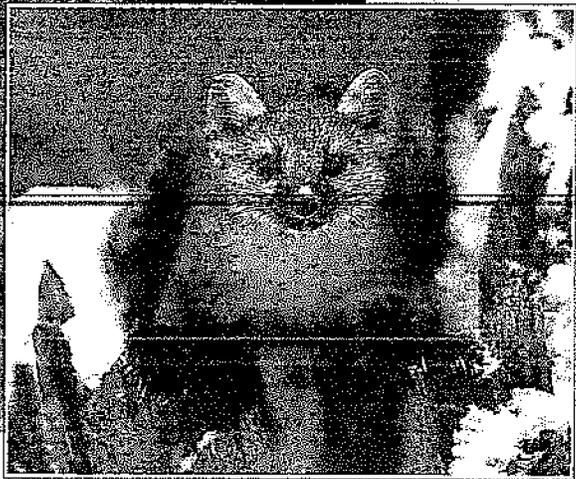


DAN & CINDY HARTMAN



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by CRAIG FAGER

Fox of the Treetops

IN RECENT YEARS the pine marten, a member of the weasel family long prized for its soft, dense fur, has moved from relative obscurity to the forefront of the debate over management of our nation's forests. The marten, or American sable, historically has been regarded as a species dependent on old-growth coniferous forests. Once found throughout much of northern New England and the northern Lake States, the marten is rarely seen in those areas today. In the Pacific Northwest, the Intermountain West, Canada, and Alaska, the marten is still abundant, but logging practices and fur harvest levels have raised concerns about its future in these regions as well.

In Montana, martens are common occupants of several western mountain ranges and less common and scattered in others. The isolated ranges of southwestern Montana, including the Crazy Mountains and Absaroka-Beartooth ranges, represent the eastern boundary of marten distribution in the state. The marten has specialized habitat needs, and its range limits are a product of forest habitat availability and related prey distribution.

With its foxlike face, erect ears, and shiny black eyes, the marten is a picture of alertness and curiosity. Although coat color varies among individuals, most martens have yellowish-brown fur shading to dark brown on the tail and legs. A buff or orangish throat patch extends downward to the breast. The stiff, glossy guard hairs range from one to two inches in length and the dense, silky underfur is about an inch in depth.

Martens have five toes on each foot with sharp, semiretractable claws about a half-inch in length. They are acrobatic tree climbers, easily jumping from branch to branch, tree to tree, or from tree to ground. Like squirrels, martens can rotate their hind feet and climb down tree trunks headfirst.

At just two to four pounds in weight and about two feet in length (including the long, bushy tail), martens are among the smallest predators in the forest. This dictates that they are alternately the hunter and the hunted, a fact that defines many of their behavioral characteristics and needs. Like most members of the weasel family, martens are bold, voracious predators, capable of killing animals twice their size. They typically kill smaller prey by biting with sharp canines at the junction of the neck and skull or, with larger prey like snowshoe hares, by severing the large artery in the throat.

Although martens occupy coniferous forests year-round, their food habits and habitat use change with the seasons.

During the snow-free months, the forest is awash with food—small mammals, birds, insects, berries, bird eggs, amphibians, and green vegetation are abundant. The winter months, on the other hand, present a greater challenge; most songbirds migrate south, and insects, berries, and grasses are no longer available. Martens make the transition from summer to winter by becoming much more specialized, preying primarily on voles and mice. In winter, the numbers and availability of these small mammals become critical to marten survival.

Martens are well adapted to living and hunting where snow blankets the ground for over half the year. Their furred feet are slightly oversized and their weight is well distributed

so that even the softest snow poses little obstacle to travel. Most of their hunting, however, takes place beneath the snow surface. They gain access through openings in the snow associated with deadfall (fallen trees and branches), logging slash, or large boulders. Martens are highly dependent on these avenues and the features that create them, including a forest canopy that reduces snow accumulation.

Although martens utilize all the major forest types in southwestern Montana (Douglas-fir, spruce/subalpine fir, lodgepole pine, and whitebark pine), they rely on specific forest types for much of their hunting. Foraging sites tend to be dominated by spruce and subalpine fir—moist sites characterized by large-diameter deadfall and lush ground cover that supports abundant mouse and vole populations.

