Collection of eight wildlife conservation controversies

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The University of Montana
THE NARROW MARGIN OF THIS VOLUME WOULD NOT PERMIT SEWING. A QUALITY ADHESIVE WAS APPLIED TO THE SPINE TO PROVIDE A DURABLE, LONG LASTING VOLUME.

A COLLECTION OF EIGHT WILDLIFE CONSERVATION CONTROVERSIES

BY

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These eight articles, which appear in the order they were written, cover a broad spectrum of wildlife conservation controversies. They include habitat as well as management questions, and involve federal as well as state agencies. Though the topics are quite diverse, these controversies have been approached with basically the same philosophy. All attempt to display a consideration of broad ecological values and goals while typically rejecting short-term, single-use or vested interest solutions. The emphasis is on maintaining the sanctity of our natural systems, within the political and economic limits of our society.

The first three articles deal specifically with controversies regarding habitat loss or destruction. I tried to show how the unchecked actions of special interest groups were attacking the land base, and thus, the wildlife. At Red Rock National Wildlife Refuge, overgrazing was destroying a watershed and threatening wildlife, with the consent of federal wildlife officials. In the Wolf Creek article, I discussed how real estate men were allowed to develop land in a manner that was clearly not in the public interest. On the Madison, I explained how a poorly sited dam was destroying a nationally famous trout fishery, and what we might do to save it.

The last five articles deal with management problems, which can be even more complex that habitat issues. Management problems often require not only a knowledge of wildlife biology principles, but also
a weighing of social, cultural and economic values. These articles attempt to show how wildlife agencies sometimes fail to consider these broad values, and instead make their decisions based on political factors or pressures from special interests.

In dealing with management questions, it's often not enough just to inform citizens of a problem. They must also be told how to get involved. I've tried to suggest ways private citizens can make their views known to public officials.

These eight articles have appeared in the following magazines:

In 1912, with trumpeter swans rapidly declining in the United States, eminent ornithologist Edward Forbush made a dire prediction about the big bird's future. "Total extinction," he said, "is now only a matter of years. Its trumpeting call will soon be lost in the silence of the past." 

Twenty years later, it seemed as if Forbush's alarmist prediction might come true; fewer than 70 of these majestic white birds remained. In a last-ditch effort to preserve the magnificent trumpeter, President Franklin D. Roosevelt in 1935 issued an executive order establishing the Red Rock Lakes National Wildlife Refuge in the Centennial Valley of extreme south central Montana. This action set the stage for preservation of important trumpeter habitat, and the trumpeter population subsequently benefited.

The refuge, managed by the U.S. Fish and Wildlife Service (FWS), lies at the eastern end of the Centennial Valley in Beaverhead County, about 40 miles west of Yellowstone National Park. Summer access to the refuge comes via a dirt road between Monida and West Yellowstone, Mont. Snow machines provide the only winter access.

The Centennial Mountains, rising over 10,000 feet to form the southern boundary of the valley, markedly contrast with the gently rounded, sagebrush-covered Gravelly Range to the north. Heavy timber, which gives way to sheer rock faces and rugged escarpments, accentuates the splendor of the valley and creates a refuge which former FWS Director Ira Gabrielson termed, "scenically, the most beautiful of all."

Timbered slopes and rocky basins capture the heavy winter snows, providing a constant water supply for the lakes and marshlands below. Four
major streams feeding the refuge originate in the steep-sloped Centennials—Red Rock, Elk Spring, O'Dell and Tom creeks. Red Rock Creek and its tributary, Helroaring Creek, are the most distant sources of the Missouri River.

The 40,000-acre refuge comprises two large shallow lakes (Upper and Lower Red Rock Lakes), the marshes and meadows surrounding them, some forest land in the Centennials and some dry sagebrush land in the Gravellys. This wide range of habitat creates a variety of niches for many kinds of wildlife.

Bird life is especially abundant in the refuge, with over 200 species identified. Eighteen different kinds of waterfowl, including significant numbers of canvasbacks and redheads, nest in the refuge each year. In August and September, more than 50,000 ducks and geese gather there for their southward migration. Shorebirds such as long-billed curlews, willets and avocets frequent the mud flats bordering the marshes, while several species of gulls, terns and white pelicans often wing over the refuge. Raptors such as the marsh hawk and golden eagle also reside on Red Rock. And the endangered peregrine falcon is occasionally sighted. Sandhill cranes are common, particularly in the grasslands bordering Upper Red Rock Lake.

Shiras moose often haunt the refuge's willow thickets. Other big game species such as deer, elk and pronghorn antelope browse the grasslands and forests near the marsh. But only the moose remain through the severities of winter. Mink and muskrat also frequent the marsh. Muskrat houses do "double duty," since trumpeter swans use them for nesting platforms.

This vast network of lakes and streams is best explored by canoe. Although movement of the water is almost imperceptible, the Red Rock River can be followed as it wends its way through the marshes. However, boating is permissible only after July 15 to avoid disturbing nesting trumpeter swans.

Although the refuge is best known for the trumpeter's comeback, it is also noted for its Montana grayling population. The population has managed to persist despite severe habitat destruction, both on and adjacent to refuge lands. Formerly found in the Missouri River and its tributaries above Great Falls, now the Big Hole River and streams which form the Red Rock drainage represent some of the last native grayling water in the U.S., outside Alaska. In these waters, the discriminating fisherman can still catch the fish on which Lewis and Clark dined. Several mountain lakes also retain substantial grayling populations, started mostly from planting.

The relative inaccessibility of the area and the harsh climate combine to keep the Centennial Valley isolated. In 1973, Red Rock Lakes National Wildlife Refuge was judged suitable for a wilderness designation. It received a favorable recommendation from the FWS and awaits Congressional approval.
status as a wildlife refuge; the FWS would not lose authority to restrict use or prohibit entry to protect swans. However, the advantages of designating Red Rocks as “wilderness” are not immediately obvious since nothing much would change.

Swans have long appealed to man in an aesthetical sense, as evidenced by early mythology and artwork. Seven different species of swans exist today and two—the trumpeter and whistling swans—are native to North America. Although both are identified by pure white plumage and black feet and bills, the trumpeter, with a wingspread of six feet and weight of 30 pounds, is about one-fourth larger. However, the most remarkable difference between the two birds is their voices. While the whistling swan’s call is a muffled, musical whistle, the trumpeter produces a loud, low-pitched bugling note that can be heard from far away.

The trumpeter swan, which may live longer than 30 years, was probably widespread, but never abundant, in North America before arrival of white men. Generally recognized as our largest waterfowl, by weight it is the largest bird in North America. Winston Banko, in his monograph on the species, indicates that early records and observations show the trumpeter wintered as far east as New England and North Carolina, while nesting in Illinois and the Ohio Valley. Banko also states that early evidence shows the Flathead Valley in northwestern Montana once supported trumpeters.

Although the swans provided easy targets for early gunners, the age-old problem of habitat destruction nearly spelled doom for the trumpeter. Whistling swans, which nest farther north than trumpeters, have not had to deal with as much marsh drainage and other types of man-caused habitat destruction, and have managed to maintain a population of about 100,000.

Formation of Red Rock Lakes National Wildlife Refuge aided recovery of the trumpeter population; by the early 1950s, they numbered over 500. Since, swan numbers have wavered between 500-600, and they are found in a 60-square-mile radius around Red Rock, encompassing the tri-state area of Wyoming, Idaho and Montana. Now, according to swan researcher Roger Page, the refuge has probably reached—if not exceeded—its saturation point.

One of the most severe limiting factors for swans in the tri-state area is available wintering grounds, because these birds no longer migrate. Approximately 300 swans winter on two spring-fed lakes which do not freeze over, but other refuge waters usually freeze by the end of October. These small lakes can’t supply the vegetation 300 trumpeters need, so refuge personnel usually start artificial feeding in January. About 82,000 pounds of grain were fed to the swans in winter 1974. (The other 200 refuge swans make a short flight into Idaho and winter on Henry’s Fork of the Snake River.)

Artificial feeding is generally a poor game management procedure, but in 1939 the FWS didn’t want to take any chances with the few remaining swans. In 1971, the FWS experimented to see if swans would migrate if food were not available. Grain was withheld for several weeks. After several swans died, the experiment stopped, emphasizing that once artificial feeding becomes an established pattern, it is very difficult to change. Red Rock trumpeters are therefore an artificially maintained population—dependent on a winter food supply.
provided by man. When applied to other wildlife, the experience with trumpeters and their dependence on an artificial food supply re-emphasizes the necessity of maintaining natural foods in an unaltered habitat.

When the population leveled off in the early 1950s and signs of crowding appeared, swans were transplanted to areas with suitable habitat in Washington, Nevada, South Dakota and Oregon. At this time, only the swan population at Lacreek National Wildlife Refuge in South Dakota is increasing.

Preserving the trumpeter swan has been the major focus of refuge management since its inception. Banko, former refuge manager at Red Rock, said in 1960, "For all practical considerations, the trumpeter swan has been saved from any immediate threat of extinction in this country." He also added, "The prime goal now is to preserve existing habitat."

The key to preserving any wetland and its complement of wildlife lies in maintenance of proper water quantity and quality. An adequate water supply poses no problem at Red Rock because the heavy snowfall in the Centennials provides a bountiful, year-round source of cold, clean water.

Maintenance of water quality isn't so easy, though. No heavy industry pollutes this far-removed area. Instead, the pollution at Red Rock is much more subtle and cumulative and comes in the form of silt. Excessive siltation, usually caused by man-associated activities such as overgrazing and poor forest practices, kills stream vegetation and other aquatic life. Geological surveys show that soils in the Centennial watershed erode easily.

In the upper Centennial watershed, silt is deposited most heavily in the lower stretches of the streams which feed the refuge and in Upper Red Rock Lake. An early investigator, J. V Brewer, recorded the depth of the lake at up to 25 feet in 1897. Now, few places are deeper than six feet.

Although siltation gradually filling a lake is a natural process, 19 feet in less than 80 years is abnormally rapid. In its wilderness proposal for the refuge, the FWS stated, "Sedimentation will eventually lead to extinction of the lakes, but this is a slow process with a timetable measured in millennia, unless accelerated by man" [emphasis added].

The refuge doesn't bear the burden of watershed damage alone. In fact, many of the serious problems occur higher in the watershed, on private and other public land. But since the refuge is downstream, it suffers the consequences.

Coordinated management of the watershed has been difficult, since several different agencies and private individuals own portions of it. Atop the Continental Divide lies land controlled by the Agricultural Research Service (ARS), which is used for experimental sheep grazing. Some range specialists believe this land has been overgrazed and contributes to the eroding soil.

The Bureau of Land Management (BLM) administers the next step down the watershed, generally the steep, heavily forested north slopes of
the Centennials. Past logging sales let by the BLM contributed substantially to the siltation problem. But now the BLM has placed a moratorium on logging in the upper Centennials.

The BLM also allowed a phosphate company to open a pit mine high in the Centennials in 1956. Although the mine was closed in 1958, the mine itself and the access road up O'Dell Creek seriously polluted the area.

Grasslands and meadows intermingled with some trees generally comprise the next section of the watershed, controlled by private landowners. Primary use of this land is cattle grazing. And in places, it's severely overgrazed, which causes siltation. In addition, streams running through this private land have been severely damaged. Streamside vegetation has been grazed down to nothing, resulting in unstable streambanks and, in turn, encouraging bank sloughing and side-cutting. Irrigation, stream diversion and organic pollution from animal waste also contribute to the watershed problems.

The refuge controls the lowest extremities of the upper Centennial watershed and problems are similar to those on private land. Stream channelization (such as that on Red Rock Creek in 1960), irrigation and stream diversions occurred in the past, but have mostly stopped now. Unfortunately, some of the effects of overgrazing and streambank damage don't disappear overnight.

The wildlife refuge leases approximately 24,000 acres of its land for use by an estimated 4,200 head of cattle which graze about 12,000 animal unit months (AUM) annually. (An AUM is the amount of forage it takes to feed one cow for one month.) The FWS earns about $30,000 each year from these grazing leases, according to Refuge Manager Gene Stroops.

Grazing on the refuge has created controversy for several years. Cattle use may adversely affect the refuge in at least three ways: (1) disturbance of nesting waterfowl, (2) damage to the watershed and (3) disruption of the natural setting.

Those who oppose cattle on the refuge often point to the aesthetical considerations, claiming the untouched and pristine nature of the marsh is marred by the sight of large numbers of cattle. "Beside," they argue, "what place do cattle have on a wildlife refuge?"

Many waterfowl biologists wonder about this also. Leo Kirsch of the FWS' Northern Prairie Research Center reviewed scientific literature on the subject and wrote, "I was unable to find a single example where grazing or other cover removal activities increased waterfowl production." He concluded his own study by saying that elimination of grazing will result in increased waterfowl production.
Since availability of nesting vegetation is one of the most important limiting factors for waterfowl, a major conflict arises. Cattle graze the refuge from July 10-Oct. 10, although this date may be extended. In a normal year, most ducks finish nesting by July 10. However, with a late summer, this date may be moved forward several weeks. For instance, in 1975 many ducks on water areas across Montana were still nesting until the end of July.

To see how this could affect waterfowl production, consider nesting requirements for the lesser scaup, the most common nesting duck on the refuge. The scaup typically nests on land within 10 feet of the shoreline, usually later than other waterfowl. Cold weather may delay its nesting even longer. When cattle are released on July 10, they usually go first to the succulent shoreline vegetation. Extensive activity not only disturbs the nesting birds but could also result in trampled nests, forcing the ducks to move to more inaccessible areas which may already be filled by other nesting ducks.

