1994 WINTER COMPENDIUM OF WILDLIFE APPRECIATION

Colorado's Wildlife Company

ermine holding meadow vole

SMALL MAMMALS IN WINTER

porcupine

Weathering Winter

Winter is a harsh season calling for much adaptive "ingenuity" from wildlife. How do Colorado's small mammals survive winter? Here's a look at the diverse strategies they've evolved. (For the purpose of this article we're using the highly scientific definition of a small mammal as "smaller than a bread box").

See You Next Year

Migration is a familiar strategy birds use to deal with winter. Yet some members of one mammal group also migrate. Any guesses? Bats, of course. Equipped with wings, many of these tiny flying mammals avoid the stresses of winter by moving southward to more hospitable climates. Within a species, some populations may migrate, while others don't. Brazilian free-tailed bats are known to migrate up to 1000 miles to wintering sites in Mexico. Whether bats migrate in flocks is uncertain. We assume most migration is at night, but some bats may move by day.
Other Migrators: hoary bat, silver-haired bat

Winters' Deep Sleep

Because they have less bulk, small mammals have greater surface area per volume, meaning more surface through which heat is lost. Thus small mammals lose heat more readily than larger animals. (Think of heating a cup of water and a gallon of water. Which will cool first?) To stay warm in winter, they must burn proportionately more energy, all this in a season when food (read that: fuel) is harder to come by. One solution is to shut down all the systems that require fuel. In other words, hibernate.

In late summer and fall, hibernating mammals feed constantly to put on the fat which must carry them through winter. High altitude species, like marmots, may enter hibernation in August and not become active again until May. The hibernation den is below the frostline where temperatures remain fairly constant. Once in the den, the animal's body temperature drops to within a few degrees of the surrounding temperature. Breathing may be as shallow as one breath a minute and the heart may beat only a few times a minute. Hibernating uses only an estimated one seventh of the energy of remaining active. Upon emerging from hibernation, the animals are very emaciated, but gain weight quickly.

Patterns for hibernation vary greatly between species. Some hibernators, like chipmunks, awaken periodically and become active. Some store food in the burrow to feed on when they rouse. Most of our Colorado bats probably hibernate instead of migrating. Big brown bats cluster together in large colonies (sometimes 100,000 animals) in mines and caves. By reducing each individual's exposed surface area, they reduce heat loss.
CAUTION! If you come across bats hibernating in a cave, mine or even an old building, leave them alone! The energy required for the bat to "rev up" its metabolism to react to a disturbance can deplete so much stored fat that the animal may starve to death before food is available again in spring.

Like any survival strategy, hibernation has its price. One third of adult ground squirrels, and two thirds of immature animals, do not survive till spring. They either freeze when their supply of stored fat is used up, or they are dug up and eaten by predators.

The winter strategy of raccoons, skunks and badgers is not fully understood. They don't completely hibernate but go into periods of deep sleep which conserve energy. They are active during good weather.

Other Hibernators: golden-mantled, 13-lined and Wyoming ground squirrels; meadow jumping mouse; white-tailed and Gunnison's prairie dogs; Townsend's big-eared bat, California myotis and pallid bat

On The Go Below The Snow

While some small mammals are sleeping away the winter, many remain active beneath an insulating layer of snow. Snow creates a microclimate of relatively constant temperature above freezing. It also provides protection from predators. Many small mammals—shrews, pocket gophers, voles and mice–have relatively low mortality rates in winter. They remain quite active, and many breed during this time. Inhabiting one of Colorado's most extreme habitats, pikas stay active year-round on the alpine tundra, feeding on dried grasses and forbs they have stored. Visit the alpine in fall and watch how busy the pikas are preparing for winter, cutting vegetation and storing it in little "haystacks" stuffed between the rocks.