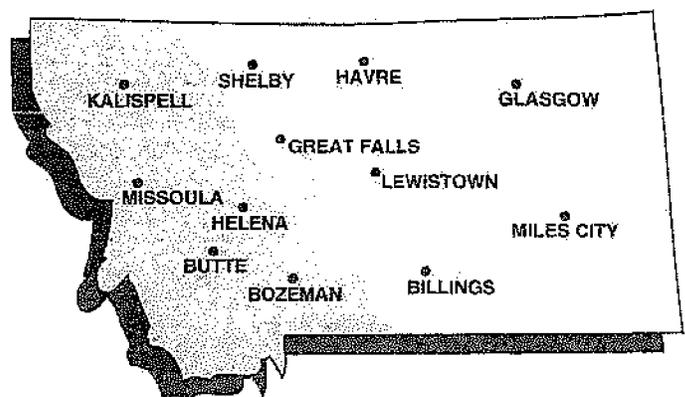
Martens breed in July or August, but the fertilized eggs do not fasten to the wall of the uterus until midwinter (a phenomenon known as delayed implantation). They give birth in April to two to five young, each weighing about an ounce. The young martens are nearly full-grown at about three months.

THE SOUTHWEST MONTANA PINE MARTEN PROJECT

The U.S. Forest Service and the Montana Department of Fish, Wildlife & Parks (FW&P) are the two principal agencies responsible for managing martens in southwestern Montana. The Forest Service manages the vast majority of marten habitat and considers the marten an old-growth forest "indicator" species, or a species whose presence is indicative of a healthy old-growth environment. FW&P manages marten populations through regulation of harvest. In 1989 these agencies combined forces with Montana State University to create the Southwest Montana Pine Marten Project, a three-year study designed to assist resource managers in perpetuating marten populations.

During the study, researchers Quentin Kujala, Ken Coffin, and I live-trapped and radio-collared more than 50 pine martens. In turn, each of us spent one year in the field following these tagged animals—monitoring their movements and behavior, documenting their food habits, and evaluating their habitat use. Over the course of the study we estimated the relative density of marten populations through the use of

MARTEN DISTRIBUTION IN MONTANA

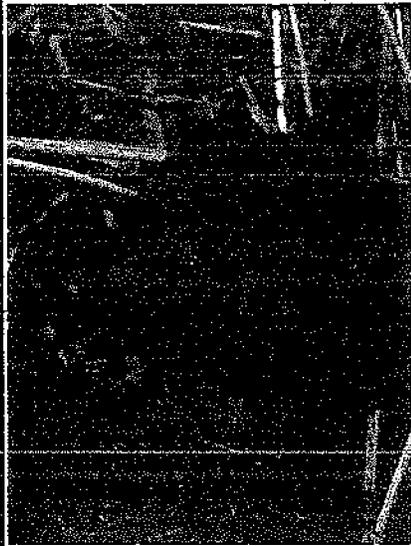




Red squirrel



Snowshoe hare



Meadow vole

JAM L. WASSING

Voracious predators, martens are capable of killing animals, like snowshoe hares, that are twice their size. Perhaps because they are adept tree climbers, martens have long been thought to prey heavily on red squirrels; however, recent studies show that mice and voles provide the staple of the marten's diet in winter.

"track" transects. We ran these transects on snowmobiles or snowshoes one to two days after a fresh snowfall wiped out old marten tracks.

Track surveys are an integral part of furbearer management because they provide a reliable means of censusing animal abundance and distribution. On a statewide basis, FW&P biologists have established transects over hundreds of miles of forested habitats, using them to census marten, wolverine, fisher, lynx, bobcat, and mountain lion, and prey species like snowshoe hare, cottontail, and red squirrel.

Perhaps because martens are expert tree climbers, it has long been believed that they prey heavily on red squirrels during winter. Although we found that martens do indeed eat red squirrels, voles and mice are clearly the winter staple of the marten's diet in southwestern Montana. Food habit studies conducted since 1988 at the FW&P research facility in Bozeman indicate voles and mice make up about two-thirds of the marten's winter diet.

Not unexpectedly, marten populations fluctuate widely due to periodic failures in prey survival and reproduction. Judging by our poor success in live-trapping study animals during the winter of 1988-1989 and the low harvest by fur trappers the next fall and winter, such a prey-induced crash probably occurred across southwestern Montana during this period. The results from track surveys in subsequent years, however, suggested that marten numbers can rebound quickly when prey populations turn upward.

Although martens are fairly common forest occupants,

they are not easily observed. Like domestic house cats, they sleep much of the day. Even with the aid of radiotelemetry we saw our study animals only infrequently. Occasionally during warm weather we spotted martens sleeping in birds' nests high up in trees. More typically they seek out dens in dead

snags, hollow logs, or under tree roots that protect them from the elements and predators like great-horned owls, goshawks, coyotes, fishers, lynx, and mountain lions. Martens don't hibernate in the strict sense, but during extremely cold weather they may slightly depress their metabolism and sleep for several days at a time.

Although the marten is generally considered a somewhat sedentary species (many studies report a maximum home range of about one square mile), the martens in our study areas proved to be surprisingly mobile. A male marten we ear-tagged in the Big Hole drainage in 1989 was harvested by a trapper three years later over 25 miles away. One of our radio-collared animals crossed ice-covered Hebgen Lake one night and returned the next, a round-trip distance of roughly nine miles. Movements of up to five miles a day were common, and our

collared subjects ranged over areas of anywhere from 2 to 20 square miles. From a management perspective, this mobility is cause for optimism, as it assures that martens are continually testing and exploring the suitability of different habitats.