Aldo Leopold pointed out another important reason for maintaining ungrazed cover in his pioneering book, "Game Management." Leopold noted that since many waterfowl begin to nest before new growth is suitable for nesting, residual cover from the previous year permits birds to nest earlier and thus allows a longer period for renesting. Since grazing extends until Oct. 10, and may be partially extended until Oct. 25, removal of much vegetation results in a reduction of nesting habitat the following spring. Leopold's early speculations have since been substantiated by scientific studies.

On the other hand, those who favor grazing on the refuge point to economic benefits and state that cattle benefit waterfowl production. "Waterfowl Tomorrow," a FWS book, states, "Regulated grazing by cattle improves and maintains breeding habitat, which otherwise becomes overgrown with low-value, space-consuming vegetation." The FWS offers no scientific evidence to reinforce this theory, however.

Commendably, the FWS is finally taking steps to determine the optimal number of cattle for the refuge. In 1975, refuge personnel began reducing cattle grazing by 10% each year, for a maximum of 5 years. The program can be halted when the FWS feels an optimal number of cattle for the wildlife refuge has been determined.

Overgrazing is only one of several factors leading to excessive siltation which, in turn, speeds up such natural processes as plant succession and the filling in of a lake. While it is difficult to gauge how this acceleration affects resident wildlife, one thing is clear: Rapid changes in the environment usually mean less wildlife. Evidence is strong that change at Red Rock is occurring very rapidly. Watson Beed, in his 1955-56 survey of Upper Red Rock Lake, calculated that the bottom was 88% vegetated and commented that, "...the very fertile bottom supports an almost unbelievably abundant and luxuriant plant growth." 1971 survey revealed only 44% of Upper Red Rock Lake vegetated. It exhibited the most sparsely vegetated bottom of any of the areas surveyed. How this affects wildlife is demonstrated by the history of a particular type of vegetation, waterweed (Elodea canadensis), the preferred food of the trumpeter swan, and one which ducks also take. In the last 20 years, waterweed has dwindled from what one biologist described as "thick stands," to its present state of practically nonexisting. Luckily, both the trumpeter and ducks use other food sources. But quite possibly, the need for artificially feeding swans during the winter is a direct result of loss of native vegetation due to livestock overgrazing. Too many swans for the available habitat (remember—swans are maintained at an artificially high level) may also have contributed to the decrease in vegetation.

Siltation can also devastate the refuge fishery, especially the grayling. The grayling suffers when stream bottoms become muddy and water temperatures rise, conditions which favor rough fish. A historical decline of grayling has been recorded in the upper Centennial and many streams which once contained large numbers no longer do.

Concern has been voiced for this last relic of Montana's native stream-inhabiting population, but management of the fisheries has never held a very high priority on the refuge, despite the fact that fishing is the highest refuge use. An apparent lack of concern for the fishery in the 1950s and 60s, evidenced by such destructive practices as stream diversion, channelization and overgrazing, caused Department of Fish and Game biologists to complain in a report, "There are certainly conflicting interests in this area and cattle as well as swan apparently have priority over grayling." The department further stated that expensive management procedures could not be justified until the FWS "considers perpetuation of the grayling as an active function of the refuge."

Although the refuge hasn't yet placed a management priority on the grayling, according to Stroops, the agency has become concerned. The first action which aided grayling was returning diverted or channeled streams to their original channels. Next, irrigation was halted on the refuge in 1973. Also, the grazing reduction started in 1975 should help to re-establish good stream habitat.

With the grayling primarily in mind, a thorough fisheries inventory over the entire upper Centennial watershed was started in 1975 and will run through 1977. This study should provide the key to future management.

The study, cooperatively arranged with the FWS, BLM, Forest Service (FS) and Department of Fish and Game, will determine water quality, quantity and fisheries environmental problems in the Upper Centennial Valley related to past and present stream-related land use practices.

The Department of Fish and Game is inventorying the fisheries, including an investigation of both the
range and number of grayling in their historic waters.

Initial phases conducted in 1975 have brought some discouraging results. In the spring, biologists found numerous grayling in Red Rock Creek, many in spawning condition. Remarkably large, many weighed over two pounds, approaching the state record of two pounds, ten ounces. While this was good news, biologists in subsequent fall studies found no grayling in the stream. The population has moved into Upper Red Rock Lake, where habitat may not be capable of sustaining it. Siltation was the obvious problem as very little aquatic life exists in the lower reaches of Red Rock Creek. With the current rate of sedimentation in Upper Red Rock Lake, the grayling’s future at Red Rock appears insecure.

The BLM is gathering water quality, quantity and stream data on BLM and privately owned lands. The FWS is doing the same for refuge land and the FS for national forests.

Biologists inventorying the fisheries acknowledge that many problems are already obvious. Streambeds such as O’Dell Creek, dry because of irrigation, speak for themselves, as do the bare and crumbling streambanks.

The study will isolate problem areas so proper management can be formulated. Norm Peterson, a department fisheries biologist involved in the study, said, “Some of these streambanks can only be described as very tender; the misuse they have suffered may take a long time to heal.” Peterson, along with other fisheries biologists, feels these lands can recover with enough time and protection from additional use.

Although some of the watershed’s problems might be resolved, officials have little jurisdiction over private land, where serious habitat deterioration affecting the refuge also occurs. Testifying to this, Peterson notes, “Refuge problems are minor compared to those on private land.” Stream diversion for irrigation and streambank deterioration from overgrazing pose the most serious problems on private land. Tom Creek, formerly a grayling spawning area, is completely dewatered in some sections; cattle have severely damaged Red Rock Creek, the major grayling stream in the watershed. Private land management is very significant because many of the major grayling spawning grounds lie on private land and thus can’t be controlled without the landowner’s cooperation.

The key to preserving this important remnant of Montana’s stream-dwelling grayling population lies in how well the various agencies and landowners work together to establish satisfactory management. Perpetuation of the grayling must be regarded by all parties as desirable, as must the right of ranchers to earn a living without undue constraint.

To maintain a quality watershed, action must start at the top of the Centennials and proceed down to refuge lands. Primitive designation, such as that planned for BLM lands and possibly ARS lands, would be a large step toward maintaining the upper valley.

The private landowner might be asked to fence streambanks in troublesome areas. Assistance in setting up good rest-rotation grazing systems might also help. Maintaining minimal water flows in all streams is necessary for a viable fishery. Above all, cooperation and a unified effort to preserve the watershed are necessary.

The refuge soon faces serious problems, some within its control, others not. The apparent “death” of lower Red Rock Creek and the rapid decrease in submerged vegetation in Upper Red Rock Lake may signal what lies ahead. If man-related watershed problems are not corrected, current siltation problems will only intensify.

The FWS must take a hard look at grazing on Red Rock Lakes National Wildlife Refuge, in terms of insuring optimum waterfowl production, protecting the natural setting and maintaining the quality of the watershed. Current reduction of cattle grazing on the refuge is a step in the right direction, and should slow some of the damage.

The problem relates to whether or not grazing is a legitimate use of the refuge, particularly in light of pending wilderness designation. To properly manage grazing, man-made improvements such as fencing are a necessity. However, with wilderness designation, man-made improvements won’t be allowed. Grazing is permitted on wilderness areas where it has been an established use. But it may conflict with the definition of wilderness in the Wilderness Act of 1964, which says, “the imprint of man’s work” should be “substantially unnoticeable.” Also of concern is the artificial feeding and maintenance of the trumpeter population—this is an “imprint of man’s work.”

Economic benefits of continued refuge grazing are miniscule when weighed against the costs. Short-term attempts at controlling siltation, such as the Red Rock Creek channelization fiasco and construction of water control structures, have been costly, inefficient and detrimental. A price can’t be placed on seeing a huge trumpeter swan flying gracefully overhead or catching a record size grayling. Nevertheless, we must weigh that value.

It will be a sad statement indeed if the Red Rock fisheries study turns out to be a post-mortem investigation where biologists do their work and end up by saying, “Yep, it’s dead all right.”

If there is any place where we must always give wildlife the benefit of the doubt, it is on our national wildlife refuges. If we can determine, by scientific study, that cattle can benefit the watershed and waterfowl, then—and only then—should we consider grazing. At Red Rock Lakes National Wildlife Refuge, this proper procedure has been reversed. The wildlife refuges must remain both a stronghold and a fortress—protected areas where wildlife can’t lose.
REFERENCES


The Subdivision Nobody Knew

by Hank Fischer

SOME folks thought recent changes in Montana’s subdivision laws would solve the problems of habitat destruction and uncontrolled growth that accompany many developments. But if the Wolf Creek subdivision typifies the trend, fish and wildlife — and thus, sportsmen — are still in big trouble.

Developments such as the one at Wolf Creek, between Helena and Great Falls, graphically depict the shortcomings of current laws and regulations. This subdivision, largest ever in Lewis and Clark County, takes more than the traditional “inch” of wildlife habitat. It sprawls over 9,000 acres of previously undisturbed land. Here, developers, aided by “back-to-the-land” buyers, have pared away an important piece of our wildlife resource.

In the process, developers built low-quality roads on state lands without permission, damaged the watershed, eliminated large tracts of wildlife habitat and changed a way of life for local residents, all without an opportunity for public review or approval.

The development also promises to change land-use options on state land in the Wolf Creek area. Most land in this drainage is arranged in a checkerboard pattern, with alternate sections belonging to the state and the developers.

The development in Wolf Creek could aptly be called “the subdivision nobody knew.” Until August 1975, after many of the lots had been sold and the faulty roads constructed, no state or local agency knew anything about it, even though this subdivision was twice as large as any previous Lewis and Clark County development. The comment from several agencies which deal with subdivisions was, “We read about it in the newspaper.”

How did this come to the attention of newspapers and eventually state agencies? Through the concern of a hunter for his favorite elk hunting area. He correctly concluded that important wildlife habitat...
was being destroyed.

How does this happen without public notice? The answer is alarmingly simple. If a developer sells his land in parcels 20 acres or larger, he is not regulated by any subdivision law, only by his conscience.

If a developer exceeds the less than 20-acre limit—even by a tenth of an acre—he has no obligation to (1) inform anyone about his plans, (2) be concerned about fish and wildlife, (3) assume responsibility for sewer, water or roads, (4) consider what local residents think or (5) assess the impact on the community. In short, he alone decides the best use of the land.

Thus, by what often amounts to a few decimal points (20.01-acre lots), the subdividers avoid the law. This often angers wildlife fans and local residents. They resent seeing their backyards turned into second home playgrounds, especially when they had nothing to say about it.

For many ranchers, the roots run generations deep and they are perplexed by the rapid change. One local resident commented, "Things are changing so fast and the effects are everlasting." Begrudgingly, another local remarked, "I guess it couldn't last forever."

Others are more bitter. They see it as the end of their way of life. Some families have lived in Wolf Creek since it was first settled in the late 1800s.

But ranchers were by no means the first inhabitants. The Blackfoot Indians were among the original tenants of this bountiful land. They called the area "place-where-the-wolf-jumped-too." The high cliffs overlooking the creek were once the site of a pishkun, or buffalo jump. The area received its name when a wolf, following a herd of buffalo being driven toward the pishkun, jumped over the cliffs along with the buffalo. Settlers shortened the name to Wolf Creek, which became the name both of this small tributary of the Missouri River and the town which sprang up nearby.

This small town of about 175 persons has been a ranching community since its inception. As one local resident said, "No one paid us much attention except for hunters and hikers until the developers came."

Located on the Continental Divide, the Wolf Creek drainage has long been a favorite area for sportsmen and hikers until the developers came. "I don't know how we can put a price tag on the damage that has been done," Pyke remarked.

Perhaps the most brazen activity undertaken by the developers was construction of roads across state lands without permission. The Forestry Division of the Dept. of Natural Resources and Conservation (DNRC) manages the state land in Wolf Creek. Anyone needs an easement to build a road across state lands. According to Helena Area Supervisor Larry Pyke, "We routinely grant easements when they are found to be in the interest of the State of Montana." Only one of the developers, Geist and Associates, even bothered to apply for easements. None were granted.

Instead, new roads were built and improvements made on other roads on sections of state land. In the process, trees were removed and roads cut into fragile hillsides. "I don't know how we can put a price tag on the damage that has been done," Pyke remarked.

The state sued and was granted a temporary injunction to halt further construction across state lands. But damages may be settled out of court.

Not only were these roads constructed illegally, but also, according to Pyke, "By no stretch of the imagination do they conform to state standards." Most of the roads in the subdivision run along or through creek bottoms, disturbing the stream and causing sedimentation. Overburden from road construction has often been pushed into the creek, in one case entirely blocking the stream's flow. Beaver ponds, which formerly provided good fishing, also gave way to the bulldozer's blade. Steep grades on many of the newly constructed roads exceed the state standard of 6%. One of the roads measured 26%, too steep for a two-wheel drive pickup to negotiate in dry weather. The developers didn't
install any erosion control devices such as culverts, water bars or bridges. New residents must ford Wolf Creek and other streams to reach their lots.

Already, some roads are slumping and breaking up. "They have built four-wheel drive roads, and poor ones at that," Pyke criticized. "Many of them will be washed out, at the expense of the watershed."

The cat skinner who built the roads revealed the reckless instructions given to him by one developer. According to the dozer operator, the developer pointed to a spot on the top of the Continental Divide and said, "Get there!" The grade of the resulting road averaged 17%, and provided access, across state lands, into the headwaters of the Deerborn River. "I knew it wasn’t right," the cat skinner admitted, "but there’s no way to make a good road in country that steep."

The impact of road building, although substantial, is not permanent. Nature could heal these scars if the roads were put to sleep. However, the cumulative effects of increased human use and accompanying pollution pose a real threat.