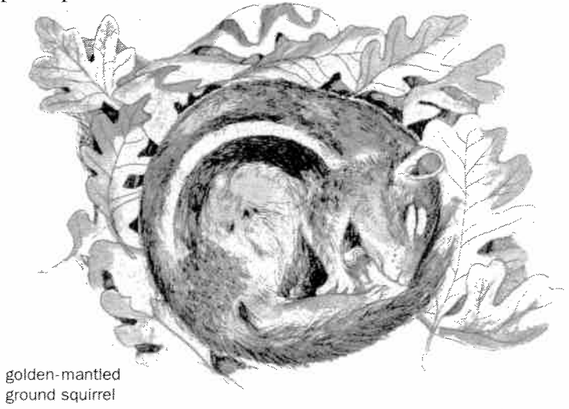
The Color Of Winter

For those small mammals remaining active out in a wintry world, changing color for better camouflage is a handy survival tool. Snowshoe hares, sometimes called varying hares, lose their grayish-brown summer coat for winter white. These hares are further adapted for winter life; with their large "snowshoe" feet, they run easily on top of the snow, leaving their less-well-equipped pursuers floundering.

Short-tailed weasels also molt their brown coats for snowy white. In winter plumage they are commonly called ermines. Hidden against a snowy backdrop, only the ermine's black nose and black tail tip give it away. Blending into the landscape serves the same purpose for the weasel as the hare – concealment from predators. But as a hunter itself, the weasel gains an added advantage of being less obvious to its prey. Shortening day length seems to trigger these animals to change color.

Winter Active

Black-tailed prairie dogs don't hibernate and are active above ground on sunny winter days. During periods of bad weather, they stay deep in their burrows. Tree squirrels cache nuts and food in various locations for winter. They may be active in good weather, retreating to insulated nests to sit out storms and extreme cold. Shrews forage night and day, year-round. Their metabolic rates are so high they require incredible amounts of food; some species must consume several times their body weight in food every day. Since shrews forage beneath leaf litter and in subterranean burrows, winter probably doesn't slow them down too much. Moles, too, remain active in their underground tunnels, though they have been seen swimming beneath pond ice!
Other Active Animals: woodrats, muskrats, porcupines, rabbits



golden-mantled ground squirrel

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A Mouse So Rare

One of Colorado's small mammals is gaining attention for reasons other than its hibernating habits: it may be the rarest mammal in North America. What is this creature? The tiny Preble's meadow jumping mouse.

Unlike most mice, the Preble's (that rhymes with pebbles) hibernates in winter. Also unlike other mice, which scurry around on four legs, jumping mice jump like tiny kangaroos, using their long hind legs and big feet to move through the dense vegetation along waterways where they live. Since land along rivers and streams is also prime human habitat, an estimated 90% of the species' habitat has been lost to agricultural and urban development. Its historical range extended from the area of Casper, Wyoming to El Paso County, Colorado. Only two remaining populations have been found of this little mouse with the big name - one at Rocky Flats and one within City of Boulder open space. Because of its scarcity, the mouse may be federally listed as a threatened or endangered species. A study team, including government agencies and private groups, is developing strategies to locate and protect other populations of the mouse and its habitat in Colorado and Wyoming.

On The Move

High in the forests of the Rocky Mountains, pine martens survive the rigorous winter without hibernating, migrating or even putting on fat! Instead, they carefully choose where they spend their time to stay as warm as possible.

Like other members of the weasel family, martens have small, long bodies which lose heat fairly readily. Researchers at the University of Wyoming found that martens make precise use of microenvironments in the forest, moving around to always be in the warmest site available. In very cold weather, they stay under the snow where the temperature hovers around freezing. In warmer weather they move above the snow. Martens use structures extensively, taking advantage of complex forests with trees in various stages of growth, death and rebirth. They shelter in hollows in fallen logs, snags and live trees; tangled masses of witch's broom (a parasitic plant) in spruce trees; and crevices between rocks in boulder fields. They undergo a shallow daily torpor (sleep-like state) to save energy, in which their temperature drops about 3° Celsius (5° Fahrenheit).

pine marten

Winter Watching Tips

Winter is a good time for wildlife watching. The bare landscape and leafless trees make wildlife easier to see. Snow provides a canvas on which many animals leave traces of their passage. We may find evidence of animals we rarely have a chance to see. After a fresh snowfall, look for tracks, evidence of burrows or diggings, or even fresh scat. Try deciphering the stories left in the snow. Doglike tracks leading to a hole tell you where a coyote pounced on a mouse beneath the snow. Rabbit tracks ending in a stirred-up area edged by telltale wingmarks signal where an owl caught a meal.