EFFECTS OF CLEARCUT LOGGING

Part of the reason for the marten's large home range size in southwestern Montana may be due to clearcut logging

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Martens are well adapted to a climate where snow blankets the ground much of the year. Their furred feet are oversized and their weight well distributed so that even the softest snow poses little obstacle to travel.

Good marten habitat is a combination of many variables, including forest type, prey availability, stand maturity, and space.

practices. During winter, they rarely utilize large openings such as natural meadows or clearcuts. The lack of tree cover in such areas results in heavy snow accumulations that limit access to martens for hunting, resting, or escape from predators.

When they are too large or dominate the landscape, clearcuts force martens to concentrate in remaining forested areas, lowering the overall carrying capacity of the habitat, increasing territorial strife, and leaving them more vulnerable to trapping. Options being used by management agencies to reduce the impacts of clearcutting on martens and other forest-dwelling species include: (1) leaving more slash scattered throughout clearcuts, (2) limiting the size of clearcuts, (3) closing roads after logging, and (4) using alternative harvest techniques that leave standing live trees.

Although clearcut logging has undeniable impacts on wildlife, it is a controllable alternative to large, catastrophic wildfires that produce many of the same effects. The inherent danger of heavy accumulations of deadfall was dramatically brought home in the summer of 1988 when several million acres of forested land burned in the Intermountain West. These fires have reduced the carrying capacity of large acreages of marten habitat for many years to come. Burned-over areas can support martens, but generally they are not used for many of the same reasons that clearcuts and meadows aren't used.

Whether or not the primary habitats of pine martens in southwestern Montana are truly "old growth" is a difficult question to answer. Old-growth forests probably represent some of the best marten habitat we have, but they by no means represent the only forests that support martens. Martens live, indeed thrive, in many areas of southwestern Montana that have been roaded, commercially logged, and stripped of deadwood for firewood. While there is a popular perception that old-growth forests are static communities that can be preserved indefinitely, we know after the events of 1988 that today's old-growth can easily be tomorrow's smoking ruins. Good marten habitat is a combination of many variables, including forest type, prey availability, stand maturity, and space. Our study taught us that, at least in southwestern Montana, martens possess a degree of adaptability that goes well beyond their customary classification as an old-growth-dependent species.

EFFECTS OF FUR HARVEST

Marten trapping, indeed all fur harvesting, is in the midst of change. Such change isn't new, as many of the same price woes and fashion changes that brought down the beaver trade

in the mid-1800s are still at work today. Despite the decline in most major fur markets, trappers are still taking to the field every year. Trapping has a long-standing tradition in Montana, and many trappers continue to ply their trade in the hope that stronger markets will return someday.

Martens are currently managed through a December-January trapping season. Their lustrous brown fur is utilized for complete coats, as lining, and as trim. Historically, the harvest level has varied with market value, marten population levels, and trapping pressure. During the 1980s, the marten harvest in southwestern Montana averaged about 450 per year. The lowest catch for this period was 220, when pelt prices were around \$14 each, and the highest was 950 when prices jumped to about \$36 each. The turnaround in pelt prices and harvest occurred in just two years—between 1982 and 1984—illustrating some of the problems that radical price fluctuations can create for resource managers. The Montana Fish, Wildlife & Parks Commission responded in 1987 with a two-month reduction in the trapping season, which at the time ran from November through February. High pelt prices continued through the 1988 trapping season, but have since fallen to the \$25 range. Predictably, marten harvest levels have also dropped, and are now below 200 per year.

Because harvest level is a concern with any furbearer, we studied the effects of trapping on marten populations. Where active trap lines existed in our study area, trapping was the greatest source of mortality. Each year of the study we tried to quantify the effects of harvest by live-trapping after the fur season had ended. Post-season efforts yielded results similar to pre-season capture rates, indicating that new martens moved into unoccupied territories almost immediately after they were vacated. Our results showed that trapping at current levels by no means produces voids where few martens exist. Because marten populations enter winter, or the time of least food abundance, at their highest levels of the year, mortality is inevitable. Spring marten populations tend to be in line with the lowered carrying capacity whether trapping is present or absent.

MONTANANS value martens as fur animals, for viewing and photography, and as indicators of forest health. In recent years we have learned a great deal about these secretive predators—about their habitat requirements and their ability to adapt to changing conditions. Long-held assumptions about marten biology will need to be evaluated as additional research results come forward. With sound cutting practices and furbearer management, the marten can continue to prosper in the forests of western Montana. ■