State hydrologists and soil scientists who examined the site made dire predictions about sewage and waste from the development. Pointing out the coarse structure of the soil, Pete Bengeyfield, Missoula hydrologist for DNRC’s Forestry Division, commented, "Any sewage or waste disposal from dwellings in the bottoms would go into the high water table and not have a very great distance to travel to reach surface waters in the streams." He also noted this problem "could affect the entire Wolf Creek area."

By keeping roads to a minimum, human impact on an area is also lessened, allowing more people the opportunity to enjoy it without destroying it. There’s also more room for wildlife in this plan. Aldo Leopold put it this way—"The cycle is too familiar. A gain in quantity often results in a loss of quality."

Construction or improvement of roads often signals an end to quality outdoor experience. Litter and trash accumulate faster than nature can handle them. In Wolf Creek, junked cars and broken-down cabins have already appeared, and the development is young. More cabins and roads will follow. Short-term profit will again supersede long-term use.

The Wolf Creek area justly deserves its reputation for wildlife abundance. It supported a healthy elk herd, deer and a few moose. Locals described meadows in the French Creek area as places where wildlife was always abundant. One joked, "Why in the wintertime you had to be careful when you went up there or else you’d get run over." A maze of roads and homesites now dots these meadows.

Black bear and mountain lion roam the area, as do many smaller animals. "We feel the wildlife resource is as important or more important than any other resource we have there," Pyke emphasized.

How will the subdivision affect wildlife? To answer this best, each species must be considered. Wild animals vary in their amount of tolerance for human activity.

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**MINI-EDITORIAL**

This article said it over and over. People have a right to know. Developers should not be allowed to operate without public knowledge, regulation and approval. At Wolf Creek—and regrettably, at many other places—the land, the watershed, public coffers, wildlife and people suffered. And nobody even realized what was happening. When we touch the land, we automatically touch the creatures depending on it—including man. It’s definitely time to rework Montana statutes to allow everyone to know what’s happening to his habitat.

Although the mountain lion has managed to eke out a precarious existence in Wolf Creek, it also falls into the category of extremely sensitive. Mountain lions have large home ranges and development probably has caused the available range to shrink, putting pressure on the big cats.

Department studies show that elk are also sensitive to human activity, especially road building. (See Terry Lonner’s article, “Elk and Logging—an Update” in the July/August 1975 Montana Outdoors.) Research indicates elk avoid roads, even if they are lightly traveled. Elk will rarely stay where humans are living for extended periods.

Deer—especially whitetails—are more tolerant of human activity, as long as patches of good habitat remain. Deer can’t get along, however, with the dogs that many second home buyers often have. Dogs relentlessly chase deer.

Moose, never abundant, may disappear from parts of this developed region. Numerous roads now extend through moose habitat along stream bottoms.

Rather than driving them away, development often lures black bears toward it. Repeated visits to garbage cans earn them the label of "nuisance" bears, and soon the department receives a call: "We don’t want the bear shot, but could you please move it somewhere else?" The answer is no. Nearly all areas capable of supporting black bears already do so. It’s a case of having a full hotel and then someone decides to take a room.

Many smaller forms of wildlife also suffer when their habitat is encroached upon or polluted. Black-capped chickadees, long-tailed weasels and long-toed salamanders all feel the crunch.

Destruction of fish and wildlife habitat isn’t the only problem at Wolf Creek, however. A spokesman from the Dept. of Revenue complained, "Subdivisions like the one in Wolf Creek are a real headache for us. We know they’re building cabins up there, but if the lots are over 20 acres they don’t have to file their deeds with the state, so there is no record. That means we have to go up there and check each lot. Many people get away with paying a lower rate just because we don’t know they’re there."

One of the developers devised another system for dodging higher taxes. By advertising the parcels of land in the subdivision as ranchettes, the developer...
reduces grazing rights on the land. The buyer faces cattle and cow pies in his front yard—until he chooses to build an expensive fence to keep the stock out. This setup allows an "agricultural" assessment—even though it is a recreational subdivision. The Wolf Creek development has minimal agricultural value. It supports about one cow per hundred acres, according to the tax assessment of the Dept. of Revenue. Thus, the developer scores in three ways—he (1) sells "ranchettes," (2) grazes his cattle for free on land he has already sold and (3) pays a low tax rate.

If assessed as agricultural land, the developer pays about nine cents per acre per year. If properly assessed as recreational, the tax would be approximately seven dollars per acre per year. In one year, on 3,000 acres, the difference amounts to over $20,000.

Taxpayers and buyers both face the problem of forest fires. Already termed by Pyke "the biggest area of concern in the Helena fire district," more people only worsen the problem. Pyke called the development site "a tinderbox." He added, "I hope people realize the risk they're taking by building there." But of course, they don't, any more than they realize the inappropriateness of living there in the first place.

Pyke explained the Wolf Creek area is arid and part of a "lightning belt." The area has a long history of forest fires, including several in recent years. In 1973, a 764-acre fire in Allen Creek cost $110,000 to extinguish. In 1974, a 75-acre fire on French Creek started in the subdivision and burned mostly on state land. This man-caused fire cost the state $30,000 to put out.

But the most damaging aspect of the subdivision is visible only by looking 40 or 50 years ahead. Once committed to development, land rarely reverts to its natural state. It's a one-way street where wildlife generally gets run over.

While the effect on most wildlife is usually long-term, the impact on local residents is always so. One old-timer recounted his days in Wolf Creek with a sad smile. "When I first came here," he said, "the place was wild and free. Only one person other than myself lived on the creek. Game was plentiful and the hunting was good. Course that's all changing now."

For many residents, it marks the start of a slow degradation in that intangible thing we call "quality of life." The roar of motorcycles gradually replaces the rushing of the stream. The roots which families have put down for nearly a century begin to shrink and die up. A small culture is destroyed and society at large is somehow diminished.

The real tragedy is that all of this happens without the consent, and at times, even the knowledge, of those who are affected. But what can be done?

For starters, subdivision laws should not contain the less than 20-acre limitation. The acreage size should be eliminated, since any land division involves a change in land use and thus should be a matter for public record and review. Most state and local officials who work with subdivisions recognize this as the major flaw in Montana's law.

The developers deserve part of the blame—but not all of it. Those who buy the land must share the blame.

Money-minded developers work in a market situation; without buyers, they can't do business. Some developers are sincere in their desire to see that the land, once developed, is well cared for. But developers seldom ask, "Is any development appropriate for the area?" Instead, they ask, "How can we design a good development here?"

Why do people buy second homes? Many people still retain a deep-seated desire to be close to the land. Although this valuable remnant from the past may eventually be our salvation, at this time it is a plague. As Montana becomes more crowded and "quality of life" more elusive, people grasp furiously for the most important, real parts of their lives.

For many, this will be the last stand. They plan to get a few acres, call it their own and take care of it. And wildlife is a part of "God's Little Half-Acre."

"It's a beautiful place, we can live right among the wildlife," one buyer said. If only wild animals "liked" humans as much as we liked them, if only things were the way Walt Disney told us, then human beings and animals could go tripping through the forest, hand-in-paw, and subdivisions wouldn't be a problem.

Unfortunately, the buyer overlooks reality. Everyone can't have a place in the country or "the country" will disappear. And this problem promises to worsen in the future. The myth of wanting to have a place "to get away from it all" no longer holds up. As one observer noted, "Most of these subdivisions are just cities in the woods."

Although we certainly may envy our forefathers, we can no longer afford to emulate them. Regretfully, that time has passed.

We are at a crossroads when the public will have to make a choice—wildlife or second homes. When human activity in our wildlands reaches certain levels, some forms of wildlife disappear. As we take, wildlife gives.

And it has given a good deal. According to the Environmental Information Center, a Helena-based statewide citizen group, over 500,000 acres in Montana have been subdivided. Many developments are still half empty. Nevertheless, developers march on to more beautiful and remote areas. And the buyers follow. The Pied Piper never had it so good.

While developers march into undisturbed areas, wildlife disappears. Much like the Indians driving the buffalo over the cliff, subdivision does the same thing for many kinds of wildlife. Push, push and then eventually over the edge.

There oughta be a law.
REFERENCES


4. Environmental Information Center, *Montana Subdivision Inventory*, (Helena, 1975), pg. 2
from blue ribbons to inner tubes?

by Hank Fischer

MONTANA: the land of the rivers with the "magical" names. Mention of such sparkling waters as the Beaverhead, Big Hole, Yellowstone and of course, the Madison, evokes images of clean, rippling streams and fish-filled afternoons. Trout fishermen across the nation dip their rods in respect to these fabled Montana waters and the magnificent Madison draws perhaps as much praise as any. Yet if fisheries biologists prove correct, a large section of the Madison may soon lose much of its "magic"—and its trout.

The 37-mile section of the Madison River below Ennis Lake, commonly known as the lower Madison, has earned the label of blue ribbon trout water for many years. As recently as 1970, biologists estimated that every 1,000 feet of river averaged 703 trout, weighing a total of about 514 pounds. The blue ribbon designation—adopted jointly by the Dept. of Fish and Game and the U.S. Fish and Wildlife Service and reserved for only the most scenic, accessible and productive trout streams in the nation—threatens to go up in steam. The lower Madison is slowly but surely becoming too warm to support trout.

Department fisheries biologist Dick Vincent, who heads a team which has intensively studied the Madison since 1967, terms the future of the lower Madison "precarious"—and he has the data to back it up. Creel censuses, stream surveys, growth rates and general fish condition all point toward a slow and steady decline in the lower Madison fishery.

All of these warning signals lead Vincent to a dire prediction: "If we have a hot summer, which we haven't had for several years, there could be a fish kill on the Madison that could literally decimate the fishery."
Few people know the fisheries situation on the Madison as well as Vincent. He received nationwide recognition for his earlier Madison River studies, demonstrating how the planting of hatchery-reared trout actually decreased the overall wild trout population in the river. (See "The Catchable Trout" in the May-June 1972 Montana Outdoors.) This revolutionary finding promises to influence stocking programs across the country. His latest findings on the Madison should prove similarly noteworthy.

Why do high water temperatures occur in a mountain stream like the Madison? All the current problems began with construction of the Madison Dam in 1900. This dam, which forms Ennis Reservoir, triggered a series of environmental changes that are transforming the lower Madison from a blue ribbon fishery to a "hot spot" for swimmers floating the river in inner tubes.

Perhaps even more significant, since the dam is so old, a look at problems now surfacing on the lower Madison provides an interesting preview of what may lie ahead for many of our dammed trout streams. The picture isn't cheery.

Formed by the confluence of the Firehole and Gibbon rivers in Yellowstone National Park, the Madison owes much of its high water quality to its pristine source. It flows north for about 140 miles before uniting with the Gallatin and Jefferson rivers near Three Forks, Mont. These three rivers, named by Lewis and Clark, join to form the Missouri.

Two reservoirs straddle the Madison River: (1) Hebgen Reservoir, a large storage reservoir created by Hebgen Dam at the head of Madison Canyon near Yellowstone Park and (2) Ennis Reservoir—also known as Meadow Lake—which supplies a small Montana Power Co. electrical generating plant at Madison Dam. Ennis Reservoir lies about seven miles north of the town of Ennis.

Hebgen Reservoir was created by Hebgen Dam in 1915. The dam rises 87 1/2 feet above the stream bed and measures 721 feet long at the top. Although not currently a large problem, irregular water flows from Hebgen Reservoir for many years seriously hurt trout populations in the upper Madison. Recently, however, a cooperative effort by Montana Power Co. and the Dept. of Fish and Game has provided more desirable flows, generally enhancing the wild trout fishery below Hebgen Reservoir. Since cool waters flow out of the bottom of this deeper reservoir, no water temperature problems currently exist on the upper Madison.

Ennis Reservoir, however, provides an entirely different picture. Madison Dam, a maximum of 47 1/2 feet high and 257 feet long, forms a barrier that causes Ennis Reservoir to catch much of the silt from higher in the watershed. So, the reservoir is less than 10 feet deep in most places, with the shallow south end averaging about 3 feet.

The heavy silt loads which have filled the reservoir originate from many upstream sources. A major sediment contributor is the Quake Lake slide area, which occurred in 1959, partially blocking the Madison River below Hebgen Reservoir. It has probably accelerated the sediment/temperature problem in Ennis Reservoir and may continue to do so.

Other primary sediment producers are the West Fork of the

recycled paper
Madison, Beaver Creek and Cabin Creek. Fragile, easily erodable soils characterize these drainages. And man's activities such as overgrazing, logging and road building have accelerated the erosion in certain areas, according to Vincent.

The extreme shallowness of Ennis Reservoir causes two major fisheries problems—increased turbidity (muddiness) and higher water temperatures. The turbidity problem stems from windstorms that cause waves which, in turn, stir up the muddy bottom of the reservoir. This creates heavy silt loads—at irregular intervals—for the lower Madison, below the dam. This not only foils fishermen, but also profoundly impacts plant and animal life in the stream.

Temperature problems are a bit more complicated, however. As many swimmers who have dived into deep lakes know, most lakes separate into distinct layers of cold and warm water. Although the surface of a lake generally seems warm in the summer, a level known as the thermocline exists, below which the water remains cold. In a normal situation, this cold water in the bottom of the lake flows through the dam, and a cold-water fishery can be maintained below.

Because of Ennis Reservoir's shallowness, however, it fails to separate into levels of warm and cold water. As a result, at any given time the entire lake is basically the same temperature. In July and August, this can be downright hot—about 70°F. This spells trouble, not only for trout in the lake, but also for fish in the river below the dam.