Once snow melts in spring watch for the snaking ropes of dirt, called eskers, left by pocket gophers. In their winter tunneling, gophers deposit dirt above ground in tunnels burrowed in the snow. Watch also for the tunnels munched through the grass by voles. These galleries appear when the snow, which often forms the roof, melts. Large, oval wounds chewed in tree bark, especially in pine and aspen forests, are evidence of porcupines, who climb trees to dine above snow depth.

Ermine (the winter, white-coated version of short-tailed weasels) are no strangers to cross country skiers. Popping up out of the snow to bound a distance before diving under the snow again (and covering more ground!), ermine are often first detected by the contrast of their black noses and tail tips against the snowy white landscape. Their bounding winter tracks often disappear, only to reappear a distance away.

DOW WORKING FOR WILDLIFE

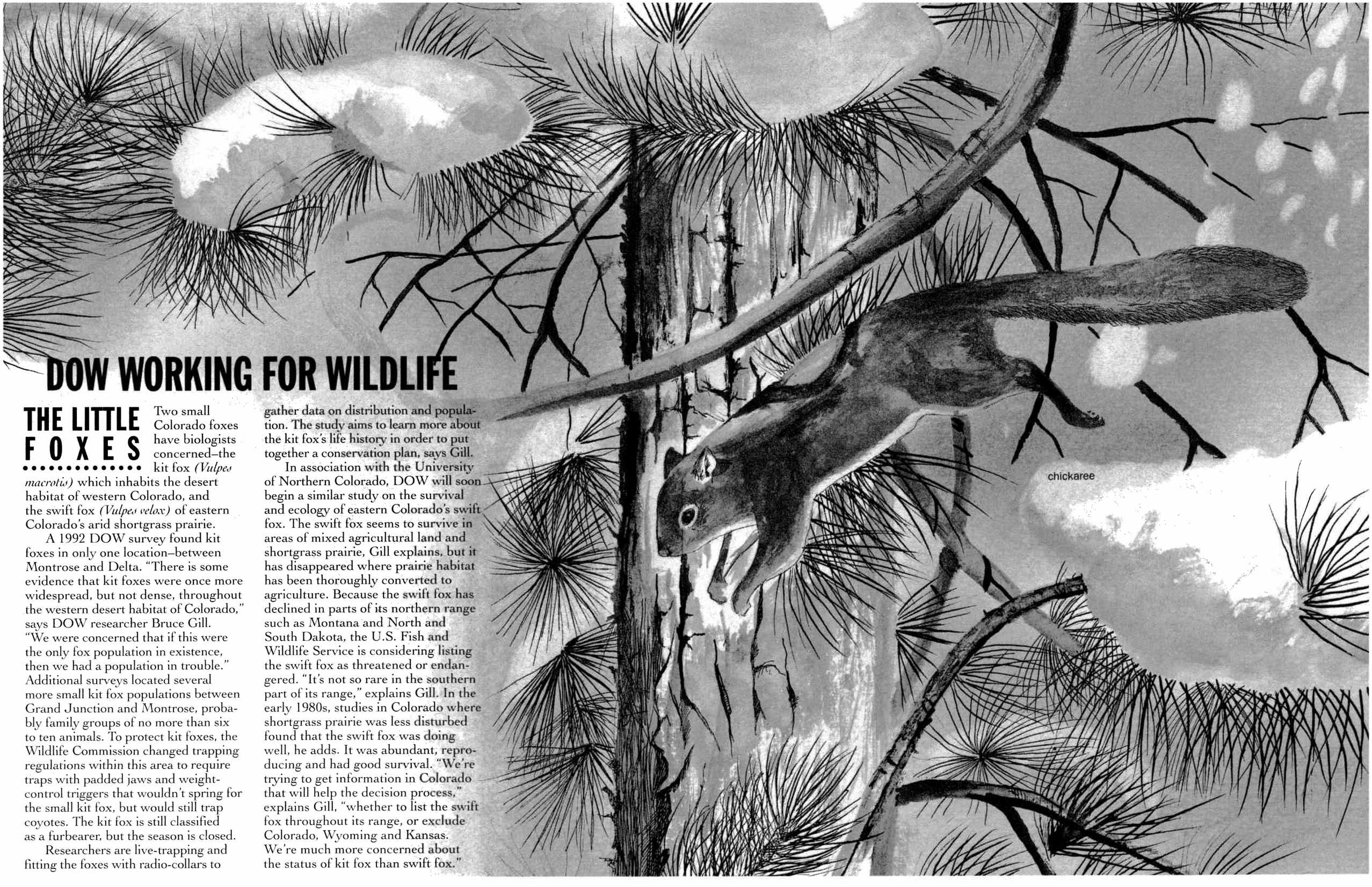
THE LITTLE FOXES

Two small Colorado foxes have biologists concerned–the kit fox *(Vulpes macrotis)* which inhabits the desert habitat of western Colorado, and the swift fox *(Vulpes velox)* of eastern Colorado's arid shortgrass prairie.

A 1992 DOW survey found kit foxes in only one location–between Montrose and Delta. "There is some evidence that kit foxes were once more widespread, but not dense, throughout the western desert habitat of Colorado," says DOW researcher Bruce Gill. "We were concerned that if this were the only fox population in existence, then we had a population in trouble." Additional surveys located several more small kit fox populations between Grand Junction and Montrose, probably family groups of no more than six to ten animals. To protect kit foxes, the Wildlife Commission changed trapping regulations within this area to require traps with padded jaws and weight-control triggers that wouldn't spring for the small kit fox, but would still trap coyotes. The kit fox is still classified as a furbearer, but the season is closed.

Researchers are live-trapping and fitting the foxes with radio-collars to gather data on distribution and population. The study aims to learn more about the kit fox's life history in order to put together a conservation plan, says Gill.

