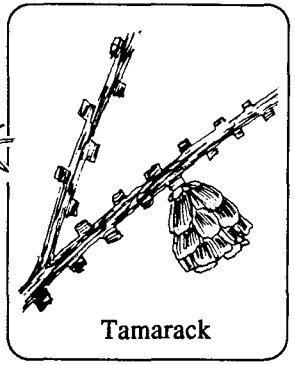
Many mammals remain active throughout winter. Small ones, like voles, shrews, and weasels, spend winter under the snow. Other mammals, including hares, foxes, and moose, are active mainly in early morning, late evening, or at night. You are most likely to detect their presence by tracks and droppings. But, if you are quiet and watchful, you might see one of them during daylight.

Trees and Shrubs in Winter

Use the accompanying illustrations to identify the most common conifers, hardwoods, and tall and low shrubs in Creamer's Refuge. White spruce and aspen grow on warm, well-drained sites. Black spruce and tamarack grow in poorly drained, permafrost soils. Birch trees and most of the shrubs grow in both kinds of sites.


White Spruce

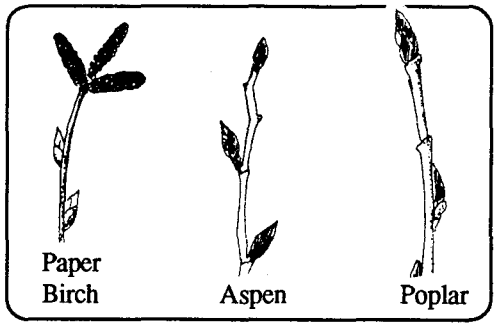

Black Spruce


Tamarack

Plants of the boreal forest have many traits that allow them to survive the harsh conditions of winter.

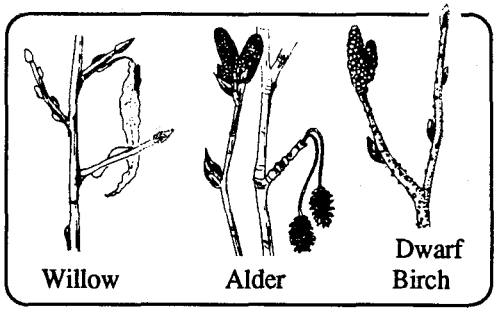
Plants can not survive if the water in their cells freeze. As temperatures drop in fall, many cold-adapted plants force water out of their cells into the spaces between cells. Water in these spaces freezes in winter, but here it does not rupture the cells.

Plants are also in danger of drying out due to low humidity in winter. Plants lose most water through their leaves. So some plants, such as birch, avoid drying out in winter by dropping their leaves in fall. Plants that keep their leaves through winter (such as spruce) have tough, narrow leaves with a waxy surface that traps moisture inside. Small plants that are covered by snow in winter are protected from drying out by the moist air in snow.


Paper Birch

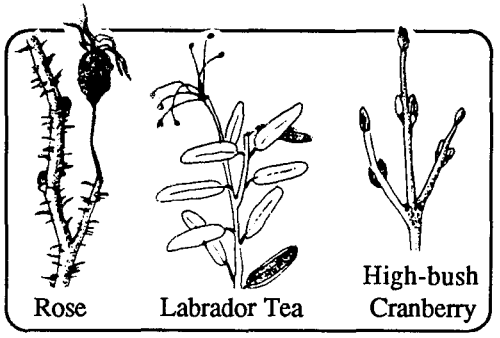
Aspen

Poplar


Willow

Alder

Dwarf Birch


Rose

Labrador Tea

High-bush Cranberry

Creamer's Field Migratory Waterfowl Refuge
Winter Map

The Subarctic Winter

Winter officially begins on 21 December and ends on 21 March. But here in the subarctic, snow and cold temperatures begin as early as late September and usually continue until mid- to late April. Sunlight provides the heat that warms the earth. At this high northern latitude, the sun shines for just a few hours a day in mid-winter. Daylength decreases by as much as 8 minutes per day from 12 hours in late September, to a low of 3 hours, 42 minutes on December 21. Short days, combined with the low angle of the sun, and the cooling effects of snow cause the severe weather of Fairbank's winters.

Winter Temperatures vary from an average of 27°F (-3 °C) in October to -11°F (-24 °C) in January. Extremes of -61 to +38° F (-52 to 3°C) have been recorded in January. Temperature fluctuations can be extreme in any month. A 50° F (28°C) change can occur within 24 hours.

Snow—Fairbanks receives an average of 66 in (1.7 m) of dry snow each winter. This snow is great for skiing and dog-mushing. It also provides insulation for plants and many animals, such as voles, shrews, weasels, ptarmigan, and redpolls. The insulative value of snow depends on its depth and its density. Fresh, light snow provides the best insulation. The temperature beneath a thick blanket of fresh snow may be 20°F (34°C) warmer than the air temperature. As snow settles, is windblown, or compacted, snowflake crystals are broken and the snow's density increases. This reduces its insulative value. Temperatures beneath compacted snow may closely resemble air temperatures.

Ice Fog: Thick, cold fog occurs on many cold winter days in Fairbanks. This fog may reduce visibility to 30 feet (9 m). It is formed during calm, sub-zero weather, when snow-covered ground cools the layer of air above it. This cold air is sometimes trapped near the ground by a higher layer of warm air, creating a *temperature inversion*. During an inversion, moisture is also trapped in the cold air near the ground. This moisture freezes into ice crystals, thus forming *ice fog*. Pollutants adhere to the ice fog crystals. Exhaust from burning of fossil fuels and wood are the main sources of moisture causing ice fog in Fairbanks. Ice fog also forms naturally around hot springs or other open water.

LEGEND

- Creamer's Refuge
- Paved Roads
- Unpaved Roads
- Creamer's Nature Trail
- Dog Mushing Trails
- Brush lines or old trails
- Lakes and Ponds
- Buildings

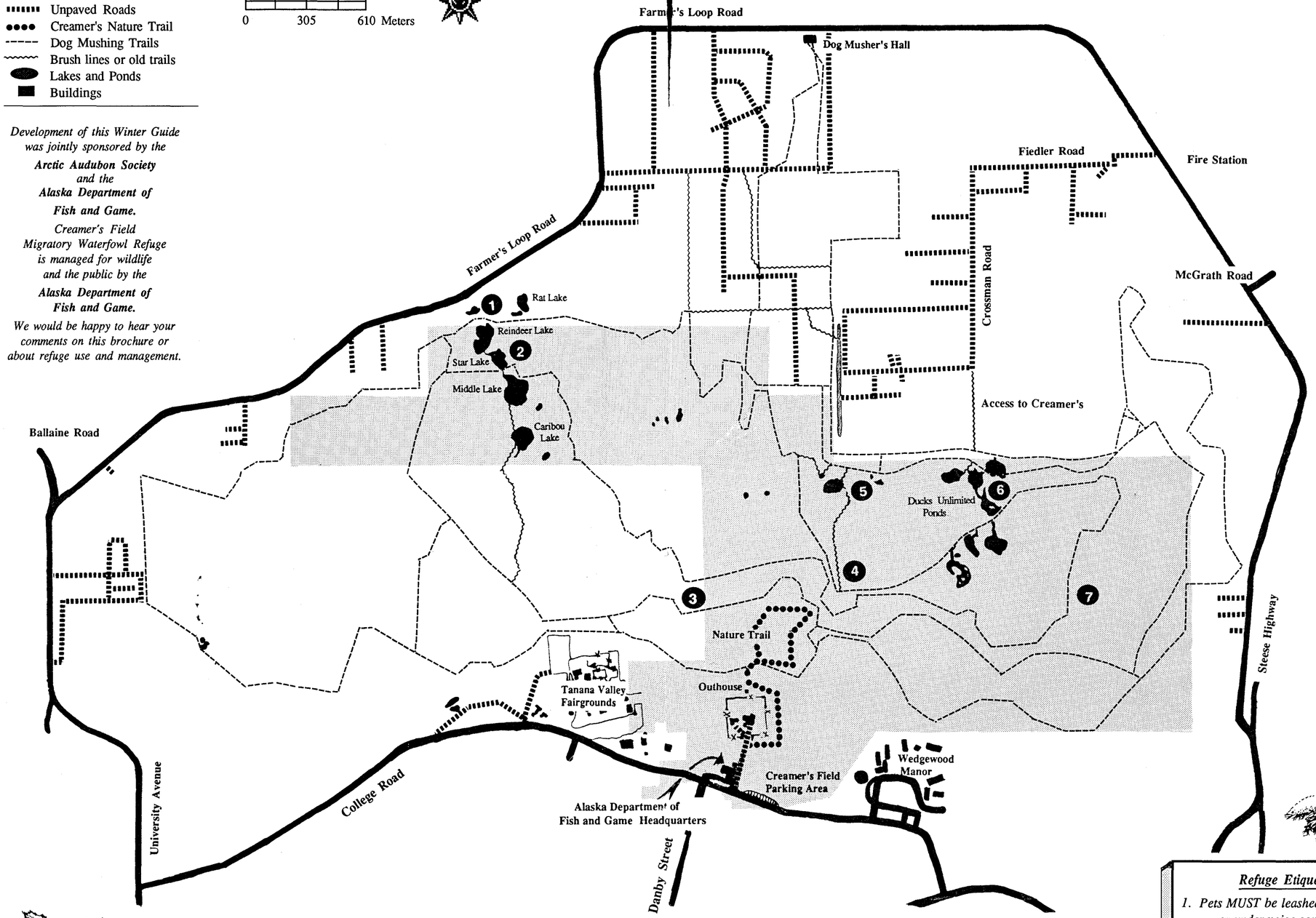
Scale: 0 1000 2000 Feet; 0 305 610 Meters

N

Development of this Winter Guide was jointly sponsored by the ***Arctic Audubon Society*** *and the* ***Alaska Department of Fish and Game.***

Creamer's Field Migratory Waterfowl Refuge is managed for wildlife and the public by the ***Alaska Department of Fish and Game.***

We would be happy to hear your comments on this brochure or about refuge use and management.



Permafrost --Much of the forested land of Creamer's Refuge is underlain by soil that remains frozen year-round. In the severe cold of winter, permafrost laden soils contract and eventually crack. If you venture out on a very cold winter day, you may hear a loud "Crack!" as the ground contracts and splits into polygonal shapes. In spring, meltwater seeps into these cracks, refreezes, and expands. This enlarges the cracks. Over many years, these events create a pattern of deep troughs and raised hills which blend to create many-sided geometric shapes, or polygons. This pattern is difficult to see when snow covers the ground, but you may notice old, deep troughs, where surrounding trees have slumped into the growing trenches.

CAUTIONS--PLEASE NOTE:

1. Public use is encouraged only within Creamer's Migratory Waterfowl Refuge, shown by the shaded portion of the map. Trails outside the shaded area are maintained for dog mushers by the Alaska Dog Musher's Association through cooperative agreements with other land owners.

2. Dog-mushers have the right-of-way on all mushing trails.

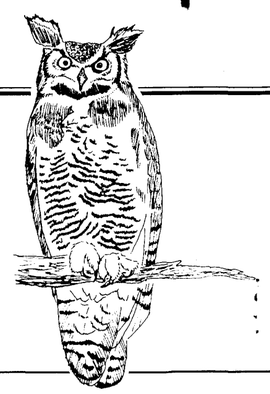
3. You are responsible for your own safety on the refuge. The trails can be confusing. Take along a compass, map, and clothing adequate for changeable weather. Carefully consider the short length of winter daylight and time your visit to avoid having to find your way out after dark.

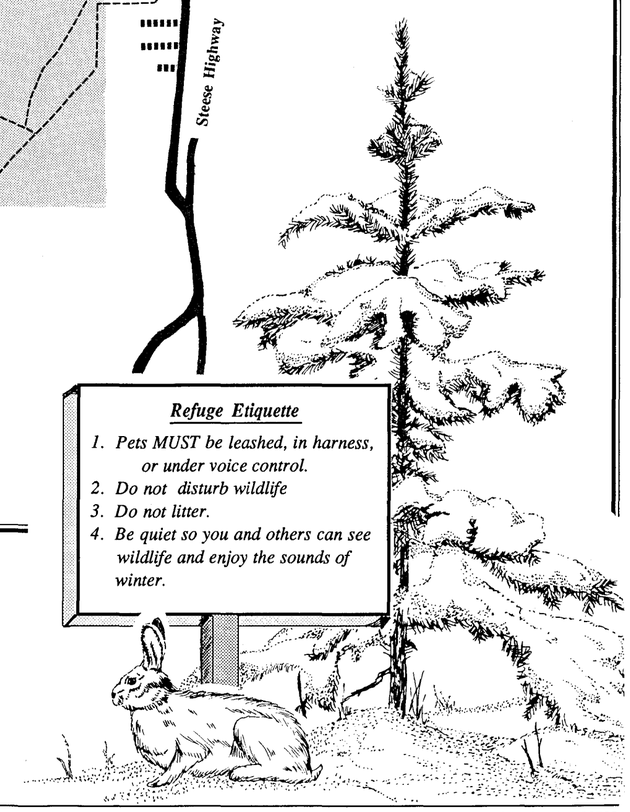
More to Look For..

1. Water from an underground spring wells up here creating "overflow ice" across the trail in this area.
2. Look for muskrat breathing holes, or push-ups, in the ice of these lakes.
3. Look for sharptail grouse in this area. They often sun themselves in the tops of spruce.
4. Moose frequent these areas. Look for browse and tree rubbings.
5. You may smell the musky odor of red foxes if you get near one of their scent posts. Watch for these along all of the trails.
6. Watch for the characteristic droppings of ptarmigan in this area.
7. Several nest boxes have been placed out in this area. Some of them are used for nesting and roosting by boreal owls.

Refuge Etiquette

1. *Pets MUST be leashed, in harness, or under voice control.*
2. *Do not disturb wildlife*
3. *Do not litter.*
4. *Be quiet so you and others can see wildlife and enjoy the sounds of winter.*





Text, illustrations and design by: Sue Quinlan and Bud Lehnhausen, Linnaea Associates, Wildlife Research and Interpretive Services, P.O. Box 82115, Fairbanks, AK 99708