Cold-water fish like trout don't fare well when water temperatures rise above 70°. Water temperature determines the growth rate and, in part, general health of cold-blooded species such as trout. Therefore, at different temperatures a trout will either gain, lose or simply maintain its weight. Ichthyologists say that trout grow best when water temperatures are in the 50s and 60s.

Growth is minimal, or non-existent, below 40° or above 70°. Thus, the trout’s normal growing year runs from May-October and suitable water temperatures are a must. (4)

Vincent has compiled statistics since 1972 charting water temperatures both above and below Madison Dam. The department maintains thermographs, which record water temperatures around the clock, at three key locations: one at Varney, about 13 miles above Madison Dam; the second just below the outlet to the dam, and the third near Norris, about 10 miles below the dam. From these thermographs, Vincent has calculated the average minimum and maximum water temperatures for each month from March-September. These calculations provide the backbone of his alarming contentions.

For example, at the station above the dam, the average maximum temperature for July 1974 was 66°, while the average minimum was 55°. In contrast, the station below the dam averaged a maximum temperature of 74° and an average minimum of only 64°. In other words, for the month of July in 1974, this section of the lower Madison averaged nearly 10 degrees warmer than the section immediately above the lake.

Some basic information about water temperature changes in rivers underscores the importance of these findings. While lakes generally have very little day to night temperature fluctuation, rivers normally experience diurnal temperature changes of 10-15 degrees. Good fishermen know this and capitalize upon it. They try to plan their outings so they're on the river when water temperatures stand between 55°-60° and trout are feeding most actively.

Cool nights obviously play an important role in lowering water temperatures in a river. The nighttime cooling effect compensates for daytime temperature increases. Since the temperature of Ennis Reservoir remains essentially the same day and night, warm water pours into the lower Madison during the crucial nighttime cooling period. Vincent noted that several readings showed nighttime temperatures never dropped below 70° at the station below the dam near Norris. On the other hand, the station above the dam rarely recorded nighttime temperatures of even 60°.

Short-term differences in water temperature only tell part of the story, because trout can withstand brief temperature rises. Vincent feels the amount of time a river measures above a crucial temperature could be the most important factor.

Summer 1973 best dramatized this long-term temperature differential above and below the dam. At the Varney station above the dam, temperatures read above 70° less than 1% of the time in July and August. (Remember, 70° is the poor or no-growth figure.) On the other hand, the river below the dam near Norris remained above 70° 35% of July and 31% of August. Furthermore, the station below the dam recorded temperatures above 75° 10% of July and August 1973. No 75° temperatures have ever been recorded above the dam since 1970. The highest water temperature ever recorded on the Madison occurred Aug. 7, 1972, when the thermograph at the Norris station, below the dam, read 82°.

How have the warmer temperatures affected the lower Madison trout? First, growth rates for both brown and rainbow trout are much higher above the dam than below. This lends credence to the comments of many anglers who say more large trout can be found in the Madison River above Ennis Reservoir.

Stream surveys back this up. For example, the average four-year-old rainbow trout measured 18.1 inches in the section above the dam, compared to an average of 14.8 inches for the same age fish below the dam. Similar size differences were also found for brown trout. Curiously, small fish seem to do better below the dam than above. Once they reach the 10-inch size, however, this changes drastically.

vincent
Vincent theorizes this size differential could be due to the altered stream ecology of the lower Madison. He cited siltation and the temperature problem as two major factors that have prompted plant and animal changes in the river.

"We know siltation and temperature changes influence plant succession," explained Vincent. "This in turn affects animal life such as aquatic insects and minnows, which trout feed upon. For instance," he added, "small insects such as midges do better with warmer temperatures and muddy bottoms. This could favor small trout. Larger trout, on the other hand, depend mostly on large aquatic insects like stoneflies or minnows such as sculpins. Both forms do best in colder waters with rocky bottoms."

Not only do fish above the dam grow faster, but Vincent's studies also show they are in better condition. He found fish above the dam significantly heavier for their length than the thinner lower Madison trout.

If the warming trend on the lower Madison continues, this portion of the river could become a marginal trout fishery where the trout are small, skinny and uncommon, according to Vincent. "At this time," he says, "we're not experiencing a crash or a disaster, as the total number of trout in the lower Madison remains high" (one of the highest in the state). "But," cautions Vincent, "the signs of trouble persist, such as a slowing growth rate, more skinny trout and fewer large fish."

While the changes are occurring slowly now, Vincent adds the trout population could crash virtually overnight. "The potential for a major fish kill is present every summer," he emphasizes.

Vincent uses past weather records for the Madison Valley to back this up. Using a 90° reading as the measure of a hot day, Vincent investigated the number of hot days on the Madison each summer since 1950. He found an average of 18 hot days occurred each summer. However, Vincent notes that the last year when even an average number of hot days occurred was 1973. "Another year like 1966, when there were 28 days over 90°, will provide the real test," Vincent commented.

What's the solution? Unfortunately few options exist, and all promise to raise serious objections from some sector. The four leading contenders are:

• Permanently lower the level of the lake and allow vegetation to re-establish. If this were done, the river would again meander naturally and allow cold waters to flow into the lower Madison.

• Construct a diking system to channel the river through the lake. This would eliminate the warming effect of the lake and could be accomplished in at least two ways: (1) Channel the main river along the east or west side of the lake, using a dike as one bank and the natural shoreline as the other. High water inflow and outflow tubes could be provided to maintain an adequate lake level for the remaining area. (2) Channel the river through the middle of the lake, much like the Canyon Ferry Project near Helena. (See "From Dust to Ducks" in the May/June 1975 Montana Outdoors.) Although this alternative would surely prove expensive, the benefits could also be substantial. First, cool water temperatures would be maintained, insuring survival of lower Madison trout. Second, waterfowl would benefit from improved nesting, brood and resting areas provided by regulated water levels.

Expense looms as the major hang-up with construction of any diking system. Building dams, however, costs no less. The Bureau of Reclamation and Army Corps of Engineers might be employed repairing some of the environmental dilemmas instead of creating new ones.

• Construct a pipeline to carry the cold water that flows into the lake to a point below the dam. This remedy would be expensive and the history of seismic activity in the Madison Valley probably makes this alternative rather untenable.

This slogan and illustration appear on the back of a small envelope that the Montana Power Co. distributes free to fish and game license dealers. The dealers, in turn, give the envelope to sportsmen when they buy permits. The envelope, which also carries the name and a small advertisement for the license dealer's business, is then used to conveniently carry hunting and fishing permits around during the year.
• Remove the dam. Although this may seem radical, it's most in line with maintaining a natural ecosystem and it would cost little. Removal would have to take place slowly to minimize damage by heavy silt loads.

Regardless of the solution, however, officials must ask whether this river is more valuable to the public as a blue ribbon trout stream or as a power generating site.

This article examines the value of the Madison as a fishery. But what about the Madison Dam as a power generating site? Power production at the Madison Dam is about 9,000 kilowatts—very small by present-day standards. Comparatively, Libby Dam produces 420,000 kilowatts and Hungry Horse 285,000.4

Most reservoirs are long, deep and narrow. This results in a larger hydrologic “head,” which means more power generation. Ennis Reservoir is neither deep nor narrow. Montana Power Company officials agree that such a project wouldn't be constructed today. They term it, “one of our small projects we operate because it's there, and it's economical.”

What does Montana Power think about the thermal problems on the Madison? Tom Smith of MPC's environmental division says, “Right now we're up in the air. We're hardly in a position to disagree with Vincent's study, as we've done no work of our own.” Smith added that no MPC research was likely for the immediate future. He suggested that the problem might be explored by continuing discussion between the Dept. of Fish and Game and MPC.

Smith ruled out the possibility of removing the dam or lowering the water level, however. “A solution to the problem that reduces our generation efficiency can't be considered feasible,” he added.

As for a diking system or pipeline, Smith said, “I don't think it's our primary concern to take care of this problem on our own.”

He added that if funds were provided, and if MPC were assured that no damage to the river would occur, then these solutions might be possible.

One of the oldest dams in Montana (more than 75 years old), Madison Dam marks well the history of an impoundment gone nearly its full cycle. What in 1900 was a sparkling new reservoir now is mud-filled and replete with algae blooms. It provides a grim look at what might lie ahead for many reservoirs.

When Madison Dam was constructed, it's unlikely the fishery received any consideration. Good trout streams flowed throughout Montana and elsewhere. Wouldn't they always? According to old records, Ennis Reservoir provided excellent fishing throughout the 20s and 30s. This occurs commonly on many reservoirs since the initial high influx of nutrients resulting from flooding at first provides an abundant food supply. The abundance usually tapers off, however.

Madison Dam had minimal impact on the river when first constructed. Vincent theorizes that changes in the river didn't become noticeable until the late 40s and early 50s. By this time, fishing had deteriorated in Ennis Reservoir. The deterioration continued through the 60s and 70s and signs of reservoir degradation now abound. Algae blooms occur frequently, often impairing swimming, waterskiing and fishing. Muddy water from wind action on shallow Ennis Reservoir detracts from fishing, swimming and scenic beauty.

It wasn't until the 60s that fishermen began to question what was wrong with the fishing in the lower Madison. “No fish,” the fisherman's most common lament, was heard frequently during the hot summer months. The fish were present, all right, but high water temperatures made them inactive. In addition, many summertime anglers prefer fly fishing, which is hampered somewhat by the turbid waters and changes in the natural insect hatches.

Many summertime fishermen are vacationers, out West to dip their rods in a river like the Madison. Some 500 men-days of fishing take place on each mile of the Madison every year. This tremendous influx of tourists into the Madison Valley each summer causes tourism to rank as the second most important source of income in the county. Thus, quality trout fishing is an economic essential to many in the Madison Valley.

Now, in the 70s, most local anglers don't bother with the lower Madison in July and August. It's been taken over by inner tubers and uninitiated fishermen.

How much will the reservoir and the river worsen? What lies ahead for the 80s and 90s? The 21st century?

These questions remain unanswered. A Madison River without bragging-sized trout seems unthinkable, as does a Montana without an abundance of high-quality streams. Yet, the same problems that are surfacing on an old dam like the Madison promise to rear their heads at other dam sites. We have very few free-flowing rivers left.

Yellowtail, Libby, Clark Canyon and other dams have created reservoirs where the fishing may be good now. But some of these reservoirs may fill in with silt—just like Ennis Reservoir. What happens when they become “too thin to plow and too thick to drink”?

With careful planning, it's likely we can avoid major problems like the ones now surfacing on the Madison. But when rivers and resources have already been committed, we can't turn our backs on them just because our options seem limited.

For the lower Madison, future decisions won't be easy. It might take a major fish kill to convince everyone that a problem exists. For now, one thing is clear—all interested parties must work together to somehow arrive at the best possible course to protect this nationally renowned fishery.
REFERENCES


special note: much of the unattributed background material concerning the Madison River comes from an extensive interview with Dick Vincent, fisheries biologist for the Montana Fish and Game Department.
THE NONGAME FUNDING DILEMMA

It’s up to you... by Hank Fischer

IT HAS often been pointed out that no animal has become endangered through regulated hunting. Hunters have been paying for their recreation for decades, and in the process have protected game species through research, management and law enforcement programs. As a result, designation as “game” has unquestionably meant survival, increased numbers and improved habitat for many animals.

But what about the “poor cousins” of the wildlife family, the nongame species? For many, so little is known about their habitat needs that it is almost impossible to chart a proper course of management. For a few, “endangered” status may be only a pound of poison or a bulldozer blade away. The problem? Although everyone enjoys nongame wildlife, this concern hasn’t generated the dollars needed to insure the integrity of the habitat these critters depend on.

Criticism has been aimed at state fish and game departments and the U.S. Fish and Wildlife Service (FWS) for ignoring nongame wildlife. Critics claim that an ecosystem approach—one that recognizes each animal as an integral part of the complex system of soil, vegetation and water that makes up its habitat—has been superseded by more utilitarian game programs. Although game programs benefit nongame wildlife in countless and unmeasurable ways, many in-the-know professionals acknowledge that wildlife programs often lack diversity. Consider the comments of John S. Gottschalk, former FWS director and currently executive vice president of the International Assn. of Game, Fish and Conservation Commissioners: “Many of us in the wildlife conservation profession have thought for several years that our programs have been too game-oriented for too long. That is to say, if a particular species can be exploited, we find ourselves studying it and attempting to manage it in order to expand its contributions to man’s welfare.”

Gottschalk continued, “We are overlooking many of the most important elements in the natural systems which support living things in general. In other words, the concerns about endangered species are as narrowly focused as those supporting game wildlife programs.”

This problem seems inherent to a system funded solely by sportsmen. Gottschalk and others have pointed out that the current emphasis on game species will probably continue unless nongame wildlife fans pick up the ball—and the bill.

At the request of the FWS and the Council on Environmental Quality, the Wildlife Management Institute (WMI) investigated such problems as how much money would be needed to fund adequate nongame programs in the 50 states and 3 territories, and how the money might be raised. In a report published in 1975, the WMI noted that a tax on outdoor recreation equipment seemed like the most promising and desirable means of raising nongame money. This follows in the tradition of taxes on fishing and hunting equipment which anglers, gunners and bowhunters pay. This type of “straight line” taxation—where those who receive the benefits foot the bill—has proved popular in the past.

Money raised by an excise tax would then go into a federal fund, which the FWS would administer to the states on a cost-sharing basis. In the past, this has meant the federal government pays 75% of a project, while the state finances 25%. For game species, the 25% is paid with license fees from hunters and fishermen. For nongame species, a special state fund would have to be established. (This brings up another fund raising problem which will be discussed later.)