In association with the University of Northern Colorado, DOW will soon begin a similar study on the survival and ecology of eastern Colorado's swift fox. The swift fox seems to survive in areas of mixed agricultural land and shortgrass prairie, Gill explains, but it has disappeared where prairie habitat has been thoroughly converted to agriculture. Because the swift fox has declined in parts of its northern range such as Montana and North and South Dakota, the U.S. Fish and Wildlife Service is considering listing the swift fox as threatened or endangered. "It's not so rare in the southern part of its range," explains Gill. In the early 1980s, studies in Colorado where shortgrass prairie was less disturbed found that the swift fox was doing well, he adds. It was abundant, reproducing and had good survival. "We're trying to get information in Colorado that will help the decision process," explains Gill, "whether to list the swift fox throughout its range, or exclude Colorado, Wyoming and Kansas. We're much more concerned about the status of kit fox than swift fox."



IT'S TIME TO CHECK OFF!

With this winter issue of Colorado's Wildlife Company, we bring the year to a close. That means it will soon be time for taxes (oh, no!), time for us to thank you for your past help and time to ask for your continued support of the Nongame and Endangered Wildlife Checkoff on your state income tax return.

Through Colorado's Nongame and Endangered Wildlife Program, your checkoff dollars have contributed to bringing bald eagles and peregrine falcons back from the brink of extinction. You've helped greater prairie-chickens and river otters. Greenback cutthroat trout are coming back because of your help, and the unique fishes of the Colorado River system– the Colorado squawfish, razorback sucker, humpback chub– are benefitting from programs funded in part with checkoff dollars.

So when that April deadline rolls around, remember how much your contribution helps maintain the wildlife diversity that makes Colorado such a wonderful place.

The Nongame and Endangered Wildlife Checkoff is up for reauthorization by the state legislature. Make your voice heard by letting your legislator know how you feel about the checkoff. Write or call your state senator or representative.

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