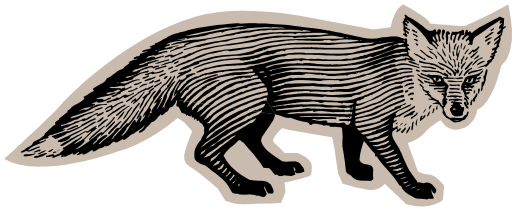
CARNIVORES

For predators, winter means keeping their eyes open and watching for any opportunity. They generally expand their hunting ranges considerably to search for prey. **Coyotes** and **Wolves** hunt in packs to increase their chances of a kill.



Red Foxes travel widely in winter, searching for mice, rabbits, and carrion. They cache surplus meat and return to it later, hoping to catch scavengers attracted to the carrion. They hunt mostly at night and sleep in a protected sunny spot during the day, curled up with their tails draped over their muzzles. Breathing through their fur pre-warms the air, reducing heat loss.

Bobcats aren't as well adapted for traveling over the snow as the **Lynx** and avoid deep snow when possible. They prey on squirrels, rabbits, rodents, porcupines, and deer. They will seldom chase prey through the snow, and will give up after a couple of bounds if their ambush doesn't work quickly.

Least Weasels are the smallest members of the weasel family. They prey on voles and mice. They are skinny enough to pursue their prey down any mouse tunnel.

Long-Tailed Weasels turn white in the winter, except for the tips of their tails. The black tailed-tip confuses predators. Many hawks end up with a tuft of tail fur instead of the meal they were expecting. In winter weasels tunnel through the snow to catch rabbits, rodents, shrews, and birds. They cache excess food to eat later.

Short-Tailed Weasels or **Ermines** look and live much like their larger cousins. They often move into the nests of their victims, lining them wit the fur of the previous occupants.

UI Museum of Natural History

Brochure designed by Sara Jane Laue.

Iowa's Winter Mammals

PART 1: CONFRONTING WINTER HEAD ON

Iowa is a pleasant place to live until the snow starts to fall, then almost everyone would prefer to be someplace warmer. Birds and bats can migrate, but it's hard to walk to Florida. Few Iowa mammals hibernate. Den sites safe from freezing and predators are normally limited to underground, so only small mammals try it. Most Iowa mammals stay active in winter, surviving above ground through some amazing adaptations, changes in behavior, and careful preparation.

The problem with winter isn't the cold--fur is an excellent insulator. Almost all Iowa mammals shed their summer coats and grow longer, thicker ones. Sometimes they change color for warmth or camouflage. The problem for mammals that stay active in the winter is finding food. With green plants gone, there is less food available. Mammals that can't store food must conserve energy to survive, and to avoid becoming a meal.

HERBIVORES

To reach the scarce vegetation that's available in the winter, herbivores have two options. First, they can evolve physical features to travel in the snow in search of food. Or second, they can store enough food to get through the season. Mortality is often high in winter due to predators.

Snowshoe Hares shed their brown fur in the winter and grow a thick white coat for warmth and camouflage. Their large feet let them travel easily over the snow without sinking in. They do not put on extra fat in winter, which would slow them down and make them sink in the snow. They eat buds and bark.

Cottontails retain their brown coats in the winter, which offer better camouflage in the patchy snow of their more southerly range. They forage for bark and buds at night and hide under bushes in the daytime, where they are protected from the wind and predators.

Eastern Gray Squirrels spend the fall burying nuts for retrieval in the winter. They prefer tree cavities for shelter but build large leaf nests in threes when a suitable cavity is unavailable. On cold winter nights, as many as 7-8 squirrels may gather together to conserve heat.

Red Squirrels are found in northern Iowa. They collect the cones of conifers and store them in large piles called middens. The squirrels' loud chatter is a familiar sound as they tell intruders to stay away. In the Rocky Mountains, grizzly bears use the noise to guide them to the food piles to raid. Sometimes they'll eat the squirrel, too.

Southern Flying Squirrels don't store food for the winter. They can't accumulate body fat or grow longer, thicker fur either, because that would change their ability to glide. They form groups in the winter, coming together in tree cavities to conserve energy and heat.

Eastern Fox Squirrels are easy to identify by their bushy, fox-like tails. Their winter survival strategy is much the same as their gray cousins.

MORE HERBIVORES

Opossums seem poorly adapted to survive the winter. They often lose the tips of their ears and tails to frostbite. Opossums spend most of the winter in their dens, coming out only at night to feed. They survive by living off their fat and whatever they can scavenge.

White-Tailed Deer survive the winter with some clever behavioral adaptations. They follow each other's paths, or trails, to ease the effort of traveling. In deep snow, they congregate in sheltered deer "yards" to conserve energy and keep watch for predators. Leaping permits travel in deep snow, which is handy in an emergency. They conserve energy by moving between sheltered night beds, which reduce hear loss, and sunny daytime beds.

Bison have ten times more hairs per square inch of skin than a cow or steer. The twisted, wooly texture offers excellent insulation. Bison use their heads to sweep away snow and graze in the winter, but the quality of the food is poor. They mostly rely on their body fat to survive.

HIBERNATORS

Woodchucks go in to their burrows in late September or early October, well before the cold weather sets in. They live off of their body fat all winter. The slow animals are attractive meals for predators, so they wait until the end of the summer to start gorging and then get fat as quickly as possible, before retreating underground.

Meadow Jumping Mice spend half of the year underground, surviving off of their body fat. Their energy is often used up before the snow disappears. Many die, but a high birth rate enables the survivors to quickly repopulate an area.

MORE HIBERNATORS

Raccoons and **Striped Skunks** are irregular hibernators—dormant when temperatures are low but quick to rouse and look for food when temperatures rise. They build up a small fat reserve that enables them to stay holed up trough the worst weather. Skunks sometimes share a den with up to a dozen others to keep warm.

Thirteen-Lined Ground Squirrels live entirely off of their fat all winter, and emerge weighing half as much as when they went in. They store seeds in their burrows in the fall to serve as an emergency supply.

Eastern Chipmunks rely on their warm underground borrows and stores of nuts, seeds, and grasses. They put on little extra fat in preparation. They wake up every few days to eat, going outside on warm days. The more food a chipmunk as, the more time it spends awake and vigilant.

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Brochure designed by Sara Jane Laue.

IOWA'S WINTER MAMMALS

PART 2: HIDDEN WINTER WORLDS

Winter in Iowa presents many problems for the animals that call this state home. Although many birds and bats, migrate in order to survive, these mammals are able to stay close to home by hiding from the harshest elements of winter. The key to survival for these mammals is to continue life underground.

Read on to find out more about the secret world of winter mammals...

SEMIAQUATIC RESIDENTS

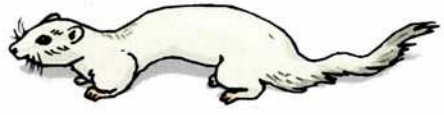
These mammals are adapted to survive regular dips in icy water in the winter. In a hard winter, the water can freeze to the bottom, with fatal consequences.

Beavers devote many of their autumn hours to storing branches near their lodge to eat all winter. Beaver families stay together. Different members of the colony come and go around the clock. That way one is always in the lodge, keeping it warm for those returning from the water.

River Otters travel widely overland in the winter looking for open water to prey on fish. They hunt until the surrounding waters are depleted and then travel to a new spot. Their thick fur is four times denser than a muskrat's.

Muskrats stay active all winter, feeding on water plants. They don't store food, so they leave their houses of piled up mud and cattails daily, via an underwater exit to forage. When water levels are low, they are sometimes frozen in or locked out on land. They starve quickly or are killed by predators.

American Minks are carnivores. They catch most of their food on land but are always found near water. Minks put on little extra body fat and keep their short hair. Their long, thin bodies lose heat rapidly, but they are extremely flexible, enabling them to slip in out of tight spots to find prey.



UNDERGROUND RESIDENTS

Eastern Moles retreat to deeper tunnels below the frost line in the winter and go on searching for earthworks and other invertebrates to eat.

Plains Pocket Gophers use their large cheek pouches to carry roots and plants to their storage caches deep underground, where they stay active all winter. Gophers use their long front claws for digging and their front teeth like picks to pry soil loose.

SUBNIVEAN RESIDENTS

For Iowa's smallest mammals, winter life goes on under the snow, in the so-called subnivean world. Temperatures hover at a comfortable 32° F, once a thick blank of snow settles on the ground surface.

The great risk is surviving the change of seasons. Snowless months increase mortality, while melting snow in spring brings the danger of flooded burrows.

Northern Short-Tailed Shrews have saliva that resembles cobra venom. They paralyze invertebrates and store them near their burrows. Shrews stay active, eating more than half of their weight daily.

White-Footed Mice use hollow logs, birds' nests, and burrows to store seeds and nuts. They gather together in a large nest under the snow and huddle for warmth. Sometimes they even allow mice of other species to join them.

Meadow Voles eat seeds, roots, and bark in the winter. They make large nests and huddle together for warmth. Voles clip the grass along their regular paths under the snow. Their runways are obvious in the spring after snowmelt.