The WMI study estimated that an excise tax on outdoor recreation equipment might raise $150 million for nongame programs by taxing such items as:

- camping equipment (backpacks, hiking boots, sleeping bags, tents, etc.),
- snow skiing equipment (downhill and cross-country),
- skin diving equipment,
- recreational vehicles (including campers, trailers, snowmobiles, trail bikes, canoes and rafts),
- birding equipment (feeders, food, bird houses, binoculars, etc.) and
- photographic merchandise (including still and movie cameras, film, etc.).

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Nobody is calling this potential source of funds “birdseed.” In fact, the WMI found that even a mere 1% excise tax on birdseed could raise nearly $200,000—enough to fund Montana’s entire projected nongame needs. (See chart for a breakdown on individual items.)

Another key part of the WMI study determined how much money would be required to initiate adequate nongame programs in the entire U.S. In what the WMI called a conservative estimate, $40 million would be necessary. Therefore, an excise tax on outdoor recreation equipment could easily fund a nongame program on the federal level. However, the FWS would need additional money from Congress to administer the program.

Dennis Flath, the department’s nongame wildlife biologist, estimates that about $200,000 would be needed to run a “very basic” nongame program in Montana. The present funding stands at $27,000, less than 1% of the department’s total budget. This money comes from hunting and fishing license fees. Although sportsmen certainly rank high on the list of nongame wildlife appreciators, it seems unreasonable to expect them to pay the whole bill.

Other than sportsmen, the only source of income for Montana’s nongame program is the recently issued $5 nongame certificate. Although a step in the right direction, it is unlikely that voluntary sales will ever entirely finance a nongame program. Ohio—much more populated than Montana—raised only $11,000 with a similar program. California raised $20,000 in a year. Colorado managed only $4,800 in 1975, with cost of administering the program an estimated $2,400. A Colorado official termed the stamp program “a howling failure.” Stamp and certificate programs must be recognized as public relations gestures to make people aware of nongame programs and to allow concerned citizens to contribute.

Many potentially fruitful ways of funding state programs do exist. Missouri came up with the novel approach of a 1% tax on soft drink bottles. Although initially popular, the soft drink industry in the state submarined this attempt before it could get off the ground. Missouri now plans to introduce a bill into the legislature that would increase the general sales tax by 1/8 of 1%. Although this increase would support conservation activities, a large portion would go to nongame wildlife. Missouri Dept. of Conservation officials estimate this tax increase would bring them $18 million annually—nearly doubling their current budget.

Washington had some success with a tax on the sale of personalized license plates. Although this measure raised only $42,000 in its first year (1974), department officials say response this year has been very good, perhaps as high as $80,000.

California currently has the best funded nongame program in the country—more than $1 million dollars. Although it has a voluntary stamp program like Montana’s, the bulk of California’s nongame funding comes from the state’s general fund. State funding for nongame wildlife started in 1974 in response to pressure by various conservation groups, citizens and the Fish and Game Commission. The rationale for this move is clear: Since the wildlife of the state belongs to all people, then it is only just that all people should pay—not just hunters and fishermen.

Several states have followed California’s lead and recognized their responsibility for financing nongame wildlife programs. Colorado legislators this past year allocated $67,000 from the general fund for nongame wildlife.

No money from the Montana general fund has gone to nongame wildlife. Yet the Montana Nongame and Endangered Species Conservation Act of 1973 states clearly, “It is the policy of the state to manage certain nongame wildlife.” This same act charges the Dept. of Fish and Game with conducting investigations, developing information and issuing management regulations for nongame species. Clearly, the department has not been able to do this—and will not be able to—until the citizens of the state are willing to bear the cost of a nongame program. Money from the general fund would not have to finance the entire program, but

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**Estimated Revenue from Potential Manufacturers’ Excise Taxes on Outdoor Recreation Equipment ($)**

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<tr>
<th>Item</th>
<th>Tax rate</th>
<th>Estimated yield (millions)</th>
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<tr>
<td>camping equipment</td>
<td>10%</td>
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<tr>
<td>snow skiing equipment</td>
<td>10%</td>
<td>2.20</td>
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<td>skin diving equipment</td>
<td>10%</td>
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<td>recreational vehicles</td>
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<td>photographic merchandise</td>
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</table>

Total: $149,613

Estimated revenue from excise taxes: $149,613,000

Estimated money needed for expanding nongame programs in the U.S. and territories: $40,000,000


These figures are based on 1972 manufacturers’ estimates of total sales. However, even if only a 1% tax were levied in all categories—using the 1972 estimates—over $36 million would be generated.
would provide only the base line amount needed to conform with the law.

Money from the general fund might not even be necessary once Montana develops a viable program for raising funds. Several possibilities exist, and readers are encouraged to suggest others. Most states have tried to tailor their funding programs to the special aspects of their state. University of Montana Professor and Fish and Game Commissioner Dr. W. Leslie Pengelly calls the funding problem "a kind of mental jujitsu—people give where the pressure is greatest."

In Montana, many people feel the pressure is greatest on the vast amounts of resources exported to other states and countries. In developing these resources, all wildlife often suffers greatly. It would seem equitable, then, to have those who contribute most heavily to the destruction of wildlife habitat to also contribute heavily to its maintenance. Only a miniscule tax would be necessary to raise the $200,000 needed for a nongame program. Some of the sources might include:

* royalty fee on strip mining,
* surcharge on timber sales on public lands,
* surcharge on grazing leases on public land,
* surcharge on electricity produced within the state and shipped out and
* capital gains tax on land sales for subdivisions.

Another possibility for nongame funding is a $1 check-off fee on the state income tax. Similar to the check-off fee for campaign contributions, this form of donation might be popular in a state like Montana where wildlife is highly valued. The public has always been sensitive to wildlife needs, but has not always had the machinery to convert this concern into action.

The future welfare of all Montana wildlife will be determined by the availability and suitability of habitat. For many nongame species, we are not even sure where or if they exist in the state, to say nothing of their habitat needs. A healthy nongame program would help answer these questions and preclude the need for costly "rescue" operations such as those undertaken for many endangered species. A good nongame program would allow the department to work with all members of the ecosystem—and better meet the needs of nonconsumptive human users of wildlife.

Picnickers, bird watchers, snowmobilers, campers, hikers, photographers and those who just like to know all kinds of wild animals still abound—it's up to you.

### Contributors

Although "The Art of Social Conservation" was written nearly 14 years ago, Dr. W. Leslie Pengelly's words ring as true today as they did then—perhaps even more so. His article on page 2 was adapted from a paper presented before The Wildlife Society in 1962. Pengelly was recently named vice president of the group. (See the article in this issue's Catchall section.) A member of the Montana Fish and Game Commission, Pengelly is chairman of the University of Montana Dept. of Wildlife Biology and professor of forestry. As a highly respected member of the wildlife profession, he has received the Arthur S. Einarsen Award (Northwest Section of The Wildlife Society) and the American Motors Conservation Award. He earned a B.A. in biology from Northern Michigan University, Marquette. Both of his graduate degrees were awarded in wildlife management, the M.S. from the University of Michigan, Ann Arbor, and the Ph.D from Utah State University, Logan.

If you said that Montana ranks as one of the top states in the country for trout fishing, nobody would give you an argument. But Al Elser enlightens anglers about an almost unlimited opportunity for catching warm-water fish—farm pond fishing. In a Montana Outdoors Recreation Guide, Elser tells anglers how to go about learning the thrills of "pond hopping," describes the species which inhabit farm ponds and provides valuable angling tips. Elser is the regional fisheries manager in Miles City. He has done extensive research on paddlefish and is involved in coal-related studies with Decker Coal Co. on the Tongue River Reservoir. He earned a B.S. in fisheries science from Colorado State University, Fort Collins, and his M.S. in fish and wildlife from Montana State University, Bozeman. For your ticket to an uncomplicated and enjoyable brand of fishing, turn to page 15. In the recipe category, Faye Ruffatto, secretary in the Miles City regional department office, provides some new angles on old favorites.

Montana Outdoors is pleased to publish a guest editorial by LeeAnn Knutson, "The Rape of Montana." Although Knutson has lived in Regina, Saskatchewan, Canada for three years, she grew up near Bridge, Mont. and the memories of those years—the frogs croaking, the unpolluted air, silence on a weekend afternoon—are things she would like to return to and share with her family. But if she did, what would she find? Do any isolated ponds offer solitude where one can think and listen to frogs and watch for deer? Or has "progress" made her return impossible? Knutson attended Eastern Montana College in Billings and Walla Walla College in Washington. She works as a free-lance technical writer, specializing in education. Her editorial appears on page 29.

Hank Fischer, Montana Outdoors intern, has contributed two articles to the May/June issue. "The Lower Madison: From Blue Ribbons to Inner Tubes?" warns that one of the most scenic, accessible and productive trout streams in the nation might go up in steam. Terming the future of the lower Madison "precarious," Fischer points out that the river is slowly but surely becoming too warm to support trout. The article begins on page 10. His second article explores "The Nongame Funding Dilemma." He details what some other states have done to fund nongame programs and offers some suggestions for Montana. Turn to page 34. Fischer returned to his graduate work in environmental studies at the University of Montana in January. His undergraduate program at Ohio University, Athens, emphasized English.

The department's fishing access program has accelerated greatly during the past few years—largely because of cooperation and support from landowners, sportmen, the department, the Fish and Game Commission and the Montana Legislature. But rising land costs and an increasing amount of private land closed to the public have offset some of these gains. The administrator of the department's Recreation and Parks Division, Ron Holliday, examines the access problem and traces the history of the program. Turn to his article on page 31. Holliday earned a B.S. in recreation from Rice University, Houston, and an M.S. in park administration from Colorado State University.
REFERENCES


The Vanishing Bobcat
by Hank Fischer

Absurdity Among the Regulators:
Opening a ‘Closed’ State
by Dick Randall

AN ACTION PLAN TO SAVE OUR DISAPPEARING WESTERN BOBCAT

No. 51-4-b
The Vanishing

by Hank Fisc

Trappers wipe out Western populations as the price of pelts rockets upward: protection lags behind fashion and greed

If you are lucky enough to see a bobcat in Montana or elsewhere in the Rocky Mountain West, it is likely the cat will be running or at least looking over its shoulder, for it's being pursued avidly. At an average price of more than $200 per pelt, nearly anyone strong enough to pry open the jaws of a steel trap is after this harried cat. And despite dwindling populations throughout the West, bobcat killing continues at a constant, if not increasing, rate.

By gun or by dog or by trap, in most western states the bobcat can be taken day or night, twelve months of the year. And to what end? So their skins can be shipped to Europe, where they are made into expensive coats.

Montana's bobcats have the unfortunate distinction of being the most sought-after cat in North America. Prized by fur dealers for their long, dense coats, Montana bobcats commonly command the highest prices at the fur market.

Bobcat hides arrive at the fur market in a variety of ways, with trappers bringing in the greatest numbers. Although cunning and artful while seeking its prey, the bobcat is hopelessly vulnerable to traps. Undone by its curiosity and lack of caution, the bobcat falls victim to the amateur and professional trapper alike.

The experience of a pair of Montana researchers who were trapping, tagging and releasing bobcats shows just how unwary the animals can be. These researchers recaptured two adult bobcats in the same traps and with the same bait they had successfully used only two weeks earlier. Such a fate would never befall a coyote.

One longtime trapper explained the sad truth of bobcat trapping to me: "Even the ranch kids can catch them. I guess the only thing easier to trap than a bobcat is a muskrat."

Bobcats habitually mark their territories with piles of feces or scratch marks on trees—telltale signs to the experienced. But trappers in Montana report they aren't even seeing much sign these days. One fur buyer said, "I've talked to a lot of good trappers in Montana—not your four-wheel drive and snowmobile boys, but men who really know the cat's country. These fellows all say the bobcat is scarcer than ever."

This complaint of one southeastern Montana trapper is typical: "I used to always get at least 30 cats every year, trapping the same territory, using the same sets. Last year I got five cats, this year only four. They just aren't hardly around anymore."

Houndsmen make up another important segment of the increasing squadrons of people who pursue the bobcat. Keen-nosed dogs track and tree the cats. Then the cat is shot from close range. While the chase may be sporting, the ending is far from it.

Before fur prices became so exorbitant, many houndsmen commonly let young cats go. Not any more. One experienced houndsman told this story: "We treed one cat last year that didn't look much bigger than a house tabby. We couldn't decide whether or not to shoot the thing, it was so darn small. We finally did, and it turned out to be an itty-bitty eight-pound tom. (Mature bobcats average around 20 pounds.) We ended up getting $115 for it, though, and that sure buys a lot of dog food."

A Montana wildlife official reported a similar case last year when a hunter brought in a four-pound bobkitten. "I couldn't believe he shot the thing," the official said. "But I later found out he got $75 for it."

Houndsmen, like trappers, are quick to agree that bobcat numbers have hit an all-time low. One western Montana hunter reported that he had crossed more mountain lion tracks than bobcat tracks in the past winter. "Everyone knows they're way down," he added.

The simple truth is that although nearly everyone agrees that bobcats are disappearing—including scientists and wildlife managers—state and federal agencies have failed to conduct the studies that could tell us just how severe the problem is.

As a result, we must rely on fur harvest data and predator control records to get an idea of what bobcat populations are doing. Nearly all state wildlife agencies compile the records of fur dealers and thus get an approximation of the number of animals taken in their states each year.

While some wildlife officials try to use these records to explain population trends, fur harvest records have been shown to vary directly with the price of fur. Not surprisingly, trappers and other hunters most avidly seek those animals whose hides are most valuable.

Probably the best population index for bobcats in Montana consists of the Fish and Wildlife Service (FWS) predator control records. One Wyoming bobcat expert has already used the FWS records in his state to chart bobcat populations. These figures record the success of government trappers. When a rancher experiences stock losses due to predators, he commonly calls the FWS for government trap per assistance.

Since FWS trapping efforts do not fluctuate with fur prices, the annual take should represent a constant percentage of the population each year. While subject to some variation due to such factors as changes in weather and FWS personnel, this index stands as the best measure we have of bobcat numbers in Montana.

The FWS figures provide interesting insight into bobcat population trends over the last 30 years. One good test of the validity of the predator control record as a population index was provided the introduction of the poison 1080 in 1948. Bobcats are not highly susceptible to poisoned baits, as coyotes are. Since bobcats compete with coyotes for foo, the drastic reduction of coyotes should have encouraged an increase in bobcat numbers.

The FWS records show that this is precisely what happened. While government trappers took an average of slightly more than 200 bobcats per year for the ten years before 1980 came in, the decade after saw an average take of more than 800 a year, with a high of 1,812 in 1955.

Since 1953, FWS predator control records show the number of bobcats taken by trappers declining steadily, to a point much lower than even in the days prior to 1080 (which was banned in 1972).
Bobcat
Only 58 cats were taken by government trappers in Montana during 1974, and a new low of 55 came in 1975.

This population index becomes most meaningful when juxtaposed with fur harvest records. These records show that the harvest of furs in Montana has actually increased slightly over the past five years. So, despite drastic reductions in the number of bobcats available, killing has increased.

**Why are bobcats getting killed at such a rapid clip, even though they are becoming increasingly scarce?** The answer is twofold. First, they are easier to get at. In Montana and many neighboring states, National Forests that stood virtually pristine 20 years ago are now webbed with roads. Built to facilitate timber harvest, roads have also brought the hunters to the prey.

The snowmobile has had a particularly insidious impact. Snow once afforded protection for the cat; it now allows unlimited access. A trapper can set long strings of traps without having to walk or carry the heavy traps. One researcher commented, “Originally, I was under the impression that because of low human population density in eastern Montana, harvest by man had little influence on bobcat num-
Hank Fischer is a graduate student in Environmental Studies at the University of Montana and a staff writer for Montana Outdoors, the magazine of the state Fish & Game Department.

I no longer believe this. Even the most remote areas are now accessible to hunters and trappers.

A quick glance at fur prices for the last 10 years gives the second reason why the current bobcat killing continues. Worth as little as $5 for many years, bobcat prices took their first major hike in 1968, when they jumped to $20 a hide in Montana. The next big increase was to $50 in 1973. Not coincidentally, this year marked the passage of the Endangered Species Act, which prohibited the import of spotted hides into the United States. Furriers turned to America's own "exotic" cat.

The 1973 price hike precipitated the intensive trapping effort that has now reached frenzied proportions. This year's average price for a Montana bobcat pelt, according to Bob Young of Pacific Hide and Fur, has skyrocketed to more than $200 apiece, with large cats going for as much as $300.

Can the price of bobcat pelts in Mon-
tana continue to rise? If Bob Young is right, it won't matter much. He says, “If something isn't done, they're going to clean Montana out.”

As if trappers, houndsmen, and hunters weren't pressure enough, biological factors also keep bobcat numbers down. The average litter consists of only two to three kittens, just half the number of a comparably sized predator like the coyote. Moreover, bobkittens are helpless at birth, and remain heavily dependent upon their mother for several months. Kittens will often die if their mother is killed at this time. Bobkittens also commonly fall prey to such animals as mountain lions, coyotes, eagles, even the great horned owls.

Despite all the pressure, state game laws protecting the cats are virtually non-existent in the West. In Montana, the bobcat may be taken by practically any method, with or without a license, at any time of year. Several other states, including Wyoming, Idaho, Oregon, and Utah have similar non-regulations. Utah, however, is closing the state to bobcat hunting and trapping for one year, beginning July 1, 1976. (But see the loopholes explored by Dick Randall in the following story.)

Colorado and Washington are the only ones in the seven-state region that even set seasons, and they are very liberal. However, Colorado and Washington are the only states which do not report population declines.

Although trappers, hunters, and houndsmen are major exploiters of bobcats, they are not necessarily the ones who oppose protection. Nearly all states in the West have at one time drafted legislation that would have afforded the cat some relief. Idaho has tried three times. In every state the opposition comes from the same place—ranching interests. This is a bitter irony, for while scientific studies indicate that bobcats may take sheep, goats, and chickens, they also no that such predation is both infrequent or of little consequence.

Norton Miner, state supervisor for the FWS in Montana (and head of animal damage control), calls the threat to livestock by bobcats practically nil. “In fact, says Miner, “we didn’t have a single request for bobcat control due to sheep losses in all of 1975, nor did we have any verified bobcat predation of sheep. The only complaints we received all year concerning bobcats involved poultry losses.”

FWS records show that bobcats were responsible for the deaths of 116 chickens in Montana for 1975. At $200 a pelt, a rancher might be better off forgetting...
about chickens and try and improve his bobcat habitat.

Miner did point out how a rancher might get into trouble with bobcats. “A rancher might have some bobcat problems if he did his lambing in places with lots of rocky outcroppings or brushy raws. That’s where the cats live.”

Scientific evidence that bobcats pose only a minor threat to livestock is overwhelming. One researcher examined the stomachs of more than 3,500 bobcats. He found traces of livestock in only two percent of the stomachs, and much of that had already been dead when the bobcat fed on it. Another researcher, this one in Idaho, checked 300 stomachs and found livestock remains in only one, despite the fact that most of the cats were seen in country used extensively by sheep. Both studies clearly proved that bobcats feed mainly upon rodents and rabbits.

Perhaps the biggest reason why the bobcat has failed to win protection is because it is so often equated with the coyote. In actuality, the two are as different as... well, cats and dogs.

Although they both commonly prey on the same species, their method of capture differs greatly. While the bobcat relies on keen vision and stealth, the coyote depends on its sense of smell and running ability.

The coyote’s running skill allows it to range much further than the bobcat, a distinct advantage. One researcher showed that while bobcats were recaptured at an average of about four miles from the original capture point, coyotes were found to have ranged an average of more than 14 miles. Not only does this aid in finding food, but it also allows the coyote to rapidly repopulate depleted areas.

The coyote’s superior ability to utilize available habitat allows it to remain far more numerous than the bobcat. Though coyotes have only a two-to-one birth rate advantage, trapping records show they may outnumber bobcats by as much as eight to one. An Arizona study, conducted over 26 years, showed a five to one coyote advantage.

While habitat loss constitutes a problem in Montana, particularly with the burgeoning numbers of second-home developments in isolated drainages, fur exploitation clearly stands as the chief cause for the bobcat’s decline.

As for the yardstick that is often used to measure the relative success of different species, the bobcat numbers have come up again. The plight of the bobcat can’t be overlooked—this cat badly needs a rest.

Defenders of Wildlife was the first national organization to inform conservationists that bobcat populations throughout the West were decreasing at an alarming rate (see DEFENDERS, Oct., 1974, p. 411). Bobcats are by no means stupid animals, but they cannot cope with steel traps. Even a novice can trap a bobcat. In the 1950s, fur buyers were paying from $1 to $3 for bobcat pelts. During the 60s, the demand for long-haired fur increased and bobcat and lynx pelts doubled and redoubled in value.

In 1974, I wrote “Trapping Bobcats,” the situation was serious. Since that time, bobcats have been extirpated in much of their former habitat; the pursuit continues into the remote, high country areas, wherever remnant populations still exist.

The managers of Utah’s wildlife, reacting to public concern, have set the wheels in motion to protect the state’s bobcats. UR, supposedly a group of professional wildlife managers, was requested by AW to draft a proclamation that would provide some protection for the bobcat. UR responded with a document that stated “The entire state is closed to the taking of bobcats.”

Terrific! Then they tacked on special regulations number one and two. Number one reads “The proclamation does not apply to Division of Animal Damage Control hunters.” In other words, predator control employees, who have contributed heavily to the decline of the bobcat, can conduct business as usual.

Number two special regulation is the real ringer: “Livestock owners or their employees may take bobcats at any time by authorized means that are molesting or about to molest livestock or other domestic animals. The term ‘about to molest’ shall be defined as bobcats found within one mile of domestic animals.”

At first glance, it might seem this proclamation was written under the assumption that any bobcat within one mile of any livestock was about to ravage the flock. I may be stretching things a bit, but I really do believe that the professionals (?) of UR know better than that, even though they must assume responsibility for this inane proclamation since the wording originated in their office. Probably this proclamation, and many other aborted attempts to protect predator species that are slowly being “whittled down to size” by livestock interests, resulted from naked power politics. In most instances where the case-in-point does not concern a game animal such as deer or elk, our professional wildlife managers would just as soon not rock the boat.

Utah is 66 percent public land. Some form of domestic animal, a horse, cow, sheep, dog, can be found within one mile of almost anywhere in Utah. In effect, this proclamation bans bobcat trapping by the private trapper and invites an open season for livestock owners, their employees, and friends. I would hope that responsible wildlife managers and a concerned public would laugh UR’s proclamation off the books.

Throughout the West our bobcat populations need protection from unlimited trapping, not fun and games hidden under a guise of wildlife management. My field experience leads me to believe that if sheep ranchers were compensated for every dollar’s worth of damage caused by bobcats, in a year’s time they wouldn’t receive enough money to buy a new hat. But the slaughter goes on.

—Dick Randall
DEFENDERS OF WILDLIFE

1. Petitioning the Secretary of the Interior to list the bobcat as an endangered species in accordance with the Endangered Species Act of 1973.

2. Urging the U.S. Department of the Interior to request the elevation of the bobcat to Appendix I (endangered status) of the "Endangered Species Treaty," thereby restricting international trade in the bobcat.

YOU CAN HELP!

Write to: The Secretary of the Interior
Department of the Interior
Washington, DC 20240

Demand a sound conservation program to rescue the bobcat, beginning with listing the bobcat as an "endangered" species.

For further information and updates on the bobcat issue, write to:

Defenders of Wildlife
1244 19th Street, NW
Washington, DC 20036

Contributions to the bobcat program may be sent to Endangered Species Fund, Defenders of Wildlife, 1244 Nineteenth Street, NW, Washington, DC 20
REFERENCES


When Is a Moose an Elk? When Shooters Take Aim

Illegal killing of moose in some areas exceeds the legal kill, but quota-setters ignore it.
The real scope of today's illegal killing has not been documented only in recent years, when biologists began to look for reasons why the herds were declining. Many biologists feel that we need to take a new look at the way moose herds are being managed.

Nearly all western states control their harvest by means of a quota system. The state is divided into hunting districts, sometimes based on drainage, sometimes based on counties. In each district, a certain number, or quota, of moose may be legally killed. A drawing is held to see which hunters will receive permits; the applicants generally outnumber permits about 15 to 1.

If a hunter receives a permit, it's highly likely he'll kill a moose. In Montana, the success rate generally runs over 70 percent. If a hunter hires an outfitter, his chances are even better. One longtime Montana outfitter said that in the last 15 years he'd probably had 35 to 40 "dudes" come to him with moose permits, and he'd never failed to fill one.

"There really isn't much to it," the outfitter said. "I can't say that I enjoy hunting as much as some other animals. There's no trick to shooting them—they stand there like cows. And I spend at two to three months each summer in the back country, so I just about see all the moose in the area by their name."

His same man, however, is deeply concerned that too many moose have been killed—both legally and illegally—in his hunting district in the Yellowstone area. "In the 50s," he said, "you could go in the meadows and see 20, maybe 25, moose. Today you might see 3 or 4. I could clean out every moose in the area if I wanted to. But I don't want to. I'm out of business if all the game disappears. I'd personally like to see this closed to moose hunting for awhile." Montana and game departments generally set their quotas on the belief that 20 to 25 percent of the moose can be taken each year without reducing the population. Contrary to common sense, however, the illegal kills are not normally figured in. They are not subtracted from the numbers the game departments set as their basis. In some areas, the illegal kill of moose has been staggering, often equaling and sometimes exceeding the legal kill. For example, in a hunting district near Livingston, Montana, the quota for 1975 was 10 antlered bulls and 30 more of either sex. The warden at Livingston personally counted 23 illegally killed moose during the 1975 season. In addi-
Hank Fischer also wrote the article on Coyote Politics on page 24. A frequent contributor to DEFENDERS magazine, he kicked off our bobcat campaign featured in the August issue.

He reported that at least 15 dead moose were found by hunters and hikers. These figures represent only dead moose actually found. The warden estimates that at least twice as many were killed. This would mean a total illegal kill of nearly 80 moose! The warden also notes that in his travels—which take him into the field nearly every day—he sees fewer and fewer moose. Yet the 1976 quota for the area remains at 40 moose.

Proof that populations are waning is irrefutable. Fremont County in Idaho provides a vivid example, best documented during the 1973-74 season. According to state biologist Brent Ritchie, about 100 moose were killed in Fremont during this period, both legally and illegally. The hunting quota was 40. “During that same time period,” said Ritchie, “we did a study to find out how many calves were being produced in the county. We found that number to be less than 100.

“We know that all the illegal killing has hurt the population,” continued Ritchie. “Twenty years ago we used to winter 1,500 to 2,000 moose in this county. Now we maybe have 400. It looks as though we might lose them all if we don’t begin to protect them real hard. We may have to eliminate legal hunting altogether.”

Several other western areas have been troubled by the illegal moose kill. Most noteworthy are Montana’s Bitterroot and Gallatin areas, the Green River area of Wyoming and the Uinta mountains of northern Utah.

Although wildlife officials feel misidentification constitutes a large part of the moose problem, it may not be the biggest one. “I’d like to think that these moose are just being shot accidentally,” said the Idaho biologist, “but it just doesn’t seem to be the case. When you come to a spot where two or three moose have been killed, with empty shell boxes littered about, it’s pretty clear that it wasn’t an accident.”

The Montana warden concurred. “Maybe five or ten of the 23 carcasses I examined might have been accidentally shot. Two or three were probably killed by poachers, ‘cause the hindquarters were missing. As for the rest of them, I have no doubt in my mind that these animals were shot by people who knew what they were shooting. I found many of them out in the middle of clearcuts, shot cleanly through the head.”

The warden is angry. “These moose are being killed by people cruising the backroads in their four-wheel drives, trying out their fancy new rifles on living targets,” he said. “Most of the time you can tell what happened. You can see the tracks from the cars up to the carcass, and maybe the antlers are cut off. I found one moose that had been shot several times from about 20 feet by some joker with a 45 pistol.”

While the illegal kills have been widespread across the West, the areas that have been hardest hit all seem to have one thing in common—they’ve been heavily logged. Although logging may at times produce additional forage for moose, this advantage is far outweighed by the network of roads that typically accompany timber sales.

Creek bottoms provide excellent habitat, so moose often become highly visible when roads are pushed up previously undisturbed drainages. Unlike elk, moose don’t seem to avoid roads, and this highly disturbed area often provides succulent browse.

Once the timber has been cut, logging roads become superhighways for “sport” in its lowest form: roadhunting. These roadside maniacs scan the clearcuts for a sign of life; when they see something move, the shooting starts. Too often the unfortunate creature is a moose.

Just how many moose can these western states spare to illegal killers? That’s difficult to answer; even the fish and game departments admittedly have little notion of
many moose there are. But in many places, one thing is clear—there aren’t as many as there were 20 years ago. And the populations have declined, quotas have stayed the same or increased, or into this equation doubled hunting pressure in the last 20 years, and thousands of miles of new roads cut into back country. The result: a serious problem.

Many biologists recognize this. One fish and game worker in both Montana and Idaho was very critical of management in those two states, calling it “completely subjective and unscientific.” He further added, “Using their current methods, I don’t think they’d know when they were down to their last few.”

Montana’s fish and game department expert, Phil Schladweiler, agrees that the quota system won’t take any uses for scientific method. He explained the quotas are set using three basic inputs of information—browse transects, aerial surveys, and hunter success records. At first glance, that doesn’t seem too bad. But it turns out, however, there are very few browse transects for moose—areas sampled in a pattern to estimate fluctuation in forage. Schladweiler terms them “minimal importance.” Aerial counts of moose are not made on a regular basis, and they are made specifically for moose. Thus, aerial surveys aren’t a very important factor in setting quotas, either.

What this means, of course, is that populations have decreased, quotas generally remain the same or are increased; in areas with low hunter success, the quotas stay the same or may be lowered. No, Virginia, it isn’t very scientific.

While this system may have worked well enough 30 years ago, when hunting pressure was slight and western National Forests virtually unroaded, it doesn’t seem logical now. It stands to reason that hunter success will be high in areas that are heavily roaded, and the access is easy. Further, in such areas the moose are vulnerable year in and year out, and the populations never get a chance to recover.

Conversely, those areas where harvest is low are likely to be in the unroaded back country, where outfitters and pack horses are essential. Such areas never receive the hunting pressure of roaded areas —nor do they suffer as many illegal kills.

Moose management in the West is far less sophisticated than in some eastern states. Maine, which has more moose than all the western states combined, conducts an intense aerial census. Small aircraft fly 250 feet off the ground, at 45 mph, in five-mile transects across the state. They combine the aerial survey with ground verification, and then use computer techniques to get a population estimate. All that, and Maine doesn’t even have a hunting season for moose.

Montana didn’t hunt moose either until 1945. Schladweiler says that moose have never been a very important game animal there. “Moose are kind of a bonus animal for hunters in Montana,” he explained. “Deer and elk seem to get all the attention, and all the money, for that matter.”

While moose may be a “bonus animal” in Montana, that doesn’t mean they aren’t avidly sought. In 1976, about 16,000 hunters competed for approximately 700 moose permits. So the Fish and Game Department is under heavy pressure to cut the number of permits issued. Therefore, quotas have only rarely been dropped as a result of illegal killing.

If moose are to remain at present numbers (or better yet, to be restored to the level of 20 years ago), fish and game departments will have to start taking illegal kills into account. Hunters must accept the responsibility of making sure that game laws are obeyed. It’s a good bet that if illegal kills did begin to reduce quotas, that hunters would begin to police their own ranks a bit.

If hunters can’t assume this responsibility, they should be prepared to lose the privilege of hunting this animal. The king of the deer deserves as much.
REFERENCES

1. Montana Fish and Game Department, *Game Management in Montana*, (Helena, 1971), pp. 89-95.


4. Interview with Roy Hugie, Maine Dept. of Fish and Game, Missoula, Montana, November 1976.
Coyote Politics

aid for by Montana's Fish and Game Department, another helicopter patrol the expansive Big Sky terrain year. Its occupants will try to gun down any and all coyotes they see, in part an's latest—and most costly—extermination scheme. While coyotes will not survive this aerial blitzkrieg, as they do other atrocities, an important question is raised by it: Why do wildlife agencies assert belief in ecosystem biology when the destruction of an integral part of ecosystem?

The argument hit F&G right in the breadbasket, since deer numbers in Montana are now extraordinarily low, for reasons wildlife officials can't explain. Many have blamed the decline on overgenerous, twodeer-of-either-sex hunting seasons, but F&G has continually discounted the impact of hunting. For 20 years deer kills have been maintained at 90,000 to 135,000 annually, despite declining deer populations. It's much easier for F&G officials to blame the decline on coyotes than on poor management.

The Board of Livestock has powerful guns it can train on the hunter-oriented F&G. When F&G doesn't cooperate with the Board, ranchers threaten to close their land to hunting. More and more land has been closed to hunters in recent years, despite F&G's $40,000 annual (since 1961) contribution to the Livestock Board. F&G officials tacitly admit that the usual $40,000 contribution is a public relations gesture; others call it ransom money.

Pengelly's points went unattended; the Commission approved the donation, 4 to 1. Interestingly, the commission attorney whose opinion first raised the question of legality did not realize that F&G had been giving money to the Livestock Board for nearly 15 years.

Not only was the commission lawyer in the dark, but many Montana citizens didn't know of this regular contribution. News of the increase brought immediate response across the state. The Montana Wildlife Fund, Inc., called on F&G to prepare an environmental impact statement before turning over $80,000 ($40,000 by habit plus $40,000 additional) to the Livestock Board. Such a contribution could seriously drain F&G resources, the group said.

A state representative from Butte called the action "a blatant misuse and giveaway of funds." He further said that the four commissioners who voted for the increase "caved in" to pressure from the Montana woolgrowers' and stockmen's associations and gave them "a no-strings-attached grant."

Hunters' objections also poured in, much to the surprise of F&G. Said one irate sportsman, "I don't pay my license fees each year to pay for the welfare of Farmer Bob's cattle." He urged F&G not to throw away any more money "on another crusade to eradicate an innocent part of nature." (Other hunters, however, continue to blame coyotes for declining deer herds.)

The Montana Wildlife Fund has also threatened to file suit if F&G releases money to the Livestock Board. Its argument involves several points. First, the law states that no money derived from hunting and fishing fees may be used for predator control. Since all F&G's money goes into one pot, it's impossible to tell one dollar from another. Thus money from license fees quite possibly could be going for predator control.

More important, the law requires that F&G money for predator control must be spent only to meet "a real and substantial need for extermination and eradication of the predator involved in order to protect and preserve some species of fish, game, wildlife? The division head said it had not. In other words, the idea of predator control to help wildlife didn't even start within the F&G, nor was it based on any known biological need.
bird, or furbearer.” F&G has no mandate to protect livestock, nor to contribute money to another organization to protect livestock. Aerial gunners, of course, have no way of distinguishing a “livestock-killing” coyote from a “wildlife-killing” coyote.

The most significant question is whether or not a “real and substantial need” to control coyotes to protect wildlife now exists in Montana. This is the point where biological management collapses and politics slithers in.

Evidence hardly exists in the scientific literature to support the notion that coyote predation has any year-to-year impact on healthy wildlife populations. Research has often shown that the sums expended in predator control are far greater than the questionable benefits that accrue from it. Montana F&G’s own stated position on predator control has strongly reflected these scientific findings over the years.

For example:

1958—“It is recognized that the lack of protective cover, food shortage, disease and numerous other factors may have a far greater limiting effect on some species than do predators. Thus in game management it is essential to evaluate the point beyond which predator control becomes an expensive and ineffectual tool.”

1971—“Most game departments in the United States agree that trying to control predators has little effect on huntable game populations.”

1972—“The preponderance of evidence indicates that predators have an acceptable and proper place within all animal populations; they are not only tolerable, but, very likely, essential members of any animal community.”

1975—“Predation is a natural and integral part of what has been called ‘Nature’s equation of life.’ Nature’s way is any way that works, and life selects for the way that works best.”

Such strong arguments against traditional predator-control methods (poisoning, trapping, and aerial gunning) as wildlife management tools won F&G few friends among ranchers, particularly sheepmen. Many ranches were closed to hunting, to the distress of F&G.

Hank Fischer, now on Defenders’ staff in Washington, recently received his Masters in Environmental Studies from the University of Montana.

they considered the results too meager for the amount of money that had to be spent. Utah had similar problems.

But Montana F&G officials seem determined to get maximum mileage out of their study. F&G conveniently came out with some “early results” from the study (though it’s barely underway) a scant two weeks after the disputed contribution to the Livestock Board was approved; a liberal interpretation of the “results” was used to justify the contribution.

The bulk of the early report merely documented deer kills made by coyotes; it also said that coyotes were a “problem” in one of the three study areas. Nothing in the report suggested a need to control coyotes to help the deer, nor did it conclude that coyotes were hurting deer populations. Rather, the biologist who heads the study, Gene Allen, warned against trying to interpret the early results. He wrote, “It’s important not to generalize about the coyote situation. . . . Above all, in spite of relatively high losses to coyote predation, we really don’t know what the effects are on year-to-year population trends.”

Although F&G officials chose to conclude that coyotes were the culprit in the one study area that had “problems,” Allen’s report suggested another factor. In question was a Bureau of Land Management area that was under a rest-rotation grazing system; pastures were heavily grazed one year, rested the next. Allen observed: “It is important to note that [deer] numbers changed little in the rest pasture as compared to significant (37% for adults, 83% for fawns) declines in the heavy-use pasture.” Yet no one is telling the livestock groups that they must cut down their cattle grazing.

F&G maintained, a single year earlier, that “Habitat improvement is often the best approach to predator control.” F&G knows as well as everyone else that poor range conditions are one of the biggest factors in the decline of deer populations. On overused ranges, deer die of malnutrition in the wintertime, or are killed by predators before they drop. The predators, often feeding on dead or weakened animals, get the blame. Yet F&G continues to give money to protect the livestock that destroy important wildlife habitats on public lands. If their actions are not hypocritical, they are certainly spineless. It’s much easier to pick on a coyote than on powerful livestock interests.

This combination of overgrazing and excessive predator control has been one of the major causes of the decreased productivity of our public lands. A recent National Audubon Society report cogently summed up the problem:

Overgrazing also results in an increase of range rodents and rabbits, the principal natural foods of the coyote. Coyotes increase with rodent numbers; ranchers and government agents poison the rodents and then call for other poisons to kill the coyotes while overgrazing and soil erosion continue. Thus a cycle of wildlife destruction and land deterioration is perpetuated. The ultimate victims are the consumers of meat and wool who pay higher prices and the hungry people of the world who have less to eat because of the declining fertility of America’s rangelands.

So why has Montana’s F&G deserted biology and knuckled under to livestock interests? The desire to keep ranchers lands open to hunters was a factor. An F&G saved face by blaming declining deer herds on something other than overhunting. Yet this really doesn’t explain it all.

In recent years Montana’s F&G has gained a reputation for toughness, at least when game animals are involved. This open submission to livestock interests marked a change in character. Many people feel that the decision originated in the governor’s office.

Montana’s ambitious governor, Tor Johnson, has never had a good reputation with Montana ranchers. During his campaign last year, Judge told ranchers that he favored more funding for predator control (including the use of the poison 1080), a sure vote-getter. Since the governor appoints the F&G director and th commissioners, it’s easy for him to control major wildlife decisions.

One top F&G official was sure that the governor’s influence was responsible for the increased contribution to the Livestock Board. “It’s all political and nearly everyone in the Department thinks he stinks,” he said. “We’ve been trying to get budget amendments through for importar projects—like stream preservation and land acquisition—for years, without an luck. This one sails through the gover
ming out litters of coyote pups), shooting, aerial gunning, mass poisoning and habitat destruction are undeniable, cruel, which should be reason enough for ending them. But there are other reasons, reasons which even hardened pragmatists find compelling.

Destroying wildlife and its habitat, either it is purposeful or inadvertent, sport or for economic gain, is plainly cruel. Predators, prey, soil, vegetation, er, and air (and us, too; don't forget and our children) are all knitted together in the one fabric which is life on planet. It's no new thought, but it's that hasn't the currency it must have if we are to survive at anything like the meanest levels of existence.

We must do more, however, than just shout the line. Defenders of Wildlife must promote and insure the conservation of wildlife, and convince as many people as we can that conservation of life and its habitat is the only sane thing. For an immediate return of 1080 (banned in 1972 by Presidential order) in order to wipe out wolves. Defenders will be calling on each of you to port our support in pressing for passage of a bill this year.

Similarly, the time has come to quash the damage done by 1080. The poisoning of wildlife agencies are beginning to recognize the threat of the coyote. Comparing the coyote to a trash fish, the article called the coyote Politics. It's all pretty obvious."

A superficial examination of the political wranglings behind this Montana predator-control decision makes plain that good biology often gets left out and law gets side-stepped. When that happens, the wildlife resource suffers, perhaps in unexpected ways.

In this case, it's unlikely that another helicopter gunning down coyotes in Montana will hurt their populations very much (though it should hurt our consciences). The real problems are the waste of good wildlife money and the dissemination of misleading information by a state agency.

In Montana, the $80,000 in state funds could bring in another $240,000 in federal money, enough to purchase a $320,000 natural area or to completely fund the proposed nongame program. The extra $40,000 contribution to the Livestock Board was particularly ill-timed because of current F&G money problems. In 1976 the legislature raised hunting license fees and restricted the number of out-of-state hunters, which created an unexpected drop in funds that's expected to exceed $1 million. In normal situations, such out-of-department grants as the coyote contribution are the first to go. But the Livestock Board gift was treated as a high-priority item.

So what does get cut? Research funds to universities and cooperative studies with other agencies, valuable sources of scientific information. The erosion of the scientific base of any institution was a problem Plato warned about in 400 B.C. He said, "If arithmetic, mensuration and weighing be taken away from any art, that which remains will not be much."

When game departments discard or weaken their scientific foundation, they not only lose credibility but also become hopelessly vulnerable to pressure from special interest groups. In the frenzy to defend hunters or to avoid offending livestock interests, biology gets compromised. Worse, it may be purposely distorted.

In Montana, the next predator-control controversy already looms. In the wake of this recent victory, livestock interests are calling for the return of the poison 1080 more fervidly than ever. A recent article in the Montana Farmer-Stockman's magazine (entitled "Is the Reality of Coyote Predation Closing In?"), pointed to the F&G contribution as evidence that wildlife agencies are beginning to recognize the threat of the coyote. Comparing the coyote to a trash fish, the article called for an immediate return of 1080 (banned in 1972 by Presidential order) in order to keep the few remaining sheepmen in business.

Never mind that coyote numbers in Montana have declined since 1980 was banned. Never mind that numerous studies have proven the non-specific nature and pervasiveness of this deadly poison, and that it cruelly kills many forms of wildlife beside coyotes. Never mind that sheep operators manage to make a tidy profit without massive poisoning programs.

So the stage is set again. Montana's F&G has steadfastly opposed the use of 1080 in Montana. The governor, however, is on record as being in favor of it. So once again it's up to the F&G to resist the special interest groups and to protect and preserve the wildlife of Montana. Don't bet the ranch on the outcome.
REFERENCES


2. Western Association of Fish and Game Commissioners, Proceedings of the Sixth Western States Mule Deer Workshop, (Boise, Idaho, Feb. 19-21, 1976), pp. 15-17.

3. Montana Fish and Game Department, unpublished office memorandum concerning legality of using Department funds for predator control, by Clayton Herron, 14 June 1976.


5. Montana Fish and Game Department, Game Management in Montana, (Helena, 1971), pp. 207-215.


For the Defense

Complaints focus on budget, staffing

Refuges in Trouble, Our Survey Discloses

by Field Representative Hank Fischer

One hell of a mess”—"ridiculous”—"some of us feel there's not to destroy the system." Such were candid remarks of the 146 refuge managers who replied to questionnaires out by Defenders of Wildlife as part survey of the National Wildlife Refuge (NWR) System.

Though the final report on the survey was completed in May, we thought that you should know what the people on the scene—the refuge managers—had to say about the state of the refuge system.

The questionnaires trickled back to the Washington office, we began to what these men and a woman (a Gintoli of Great Meadows NWR in Massachusetts) are like. One indication was the response. More than 80 percent of the managers we contacted reported that buildings and equipment cannot be maintained, about a system that fails to serve the public, about a bureaucracy so snarled that it can no longer properly manage the refuge system.

Many managers are plainly outraged. One southern manager wrote, "The NWR System is responsible for the management of some 32 million acres of public land and is acquiring more all the time. It is unfortunate that a government that can absorb 44 million dollars annually in fraud, overpayment and clerical errors in its food stamp program does not choose to have a NWR System second to none—particularly in light of the fact that the total needs of the system at present are much less than the cost of one sizeable U.S. Army Corps of Engineers project."

Some are quitting. "I've had a bellyful and I'm pulling the plug this year," said one disgruntled western manager. A few are changing jobs. "The budget and personnel situation is so frustrating I'm transferring," said an eastern man.

Most, however, are staying. As one man put it, "We tenaciously continue to produce in adversity." Such "tenacity" is a throwback to the early days of the refuge system. The first refuge, Pelican Island, was established in 1903, but most were created in the 1930s, with the help of the Civilian Conservation Corps (CCC). In that rush of enthusiasm, early conservationists had lofty notions of what the refuge system could be.

Unfortunately, that public spirit has given way to a cat's cradle of bureaucracy and misdirection. Budgets and manpower have decreased despite the marked rise in public use. While refuge staffs have been cut, administrative positions have increased.

"My roofs leak, the buildings are rotting and they all need paint—after rehabilitation," says a Florida refuge manager. "Maintenance and residential buildings are little more than hazardous slums," reports a Georgia man. "Things have deteriorated so badly there is no longer a maintenance backlog—much of the need now is for reconstruction," complains a Washington manager.

An Idaho man described his refuge headquarters as "a converted chicken coop." An eastern counterpart calls his "a converted horse barn." Some managers report they have no drinking water or electricity. For many, little has changed since CCC days.

Inadequate equipment and worn-out vehicles are the norm. Managers report that most of their heavy equipment is army surplus, vintage early 1950s, for which parts are difficult to find and expensive. Vehicle odometers typically register more than 70,000 miles. "Most
of the equipment we have was obtained from other agencies that could afford to purchase new equipment and no longer need the stuff we now use," explained a western manager.

"Obsolete and unsafe" seems to be a favorite equipment description. One manager was told by a mechanic that his 27-year old bulldozer was quickly gaining antique value.

**MANPOWER REDUCTIONS have been substantial at most refuges.** Sabine NWR in Louisiana, which had 12 full-time positions in 1955, now has three. Montezuma NWR in New York needs three more men to bring personnel up to the 1968 level. Meanwhile, visitor use at Montezuma has increased from 25,000 to more than 200,000.

The inadequate funds for refuges has a direct impact on the general public. "Most areas that are closed to public use are that way only because of deteriorated roads and lack of personnel," says an eastern manager.

Larry M. Ivy points out the missed opportunity at Brazoria NWR in Texas: "Yellow rails, roseate spoonbills, wood storks and many other species of marsh and water birds and waterfowl are found among the 242 species on the Brazoria bird list. It's a shame for a refuge offering this kind of wildlife viewing within an hour's drive of Houston to be closed for lack of an access road."

Yet the public value of the NWR system is consistently underestimated at budget-planning time, despite sharp rises in the number of people who are discovering the system. The Fish and Wildlife Service, which runs the refuge system, has quietly accepted completely inadequate budgets.

Private citizens have been most effective in getting money and attention for refuges. When funding problems threatened to curtail public use on part of the Great Swamp NWR in New Jersey, local citizens shamed officials into providing additional funds—by donating money out of their pockets to keep the refuge open. Citizens don't understand why the government can't provide the minuscule amounts needed to keep the Great Swamp—located within 50 miles of 15 million people—open to public use.

Muscataluck NWR, a wild spot located among the tarm rolling farmlands of Indiana, is another refuge whose values have gone unrecognized by budget makers, though not by wildlife enthusiasts. Visitor use at Muscatatuck has risen from 6,000 in 1969 to more than 51,000 during 1975. But when Indiana congressman Lee Hamilton made a special budgeting request, he received only a token sum. The reason? FWS calls Muscatatuck a "limited-value" refuge. Wildlands-starved Hoosiers—who have no other national wildlife refuge, no national parks, and a single national forest—don't see it that way.

Refuge managers note that not only are the refuges often unavailable to the public, but they also fail to serve important public needs. "Development of wildlife-oriented and related educational and recreational activities represent the best opportunities to make refuges relevant to the needs of the local community and to the nation," says Lawrence Givens, former supervisor of the southeastern refuges, now retired. "The FWS has failed miserably to do this."

"Great potential, doing nothing"—"tremendous opportunity, nothing accomplished"—"ideally suited but completely de-emphasized"—these were the typical comments on environmental education and public service programs. Many refuges no longer publish informational leaflets; only a handful have any type of information or environmental center. As a result, visitors often have little idea of where they can go and what they can do on the refuge.

"Personnel are often not available to lead tours for scout troops or other interested groups. "We can't even guarantee the office door will be open during working hours," reports one manager. A Washington man sums it all up: "The important functions of environmental education and wildlife interpretation exist as lip-service activities of refuges."

While most managers blame inadequate budgets for their problems in serving the general public, others say that refuges focus too much on consumptive recreation—the popular euphemism for hunting. "I have long felt," says a Washington manager, "that the FWS is negligent in not providing more emphasis on all wildlife forms by concentrating on the hunted species. For the most part, the total ecological picture has been ignored."

"Except for hunting, we do nothing for public enjoyment," says a Nevada manager. "Nonconsumptive uses such as bird-watching and photography have not been stressed." Refuge managers admit they are not sure what their responsibilities are.

If tight budgets did nothing more than restrict public use and access to the refuge system, the problem wouldn't be so acute. After all, preserving the natural system is the foremost mission of the refuges. However, the pinch-penny funding is debasing the system. Most refuges consist of fragile marshland ecosystems, easily damaged by heavy human or animal use. Trails are a necessity, as are toilet facilities, adequate fences to keep out livestock, and sufficient water levels. In addition, refuges need adequate manpower to enforce refuge regulations.

Nearly unanimously, the managers note that law enforcement is completely inadequate. An Oklahoma manager called it "the most neglected phase of refuge work."

When the refuge survey questionnaire was sent out last spring, funding problems for the refuge system were at a peak. In September of '76, President Ford proposed the Bicentennial Land Heritage Program, a $1.5 billion supplemental package to benefit national parks, recreation areas and wildlife refuges. Over $265 million would go to the refuges, mainly for construction needs and additional personnel. President Carter has revised the format of the program, but has pledged his active support.

While some of the problems of the refuge system would be solved by this infusion of funds, the comments of the refuge managers demonstrate that the problems of the system are more than financial.
Like the city dump than a haven for wildlife and men: Automobile tires an abandoned tricycle litter an eastern refuge. Pinch-penny budgeting in Arlington and top-heavy staffing squeeze the National Wildlife Refuge System carved out in a rush of enthusiasm during the Great Depression.

Squeeze of public lands...a fiscal nightmare," Spencer explains that those men most directly involved with refuge operations— the refuge managers— can't adequately express their needs under such a system.

This budgeting approach has also created a system overloaded with administrators: regional managers, program managers, area managers—they all fit in the scheme. And while the refuge budget for fiscal year 1977 was cut again, the budget for the Washington office of the FWS increased more than any other activity.

"The result of this situation over the past few years," Spencer says, "has been the diversion of millions of dollars in funding and hundreds of man-years into meaningless and unproductive paper exercises—perhaps on the order of 25-50 percent of funds and manpower allocations."

While confusion over this budgeting system is rampant, nowhere is the tangent so great as in New York, home of both the Montezuma NWR and the Iroquois NWR. Montezuma's budget is $60,000 too low and it lacks three men. Less than a hundred miles away, refuge manager Robert Wade tells of an unusual problem: "We're understaffed and underbudgeted." The situation is almost comical. Montezuma is the refuge whose vehicles are approaching antiques value. They must be kept outside: there are no buildings. Again, Iroquois has a different story. "We have more boats (1), canoes (4), vehicles (14), bulldozers (6), farm tractors (12), lawn mowers (11) than our small staff—one maintenance man—can use," says Wade. Buildings? Iroquois has five unneeded buildings. Only "government red tape" is holding up their destruction.

The story continues. Montezuma's road grader is in such bad shape it has to be pulled—by a 26-year-old bulldozer. At Iroquois, "Our $30,000 road grader gathers rust. We have the county do our grading work." Personnel? At Montezuma, they need three people to bring them up to 1968 levels. At Iroquois, "We have seven pencil pushers and one worker. We need two pencil pushers and two workers."

What's the problem? Manager Wade thinks he knows. "We now correspond with an assistant to the assistant of the regional director."

Many managers feel that if the administration was simplified and the budgeting system properly reorganized, additional funding needs would be slight. "We have a relatively simple task," explains former Alaskan manager Spencer, "and we have made it too complex. This is not a space-age event. Some sophisticated tools must be used to cope with 1977, but they must be directed to maintain the scene of 100-200 years ago or more."

These are needs stated by a clear majority of refuge managers:

- Adequate funds for building and equipment maintenance, and more personnel to handle such neglected areas as environmental education and law enforcement.
- A clear-cut line-budgeting system where refuges are funded as individual programs. As a consequence, less people in the office and more in the field.
- Strong legislative authority to acquire and manage all wildlife lands that are clearly of national significance. This would keep refuge lands from being usurped by "higher uses" such as mining or pipelines.

Rep. Leggett (D-Calif.), introduced a bill in January that would directly address the needs expressed by refuge managers. Several bills concerning refuges will be introduced in Congress this session. President Carter has also pledged his support for the NWR system. But don't wait for politicians and bureaucrats to act. The system could get paved over in the meanwhile. If you're concerned about refuges, or if you have a local refuge that isn't what you think it should be, write to your Congressman. As Vandiver L. Childs of the Tennessee NWR observed, "Refuges need their own identity—and some people who believe in refuges."
REFERENCES

All of the information in this article comes from: