

**KANSAS**  
**FISH**  
**&**  
**GAME**

JULY/AUGUST, 1979

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# KANSAS FISH & GAME

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# Editorial....

## A BULLETIN FOR SUBSCRIBERS

Wildlife conservation has always been an optimist's line of work. Only an optimist could absorb the consistent bad news that seems to surround wild America. In a sea of discouraging trends, though, I've found at least one reason for a smile—the support of KANSAS FISH AND GAME readers. There are more than 33,000 of you now, an encouraging sign that interest in wildlife is increasing just when the need for that interest is greatest.

That's the good news.

The sour note is that we're having trouble keeping it up. In the last three years, we have lost more than \$5,000 a year, not including the salaries of the employees who work on the magazine. We've been more than happy to subsidize the magazine to that extent in order to reach wildlife supporters in the state, but the loss threatens to be quite a bit larger in the next three years. At our current subscription rates, we will lose \$38,000 in 1981 alone. We are

making every effort to ease that loss by taking advantage of larger scale production which reduces our per-magazine cost as the number of subscribers increases, but, in any case, we stand to lose a substantial sum over the coming years.

There are two ways to help balance this deficit. We can cut the heart out of the magazine by drastically reducing the quality of information and illustrations it contains. This would involve taking on advertising, cutting back heavily on the number of color photographs we use, cutting the number of pages, and taking less time with each issue. We refuse to make these sacrifices in quality. We will continue to press for the best possible coverage of Kansas wildlife—information on conservation controversies, on the pristine natural areas that still exist in the state, on Fish and Game Commission wildlife management strategies, on hunting and fishing, and, most important, on

Kansas wildlife species themselves. We owe that much to the subject we deal with and to the readers who take an interest.

In order to partially defray the increasing costs of production, we will raise our subscription prices on January 1, 1980. Our new rates will be \$5 for a one-year subscription, \$9 for two years, and \$12.50 for three years. That's as little as 69¢ an issue. Even at these rates, we will lose more than \$3,000 in 1981, not including salaries, but the increase will *help* balance the books.

Your support for wildlife in the past has been impressive, and it has never been more needed than it will be in the next decade. We on the staff urge you to continue that support. Stay with us and learn more about wild Kansas and the ways you can help conserve it. We think you'll find the next year's FISH AND GAME worth the extra cost.

**CHRIS MADSON**

*In August, the man  
who wants to catch  
fish had better be  
nocturnal . . .*

# Night Fishing

Bob Mathews

**Y**ou know how it goes. July and August, it seems, exist only to test the limits of a person's ability to handle stress. The physical discomforts of those insufferable summer afternoons only exaggerate the everyday stresses life deals to each of us.

Fortunately, there are sources of spiritual and bodily renewal besides reclining in front of an air conditioner. One of the best therapies for summertime blues is fishing at night. There's something reassuring and comforting about sitting on a lake or wading a stream under a starry sky. Maybe it's all that peace and quiet. It could be the soothing slap of waves on the shore or the sight of broken clouds crossing a pale moon. Maybe it's the breeze on your face or the way nightfall adds a touch of mystery to even the most familiar environment. Whatever the attractions, the simple joy of fishing ties them all together into an effective prescription for the unsettled soul.

In Kansas, the catfisherman probably is the most common nighttime angler but white bass, crappie, walleye, and largemouth bass are starting to attract more attention.

Construction of large reservoirs in the state during the past twenty years has been a boon for white bass anglers, since the species seems to live and reproduce best in large lakes. Their early spring spawning runs provide some of the fastest fishing available in the state. A growing number of fishermen also have

learned that white bass are vulnerable to night fishing, too.

The summer's unforgiving midday heat, which drives everybody to the closest swimming hole or air conditioned room, sends fish to deep water. Their feeding and cruising activities slow or stop completely until the sun drops and the water starts to cool. When that happens, small minnows and other forage fish move to the cooling water near the surface. Predator species aren't far behind.

White bass prefer hunting for food over sand flats and other bare patches of lake bed. Usually they cruise in deep water, hunting schools of shad and other small fish who range in shallower water. When food is sighted, the whites attack from below, pushing their victims toward the surface. The effect of these attacks can often be seen as shad roil the water's surface in their efforts to escape. In summer, this surface feeding by white bass is most commonly seen during late evening and early morning. During the hottest part of the summer, however, white bass and many other predators may feed all night long.

Gas lanterns or floating lights can be especially effective in providing an incentive for predatory game fish. The lights tend to attract and concentrate plankton and other small, light-sensitive organisms which tempt the palates of minnows, shad, and other small fish. In turn, the concentrations of smaller fish draw the



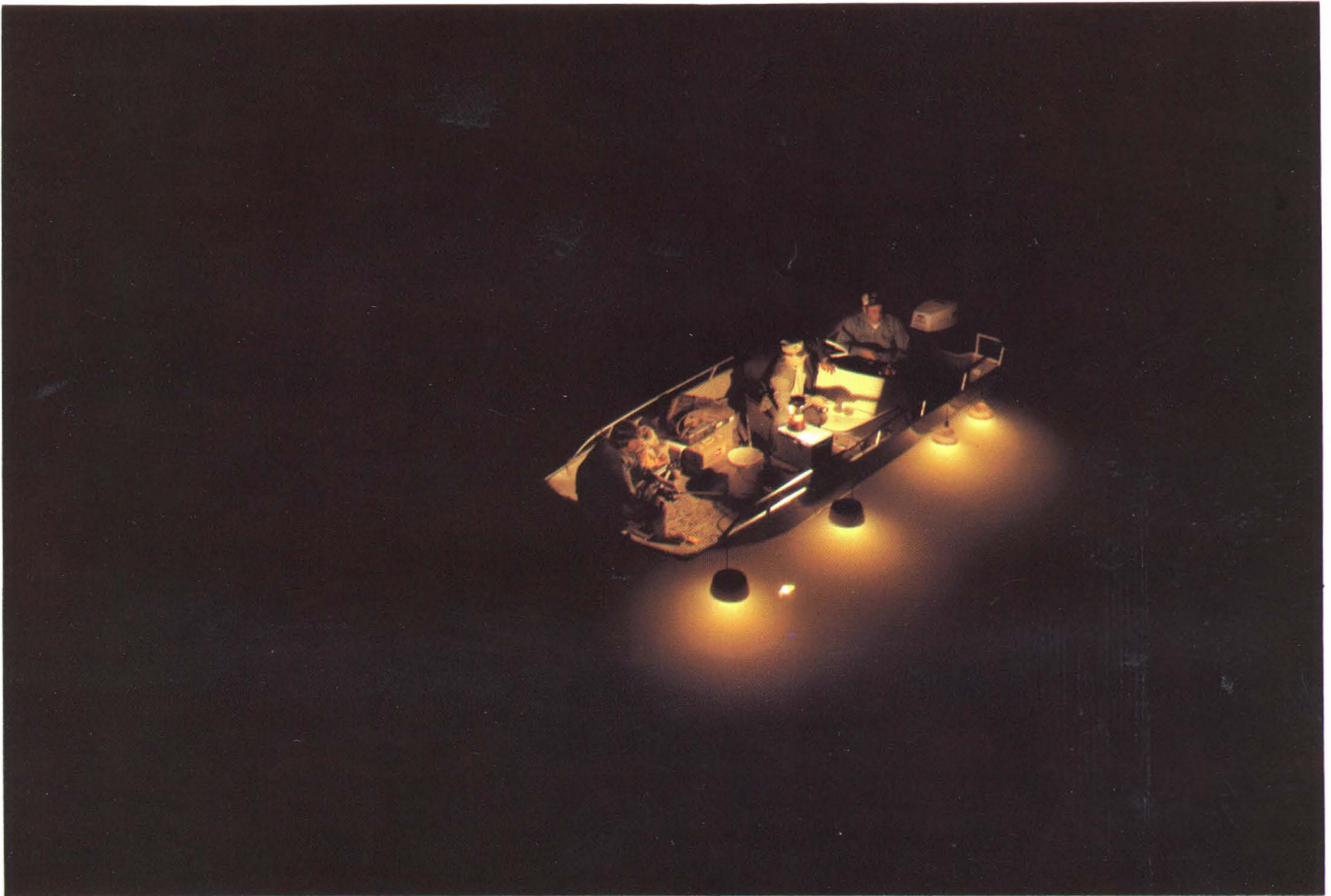
hungry predators from the deeper, cooler water.

Most fishermen use either a gas lantern hung over the side of a boat or specially-built floating lights which can be placed on the water. Anglers using gas lanterns sometimes attach reflectors which aim the light down into the water. Many night fishermen prefer the floating lights, which consist basically of a sealed beam headlight, a styrofoam collar to float the light, and a twelve-volt battery attached by insulated wire to the light. The lights can be purchased from sporting goods stores for about \$7 to \$12 each but are easily assembled, so many fishermen make their own. The

often enough to know that some knowledge of the lake structure is an invaluable aid to catching fish.

Interest in night fishing has grown sufficiently in some areas of the state to conduct classes in the art of night fishing. A one-night instructional session offered to the public by Fish and Game biologist Mike Cox on Kirwin Reservoir last summer attracted some forty-five fishermen seeking more information.

One of Cox's first pieces of advice to novice night fishermen is to set up where the fish should be. Sonar fish locaters, or depth finders, can take a lot of guesswork out of night fishing. Temperature gauges also can



Ken Siebhen

*The night fisherman baits up for the smallest organisms in the food chain when he turns on his lights. Microscopic plankton respond to the light and are in turn followed by copepods, insect larvae, fish fry, minnows, and finally the larger predators—crappie, channel cat, and walleye.*

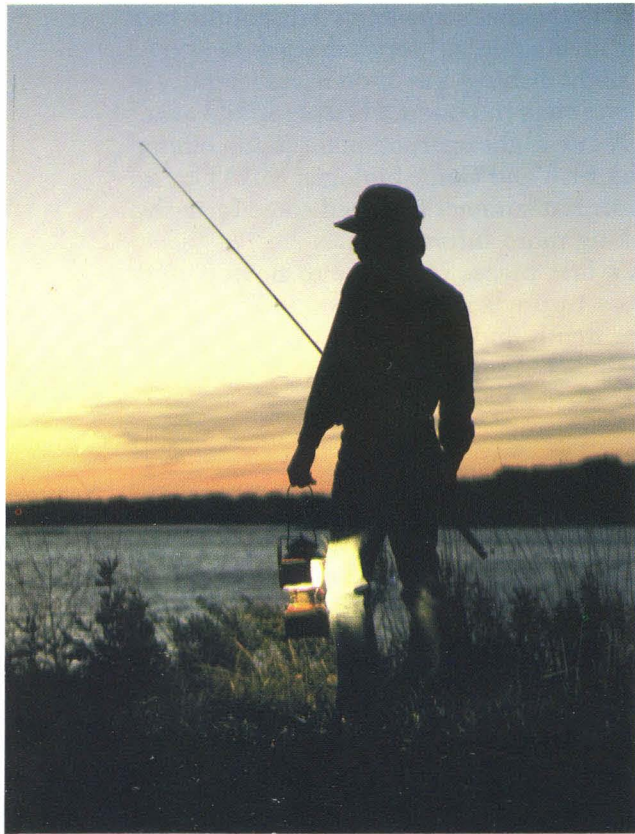
bottom of a styrofoam minnow bucket can serve nicely as the floatation housing for a recycled headlamp. Some diehards take the venture a step further by sinking enclosed lights underwater and aiming the beam up at the boat or fishing pier.

Despite their advantages, however, the lights aren't magic. It's best not to simply buzz out to the middle of the lake, set the lights, and expect the fish to flock in. Even experienced night fishermen have been skunked

help, but a simple general knowledge of the feeding habits of any fish will determine the extent of your fishing success as much as any other single factor. So, fishermen who don't have any of those sophisticated pieces of electronic gear can still help themselves by trying a likely spot and patiently experimenting at different depths.

White bass and walleye, especially, prefer areas around underwater ledges and dropoffs. Once white





*Night fishing can be as simple as a trip down to the river bank with a cane pole or as complex as a moonshot. The boat fishermen shown here have made special investments in lights, fish locators, and temperature gauges; the bank fisherman isn't equipped so elaborately, but he may do as well, especially on channel catfish.*

Ken Stiebben

bass find those underwater ledges they often cruise along that contour in search of food.

Probably the best fishing gear for white bass is an ultralight outfit, with four to eight-pound test line and a small jig. Off-color jigs, like gray, brown, or black seem to work best at night, Cox maintains. His most productive night fishing bait for white bass has been a sixteenth-ounce gray jig.

The ultralight gear is needed because fish won't hit as hard as they might in spring or fall. A rod with plenty of feel will better communicate the faint nibbles on bait. When fishing under lights, an effective method is simply jiggling the bait up and down under the lights. As in most hot weather fishing, the action on the jig needs to be slower than in spring or fall. Many fishermen prefer the swimtail type lures, because they have a little more action during the jiggling motion. If you're fishing deep, it is sometimes best to put two eighth-ounce jigs on the line since the heavier bait will give a better feel for what's going on down there.

Crappie can also be effectively taken fishing under lights. Minnows probably are the most effective crappie bait in both day and night fishing. Since crappie are attracted to the food source under the lights, the same method of vertical jiggling usually works about as well as anything.

Unlike white bass, however, crappie are more often found in brushy areas like underwater brushpiles, flooded timber, or man-made crappie shelters. Again, a

limber, ultralight spinning rod with a sensitive tip is good bet for nighttime crappie.

In hot weather, crappie prize those areas where shallow water drops off into a river or creek channel. If brushpiles are associated with that type of structure, the crappie should be there if they're anywhere.

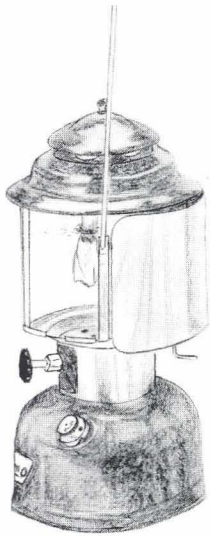
The most exhilarating night fishing may be fishing for largemouth bass with topwater lures. Lights aren't used in this method since the attraction of topwater lures lies in their appeal to a bass' hearing, or "radar," abilities. Even on the darkest night, bass can see several feet but their ability to feel the presence of a noisy topwater is remarkable. For that reason, lures that incorporate as many sensory attractions as possible are best for nighttime largemouth angling.

A topwater lure slowly retrieved through the night's darkness can offer a fisherman all the excitement and anticipation he can handle. The key word is "slowly." A slow retrieve is important since bass are relatively sluggish in the warmer water temperatures of summer.

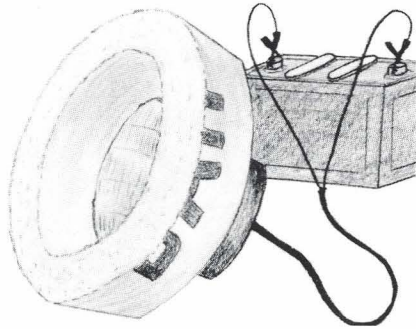
Black bass prefer cruising for food in the belt of underwater plant growth that rims a lake. The shallow areas on the perimeter of a lake allow enough sunlight penetration for underwater plant growth. While bass might prefer a deep, shaded pool or hole during the day, they make feeding forays into the shallower water closer to shore during late evening and early morning.

During the hottest part of summer, they sometimes venture into the shallows in the middle of the night.





Two of the most common lights used by night fishermen. The Coleman gas lantern has been a standby for the bank angler for years, but it can be effectively used in a boat as well. Rigged on special hangers with reflectors to direct the light down, it attracts a variety of small bait critters at night. A headlight mounted in a styrofoam float works even better. The unit is available in many outdoor catalogs, but many night fishermen prefer to make their own out of bait buckets, sealing the joint around the light with silicone sealant.



Retrieving a topwater lure through areas where submerged vegetation does not reach the surface can be very productive. Again, dropoffs and old creek channels are likely spots to look in hot weather fishing, since those areas are on the fringes of both the deeper, more comfortable water and the stickups and underwater vegetation where bass like to shop for food.

Walleye probably present the stiffest challenge to summertime fishermen. Although white bass anglers fishing under lights at night sometimes hook walleye, especially when fishing around dropoffs, there are those who contend lights do nothing to help walleye fishing. As a matter of fact, they say, lights glaring on the water will only alarm the walleye.

Night fishing for walleye can be productive during the summer for the same reasons other species are vulnerable during summer. Nighttime presents better conditions for feeding. Walleyes like rich minnow-hunting areas adjacent to deeper water.

One successful technique for walleye consists of casting for a half-hour or so over sand or gravel bars near dropoffs, then moving to the next bar if action is slow. Whatever baits or lures are used, walleye fishing generally improves when the sun goes down. Night-crawlers hooked to a jig and trailed near walleye habitats can be deadly. Some anglers contend that nights with full moons are best because the walleye's foraging is aided by the soft light.

Catfishermen have long been known as creatures of the night. Catfish are among the most widely-distributed fish in the state. They also are, by nature, nocturnal feeders, so they're a natural quarry for summertime night fishermen.

There is no other species of fish pursued in such a

wide variety of ways. Trotlines and other setlines baited with live minnows or sunfish appeal to flat-heads and channel catfish alike.

Night catfishing with rod and reel is probably the most popular form of angling in Kansas. Catfish normally feed from the bottom of a lake or river, moving upstream and into shallower water as the search broadens. Usually, their heaviest feeding activity begins at sundown, but they often continue foraging all night. Minnows, crayfish, chicken or turkey livers, beef melt, worms, shad sides, and prepared "stink" baits are all popular among catfishermen, who have been known to cast about anything—edible or inedible—with good results.

Prepared baits come in a variety of recipes. Basically, though, if the bait's odor falls somewhere between gagging you and forcing your temporary retreat upwind . . . well, you've got some good stuff there. Some say a prepared bait doesn't necessarily have to stink to attract catfish. But, given the catfish's sensory perceptions, there's something reassuring and promising about sinking the most odiferous concoction you can muster.

On Kansas lakes, many night catfish fishermen prefer still fishing the lake bottom. Good locations to fish are mud flats or off the dam. Casting bait as far as possible onto the flats often yields good stringers.

Baitcasting reels or closed-face spinning reels are best adapted to nighttime catfishing. The only light required is a lantern set up on shore so the angler can see well enough to bait his hook . . . while spreading as little of that stink bait as possible on his fingers.

When water is rising after a good rain, fishing near the inlet of a lake or reservoir can be extremely productive since catfish like to hang out there for the morsels of food carried in by the increased flow.

Although a bobber can be used effectively sometimes, most catfishermen prefer tightlining. A sinker with enough weight to keep the bait down works best since it presents the bait where the fish are most likely found.

River fishing for catfish is also a productive and enjoyable means of soaking up the cool night air. Casting into a deep eddy or below a low water dam works well since the cats prefer those deep, quiet pools.

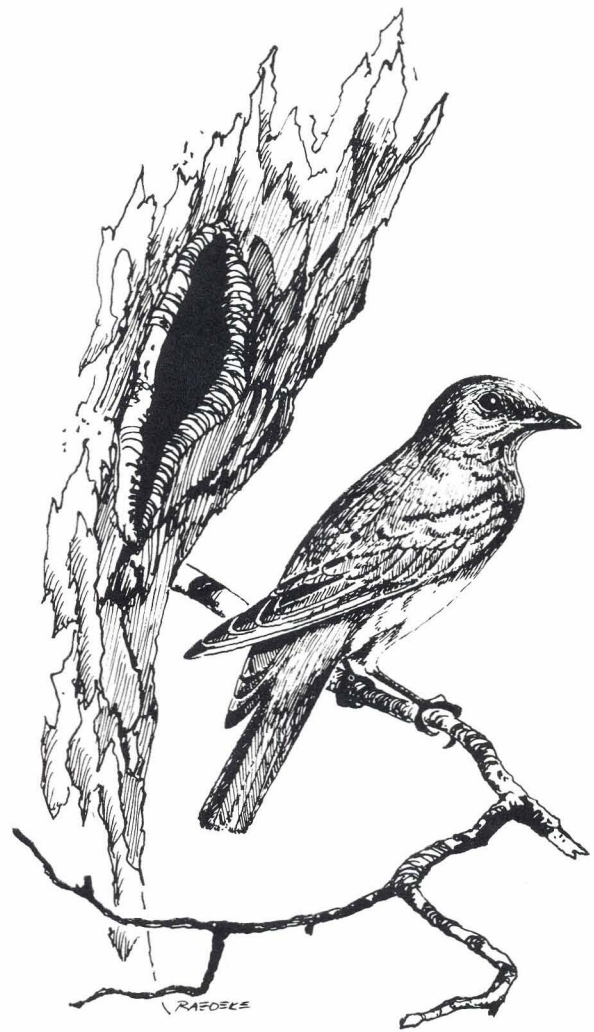
The rewards of night fishing are many and varied. The nocturnal feeding habits of fish in hot weather help improve your chances of successful fishing. The main thing to consider is that you'll have a lot better fishing luck if you're out there fishing. Maybe tonight's the night to head for the water. After all, even getting skunked seems rewarding just for having been soothed by the cool and quiet. Sound like a pleasant way to erase the memories of a 105-degree summer afternoon? And . . . now that you've considered it . . . don't you feel better already?







**The demand for firewood, lumber, and farm acreage means eviction for woodland wildlife . . .**



## **Home Trees**

**Chris Madson**

**Illustrated by Jerry Raedecke**

**I**ll have to admit that I like a good oak fire on the hearth about as well as the next man. It beats TV hands down as a passer of time and stimulator of thoughts, and it has the advantage of occasionally forcing its keeper to get out into the woods to exercise something besides his mind. Cutting firewood is one of those “healthy outdoor activities” every grandmother recommends to keep her young scout physically strong and morally straight. Having swung an eight-pound splitting maul on more than one January Saturday, I can only second the comment about physical development, but I have to question the moral effect. I have seen the light that comes into a fireplace owner’s eye when it comes to rest on a standing dead tree, and it is impossible to reason away. He may be a dedicated squirrel hunter, a hound man or bird watcher with a

vested interest in the tree as it is, but show him dry wood on the stump and his hand twitches convulsively for a chain saw.

He justifies his cutting as a sanitation effort as well as an energy saver. Old trees are a reservoir of Dutch elm disease or oak wilt, carpenter ants and termites, he has heard, and there’s always the chance of a windfall damaging a promising sapling underneath. He leans on the judgement of the old-fashioned forester who calls the old snags “wolf trees” because of their appetite for light, water, and soil, ignoring the fact that most of the forest’s wild residents call them home.

Of all the varieties of wildlife habitat, an old den tree probably takes longest to develop. The best ones are over a hundred years old with a three-foot diameter, rotten at the heart but with sound sapwood and a few





live branches still hanging on. They start out as healthy eighty-year hardwoods (a little younger for cottonwoods, willows, and other softwoods) with the minor ills common to anything that has seen that many frosts and thunderstorms. Lower branches die off as shade in the woods increases, and a limb or two is generally missing from the crown, torn away by high wind or lightning. The tree moves to heal these wounds as they rot, forming a ridge of scar tissue around and over the stub as it brooms off. Assuming that the local squirrel doesn't find it first.

There is something about these lumps of healing wood that a squirrel can't leave alone. He'll gnaw at the encroaching wood even after the limb breaks off and nothing is left but a lump. Why the persistence? It may be a squirrel's way of keeping his incisors honed to the right length or maybe a few hundred generations of his ancestors have found that it eventually pays off; in any case, he occasionally wins out over the scar tissue and creates the perfect squirrel den. Rot follows the dead

branch back into the heart of the tree and opens up a useable cavity while the ring of living wood at the entrance forms an adjustable threshold which can be chewed back to the preferred three-and-one-half-inch diameter. The den may have walls of living wood a foot thick—a fine place to raise a litter of squirrels by any standard. Dr. Fred Barkalow, a research biologist from the University of North Carolina, once found a female gray squirrel with three young happily ensconced in such a den hole. The female had laid her nursery bedding down on the decaying body of the previous resident, and the four seemed unaffected by the odor. She must have been mighty impressed with the rest of the accommodations.

A hole in a young, vigorously growing tree is particularly weather and predator resistant and, as a result, is often in high demand. The majority of the best dens seem to be claimed by mammals, especially squirrels, but they have been known to harbor screech owls, a variety of snakes, and even honey bees. The entrances are usually too small for raccoons and larger raptors, although these critters will intrude where they can. Overall, competition for premium cavities is so severe that few of the smaller birds have a chance to get squatter's rights, especially if they wait until spring to make their first bid for space.

Luckily for these critters, the same diseases and injuries that originally open a tree slowly continue to soften it and make it available to a wider variety of wildlife. Heart rot is one of the best softening agents since it attacks the center of the tree without destroying the surrounding sapwood. The resulting hollow may advance as fast as two feet in a decade, slowly opening a gallery with at least one entrance at the original point of infection. Bark beetles, wood borers, carpenter ants, and termites, all specialists in tree invasion, are followed by a host of other insects which take advantage of the cover supplied by loosening bark and rotting wood. Increasing populations of insects and softening wood finally attract a number of foragers. Some of the first and most important are the woodpeckers.

Of the bunch, I'd have to say the pileated woodpecker is my favorite. He's an impressive hewer of wood; the sound of his strokes in a dead trunk may carry half a mile, and the pile of chips and rectangular hole he leaves afterward are in keeping with his size. Besides the ivory-billed woodpecker which has probably joined the lengthening list of extinct North American birds, he's the largest wood drilling critter on the continent, as big as a crow with a mouth to match. What I like best about him, is what his presence says about the timber he's in. Because of his size, he requires a nesting tree at least thirteen inches in diameter and preferably twenty to forty inches through. This central nesting tree has to be surrounded by a good-sized chunk of woods. A pair of pileated woodpeckers occupy a range of about 175 acres, and they prefer an

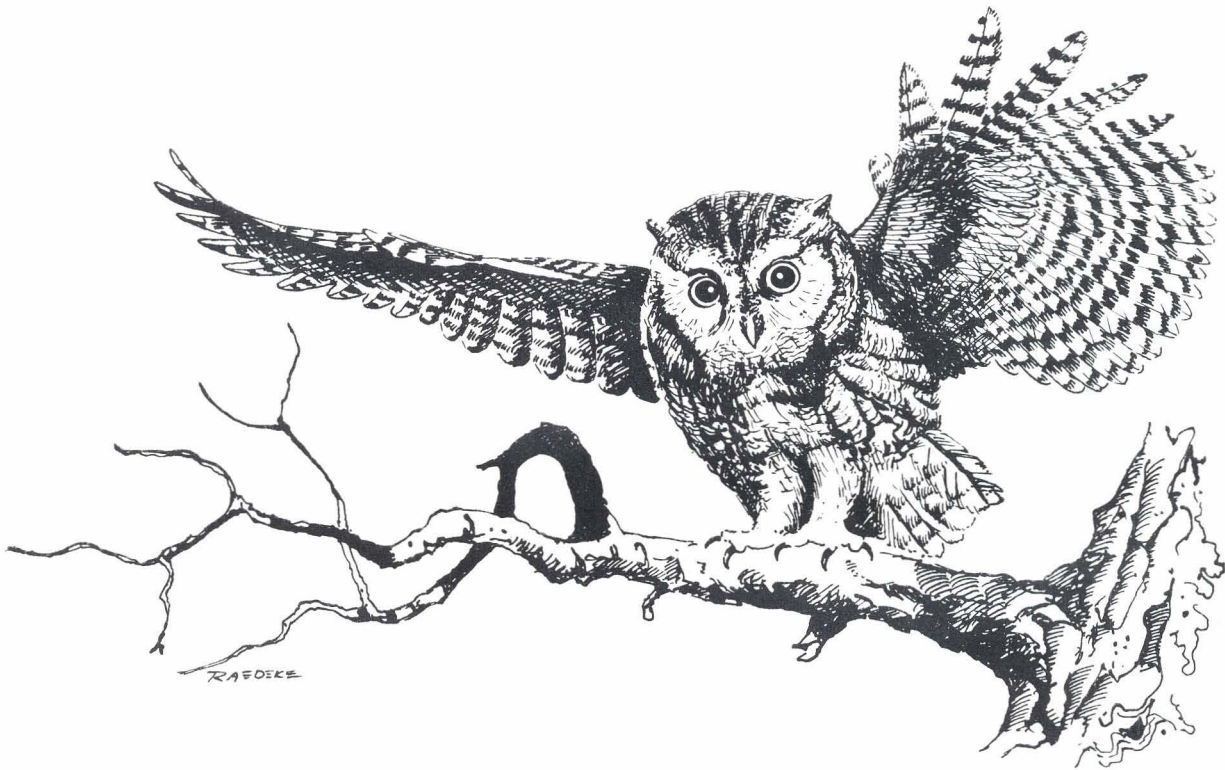


area with plenty of big timber and very little human activity. Like a blooming ladies' slipper or a creek with its own watercress, a pileated woodpecker is one sign of a piece of land that's been gently dealt with.

In timber that doesn't support pileated woodpeckers, smaller species like the red-bellied and hairy woodpeckers do their share to create cavities in dead and dying trees. Although they may nest in the same tree year after year, they never use the same hole twice, preferring to leave the previous year's cavity to other species who lay their eggs in holes but can't dig their own. That includes a lot of birds. According to a recent Forest Service publication, at least eighty-five species of North American birds use holes for nesting. A study

whelming insect outbreaks. That doesn't mean that a few old trees and an accompanying corps of woodpeckers will guarantee an insect-free woodlot. Bird predation isn't like DDT; it always leaves a few bugs, but insects will never develop an immunity to a woodpecker as they usually do to pesticides. As a result, a bird-controlled insect population isn't as likely to get out of hand in the first place.

The first real concern about cavity nesting birds developed in the southeast around the red-cockaded woodpecker. The foresters in charge of the huge public and corporate pine plantations in that part of the world were proud of their ability to manage deer and pine trees at the same time and more than a little distressed



in Missouri shows that twenty percent of all breeding birds in the state raise their broods in old trees and that two-thirds of all Missouri's winter birds also depend on snags for food or shelter.

The overwhelming majority of these birds depend on cavity trees for food as much as for nesting cover. Nearly all are efficient insect predators. When populations of injurious insects start to rise, birds in the area develop an eye for them, ignoring less common food items and taking a large percent of both larval and adult stages that might otherwise cause severe timber damage. Because of this response, a diverse population of woodland birds is good insurance against over-

to find that one of their critters was on the endangered species list. The problem was that good deer habitat wasn't necessarily good woodpecker cover. The red-cockaded woodpecker will not nest in anything but a dead pine snag, a hard thing to find in most intensively managed plantations where overmature trees are considered disease reservoirs and fire hazards. Research in the western coniferous forests at about the same time showed that intensive management was causing similar, though less serious, problems for the spotted owl and a number of other western birds.

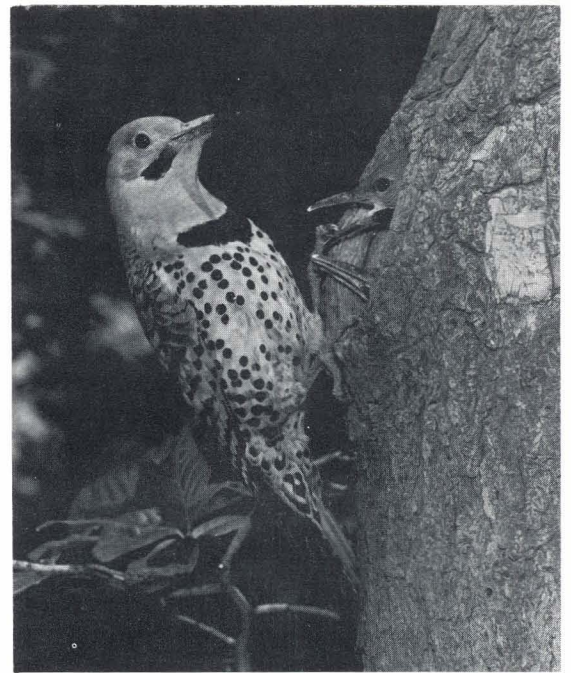
The Midwest has probably lost its only endangered cavity nester, the ivory-billed woodpecker. Most other





Ed Schulenberg

Four of more than eighty-five North American birds that use tree cavities for nesting. Clockwise from upper left: screech owl, common flicker white-breasted nuthatch, and chickadee. Of the four, only the flicker cuts its own hole. The other three, along with the majority of cavity nesters, depend on woodpeckers to do the digging. Luckily, most woodpeckers abandon their holes after one season, leaving them for other species.



B/W photos by Leonard Lee Rue





species of the deciduous forest seem to have a broad tolerance to loss of timber, possibly because they have adjusted over a long period of living in mixtures of oak-hickory woods and prairie breaks in various stages of succession. That isn't to say we haven't tried to add a bird or two to the list.

The eastern bluebird, nearly everybody's favorite summertime fence post sitter, has been on the ropes for nearly twenty years and has only recently begun to make a comeback. The bluebird's troubles have been complicated. The European starling and the English house sparrow, spreading out from their initial habitat, have given the bluebird a tough run for nesting cavities in fence posts and trees along woods edges. Many of the bluebird's favorite feeding and nesting areas, especially orchards, have been subjected to intensive pesticide spraying. DDT and other poisons have thinned egg shells and cut down on the survival of young, and the spraying operations themselves seem to spook adults who are prospecting for breeding territories. I have seen three pairs of bluebirds permanently flushed out of an orchard by the first May spraying.

Coupled with these problems has been the loss of good nesting holes. While it's simplistic to say that a lack of nesting cavities has been solely responsible for the bluebird's decline, areas that have been managed for natural cavities or have had specially designed nest boxes installed have, in many cases, regained their bluebirds.

The wood duck is another cavity nester that has had a couple of major population declines in the last seventy years. The first was due to year-round gunning pressure at the turn of the century. The wood duck is the only species of waterfowl that breeds and summers in the East and Midwest, so it absorbed tremendous punishment from early market gunners during spring shooting. Passage of the Migratory Bird Treaty in 1918 allowed the government to close the wood duck season, and after a decade of enforcement, the woodie began to come back. Populations during the forties were high enough that thirteen states allowed one wood duck in the bag, but hunting regulations only solved the problem of overharvest. They didn't influence the appalling rate of habitat loss.

It has been estimated that the Mississippi River valley alone supported more than 25 million acres of bottomland timber in the pristine state. That acreage began to decline in the late nineteenth century, and the loss has accelerated ever since. Nearly every species of waterfowl has felt the disappearance, but for most species, the effect is only seasonal. The woodie, on the other hand, depends on woodland within a reasonable distance of water for nesting sites as well as fall migration cover; without it, he is bound for hard times. Along the Mississippi, about three million acres of bottom forests remain. Stringent hunting regulations and, to some degree, the advent of properly designed nest boxes have brought the eastern population of

wood ducks back strong, and the species seems to be expanding into riparian timber on the Great Plains. Still, numbers are never likely to return to the peaks of the nineteenth century. Without mature forest and plenty of nest cavities, they can't.

The same can be said for a number of other forest dwellers. Probably the most spectacular example of the decline of woodland wildlife is the passenger pigeon which was driven to extinction more by clearing of the East than by the demands of market gunners. There are other instances, however. According to the reports of early ornithologists, there was once a population of the peregrine falcon (now an endangered species) that nested in tree cavities instead of the familiar cliff eyries the species occupies today. This population disappeared with the last large tracts of eastern timber. The red-shouldered hawk was once a common forest raptor, but he is being replaced by the redtail in many parts of the Midwest where bottomland trees are giving way to soy beans and alfalfa. The pileated woodpecker seems headed in the same direction—still fairly common but diminishing. Even the gray squirrel, still a common species, exists in numbers that are a pale shadow of what they were in the early nineteenth century. Reports of periodic squirrel emigrations in those days speak of waves as much as 150 miles long and 130 miles wide; Ernest Thompson Seton, the early naturalist, estimated the gray squirrel's rangewide population in 1800 at more than a billion animals.

The days of that kind of forest wildlife abundance are long gone, and the continuing shrinkage of forest acreage that has caused the decline in wildlife numbers emphasizes the need for a broader approach to the management of Midwestern oak-hickory timber. Most national forest managers in the region are beginning to include older timber in their wildlife habitat plans along with the development of brushy cover for quail and deer. The national forests have a harvest rotation in which large blocks of timber are clearcut, a good technique for raising healthy trees but tough on animals that depend on natural cavities. The clearcut strategy has been modified recently. The best of the snag-topped grandfather trees in a tract scheduled for clearcutting are left intact and ten percent of each management compartment is left in old growth timber. More extreme measures like girdling or injecting fungus to create new cavity trees will probably meet with more resistance from forest managers. Leaving an old tree is one thing; ruining one before its time is quite another. In the long run, however, it looks as if the Endangered Species Act and a sudden awareness of the ecology of old snags have combined to bring a new variety to the management of many public forests and some privately held corporate tracts.

The problem is that the Forest Service controls an almost insignificant amount of land in the Midwest compared to privately owned and managed timber acreage. The overwhelming majority of these acres are



part of a farm, usually a part that doesn't have a more profitable use. A few of them are neglected and have grown into perfect habitat for nearly any woodland critter, but most owners feel that a woodlot has to produce something besides dickey birds. Kansas extension foresters have tried for years to sell the idea that the best way to make a woodlot pay is to manage it for lumber, but it's a tough concept to get most farmers to accept. The majority of farm woods are managed in one of two ways; they're either grazed or cleared. Neither use demands much thought, and appropriately enough, neither yields much return. Grandad usually had a pretty good reason for not clearing those woods



when he broke his farm out in the first place. If they were along a creek, flooding was likely to be a problem. If they were on high ground, it was probably too steep to plow or too poor to make it worth the effort.

Grazing isn't any better. A hog or cow is hard put to find palatable forage under the trees, and he may get into plants or acorns that'll make him sick. If he doesn't poison himself, he'll eventually wipe out all the understory vegetation, trample the soil to the consistency of concrete, and lay the entire hillside open to severe erosion.

The timber management alternative to this sort of land abuse doesn't generate much immediate profit, but, in the long run, it compares favorably with the money to be had by putting the same ground into more popular crops. Trees don't demand cultivation or annual fertilizer and pesticide treatment, and they'll grow in places a tractor and planter won't go. There is also value in some of the non-timber resources that come with a properly managed woodlot. The right den tree may produce three or four raccoons a year, and with raccoon pelts averaging thirty dollars apiece, a landowner may be more inclined to leave a dead snag for other reasons besides its contribution to the natural scene.

Unfortunately, it's tough to assign a value to a cavity tree in terms of the number of raccoon pelts it raises or, for that matter, the number of fox squirrels, bluebirds, or pileated woodpeckers it shelters. It's substantially easier to quote a value in terms of face cords of seasoned firewood or the number of acres taken out of production.

It seems that a growing number of our decisions, environmental and otherwise, are being made on the basis of this sort of benefit/cost ratio. This generally means that the decision is slanted in favor of more production because the price tags on some items in the balance are easier to find than others. The cost in taxes of leaving a woodlot is easy to compute. So is the return on a small grain crop, the added efficiency of a larger field and bigger equipment, or the increased yield stimulated by a new fertilizer. Other price tags aren't as easy to come by and, as a result, don't usually figure into the final decision. The value of a squirrel hunt, especially one that starts right from the back yard and doesn't require an hour's prelude on the highway. Or the price of a wren on your wife's kitchen window sill. The cost of replacing the old oak patriarch that supports these critters is one of the few environmental price tags available. It'll take about a hundred years, given good weather and a source of seed. That's something to keep in mind before you start the chain saw.



*The illustrator, Jerry Raedecke, is a native of Worthington, Minnesota. Active in conservation efforts in his state, Raedecke is slowly achieving the recognition due his fine artwork. He was the featured artist at last year's National Wildlife Art Show in Kansas City.*





# The Molt

Rod Baughman

**I**n the colorful plumage of waterfowl, nature evinces a practical bent as well as a decided taste for fashion. Ducks and geese maintain cosmopolitan lifestyles, and their attire must meet strenuous demands. Inveterate travelers accustomed to skittering about the globe, they cover thousands of miles a year in journeys between wintering and breeding grounds. No textile fiber known to man could hold up under the rigors of long-distance migration: rain, snow, and the constant buffeting of the wind constitute powerful erosive forces. Waterfowl plumage can't take the beating for long, either, so nature copes with the problem of worn-out feathers in much the same way humans deal with threadbare clothes—they're simply discarded.

Most species of birds shed and replace their entire plumage once a year in a process known as molt. The old feathers drop out, pushed from their bases by new feathers growing under them. In many non-waterfowl species, the molt of both body and flight feathers occurs gradually, so normal activity is largely unaffected. The primaries and secondaries, those feathers of the wing necessary for flight, are replaced in sequence so the bird is never more than a few short of its full complement of flight feathers.

Waterfowl molt the body feathers gradually; but the wing feathers are lost simultaneously, grounding the birds for several weeks while replacement feathers grow in. In *The Life of Birds*, Joel Welty suggests a



reason for this unusual molting pattern: "Since the two chief functions of feathers—protection and flight—are indispensable, the molting of feathers must occur in such a way as to disturb these functions as little as possible. The energy demands of molting are heavy, especially if the new plumage grows rapidly, but so are the energy demands of reproduction and, for many species, migration. The main problem in molting, then, is chronological: to schedule it and these other peak demands for energy so as to avoid disastrous overlapping, and to fit them into suitable times of the year when food is abundant."

The long southward migration in fall taxes the stamina of even the hardiest duck or goose. A gradual wing molt during this time would drain much-needed reserves of strength. And while short-distance flyers can get by with a few missing or partially grown flight feathers, the slight reduction in efficiency would tell in the arduous intercontinental travel of waterfowl.

While the synchronous molt of flight feathers in the postbreeding period prevents competition for energy between important functions, it creates special survival problems for waterfowl. A flightless duck is an easy target for predators. Starvation and dehydration are also formidable threats. For many ducks, the flightless period falls in late summer, a time when shallow ponds and marshes dry up, stranding those inhabitants that lack mobility to seek out new living sites.

To improve their chances of survival during wing molt, male ducks abandon their mates after the breeding season and migrate *en masse* to large, secluded wetlands and lakes. This molting shift may only be to another part of the same marsh in which the ducks had their breeding territories, or it may involve a flight of several hundred miles. The migration appears not to favor a particular geographical direction, either. H. A. Hochbaum observes in *Travels and Traditions of Waterfowl* that the transfer of drakes to the molting areas is "an ecological rearrangement of the population, with a bias toward large marshes on the part of the river ducks and toward lakes (sometimes the ocean) on the part of the diving ducks." The molting ducks seek out sites that will afford them an abundant food supply and adequate protection against enemies while they sit out the flightless period.

The hostility between drakes that is evident during the breeding season vanishes as they gather for the molting shift. At first the birds team up in groups of two and three, then larger aggregations begin to form until flocks of drakes numbering in the hundreds and even thousands can be seen loafing along beaches and marsh edges. From these gathering areas, the ducks move to the special molting sites some time before the wing feathers are lost.

Since the flight feathers may be shed all at once, particularly if a bird is startled and forced to flush in panic, an instinctive impulse apparently causes the

flock to shift at the proper time. Hochbaum has observed a change of behavior in postbreeding drakes that indicates an inner awareness of the approaching molt: "When a mallard close to the wing molt is flushed, it does not take off in abrupt rise, as normally, but at a more gentle angle, as if favoring the wing against extreme exertion." Often these birds refuse to take to the air at all; instead, they flap across the surface of the water or dive when an intruder approaches.

The timing of the molting shift varies nearly as much between individuals as between species. It is not uncommon to see some drake mallards still involved in breeding activity while other greenheads on the same marsh are gathering for the transfer to the molting areas. Since the post-breeding molt is tied in with the sexual cycle—a drake typically deserts his mate near the beginning of incubation—early nesters are the first to migrate. Dabblers generally breed before the diving ducks; consequently, the drakes' marital responsibilities are completed earlier, and they begin gathering for the molt migration a few weeks ahead of the male divers, as early as the first part of May for some mallards and pintails, late May through mid-July for blue-winged teal, shovelers, and gadwall. Wigeon and green-winged teal start massing usually between the middle of June and early July.

The first small bands of drake canvasbacks and redheads begin to appear on northern bays normally by the third or fourth week in May, the peak of the gathering period coming in late June. Lesser scaup and ruddy ducks start grouping up around mid-June. By the first week of August most divers have departed for the molting waters.


After the birds have arrived at the molting sites and the wing feathers have been lost, they become extremely furtive. Flightless dabblers establish hiding places under overhanging shoreline vegetation, which they seek out during periods of inactivity. Only the most violent disturbance will drive them out of these places of refuge.

To compensate for the physiological drain of molt, the ducks feed intermittently throughout the day, usually in open water far from shore to guard against predators. When approached in this situation, they crouch low and swim away without making a sound. Lewis Oring describes the escape behavior of a mixed flock of flightless mallards, pintails, shovelers, and teal he encountered at Camas National Wildlife Refuge in southeastern Idaho: "When I approached rapidly, the flappers scurried across the water in a frenzied manner, using both wings as paddles. In this way, they attained considerable speed for short distances. Close approach to such birds usually caused them to dive. I measured the underwater swim of one mallard as 60 feet. It swam with alternate paddling of the legs and in no way used its wings" ("Postbreeding Behavior and Ecology of Ducks," *J. of Wildlife Mgmt.*, April 1964).

Throughout August, large numbers of flightless div-



# the YELLOW Pages



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## DU REPORTS IMPROVED WATERFOWL NESTING OUTLOOK

Officials of Ducks Unlimited, North America's largest waterfowl conservation organization, have announced that the nesting outlook for ducks and geese across the Canadian prairies is improved over that of 1978 despite the fact that a late Canadian spring delayed waterfowl migration in some regions.

"Our field reports indicate a continuation of the improved water-condition trend observed through Saskatchewan and Manitoba last year," said Ducks Unlimited Executive Vice-President Dale E. Whitesell. "Ask Canadians in those two provinces about the 1978-79 winter, and I don't think they'll hesitate to tell you that it was one of the longest—and certainly the coldest—on record. But thanks to an overall cool spring with above-average precipitation, the runoff in most areas was excellent, with many river systems receiving so much water that the flooding really got out of hand."

Though the late Canadian spring apparently caused some apprehension among biologists concerning the 1979 nesting season, Whitesell said that recent DU (Canada) field surveys from Saskatchewan and southern Manitoba indicate that production this year may be the best in a long time. "In western Saskatchewan, for instance," said Whitesell, "water conditions are nearly comparable to those top-notch levels which existed back in the nesting seasons of 1969 and 1970 when you couldn't have reasonably hoped for a whole lot more. The breeding population in this part of Saskatchewan is dominated by mallards, pintails and blue-winged teal, and given some reasonable summer rains to ensure adequate brood water, these species should be in fine shape when it comes time to evaluate this region's fall flight.

"It was not until mid-May that the major portions of our waterfowl breeding populations became established in southern Manitoba, but most permanent marshes there are full or flooded and the total number of waterbodies in this region was increased by nearly 150 percent. A significant increase in the breeding population is evident, and as one would expect for the prairie-parkland zone, the increase is dominated by mallards and pintails."

Whitesell went on to say that the optimistic nesting-condition reports from Saskatchewan and Manitoba are "reason enough" for the members of Ducks Unlimited to continue the habitat restoration and preservation fight begun by the organization 42 years ago. "It takes a certain amount of enthusiasm and dedication to raise the kind of money needed to support the work our DU (Canada) field crews will carry out on some one-half million acres of critical waterfowl breeding habitat this year. Our fund-raising goal for 1979 stands at an even \$20 million, and our volunteers consider this a solid pledge ensuring that the fight to save diminishing North American waterfowl habitat will continue to be fought."

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## THE PLEASURE OF BEING THERE

*"It is my hope in writing this to establish that hunters and fishermen are sensitive to their natural surroundings and derive pleasure just from being there," wrote James R. Harding, a Prairie Village dentist and sportsman who contributed the following item. We think Harding's account of the natural death of an aged raccoon encountered on a fishing trip carries its intended message admirably.*

Story and photo by James R. Harding

The old coon was tired. He limped slowly in and out of the fleeting patches of sunlight which heralded the end of a warm spring afternoon. His joints ached and the foot with the missing toes throbbed. The sunshine felt good and he stopped to stand in the warm rays. He was thin and his ribs were outlined in his coat. His muzzle was gray and accented the black mask over his eyes. He could see the patch of earth between the spreading roots of a gnarled old tree in the center of the field. He knew that it would still be warm from the afternoon sun. It was the spot he had been seeking. He picked his way carefully through the grass and entered the hollow between the roots. He circled the area twice and lowered himself to the ground.



The old coon remembered the past. It had been a good life. He wasn't very old when he first tasted crawdads near the banks of Elbow Creek. He remembered leading the dogs on wild runs through the moonlight, night after night. He could still hear the snap of the trap as it closed on his foot. The injury had slowed him for awhile, but he had been strong and tough and recovered quickly. He had been in many fights with dogs and with other coons. He had been a consistent victor in these conflicts, his speed and strength sustaining him. He no longer was fast or strong. His total energies had been spent finding food lately. He hadn't done well.

The old coon knew that his last fight was over. Fatigue over-whelmed him. His eyes were slits in their mask. He could see the red glow of the sun as it disappeared over the edge of his world. His eyes closed. He slept.

## PRIZES AWAIT YOUNG POSTER CONTEST WINNERS

Thousands of youngsters from across the country will be taking up paint and crayon this summer and fall to compete in the second annual National Hunting and Fishing Day Poster Contest. Last year's contest was so successful that NHF Day Headquarters has more than doubled the number of prizes which will be awarded.

With the theme "Sportsmen and Conservation . . . A Tradition of Cooperation," the second annual contest will feature more than 35 national awards totaling over \$3,700, plus many more local awards. A grand prize of a \$1,000 savings bond will be awarded to the youngster who best illustrates what sponsors of NHF Day activities have been emphasizing for many years—sportsmen are our leading conservationists.

(more)



The contest is open to all students in grades 5-12. There are two classes of competition: A junior class for grades 5-8 and a senior class for grades 9-12. Contests will be organized and sponsored on the local level by sportsmen's clubs and conservation groups. Organizations interested in sponsoring a contest should simply contact local school officials, Boy Scout, Girl Scout, and other youth group leaders to work out details. Posters must win in a local contest in order to be eligible for the national prizes. Deadline for submission of posters for national judging is Nov. 1, 1979.

Judging will be based on visual impact and appeal, originality and adherence to the theme. Posters should be done in pencil, crayon, paint, ink, etc. There are no limitations on colors. All posters must be based on the student's original idea. First, second, and third place posters will then be sent to National Hunting and Fishing Day headquarters for national judging.

For detailed rules and information, organizations, schools or students may write: NHF Day Poster Contest, 1075 Post Road, Riverside, CT 06878.

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#### FISH & GAME OFFICIAL ON NATIONAL PANEL

Royal Elder, hunter safety coordinator and boating administrator for the Fish & Game Commission, has been named one of five coordinators of a national essay contest advisory board.

Elder joins four other hunter safety administrators from other parts of the country on the Marlin Firearms Company's Hunter Safety Essay Contest Advisory Board. The board's purpose is to act as a clearing house of information and a sounding board for ideas concerning Marlin's annual essay contest.

Other members of the panel include Frank Glista, hunter safety coordinator, Connecticut; David Woodward, hunter education coordinator, Tennessee; Jim Holven, hunter safety coordinator, California; and Jim Thornhill, hunter safety coordinator, Alabama. Board members will meet formally once a year at the National Rifle Association Annual Meeting to discuss contest publicity, participation incentives, and general format.

Elder has directed the Kansas Hunter Safety Program since its inception in 1973. The Kansas program, staffed by volunteer instructors from throughout the state, was chosen the best in the country in 1975.



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## FISHING AND STRESS: A PSYCHOLOGIST'S VIEWPOINT

Prof. Jerome L. Singer, Ph.D  
Yale University

The new field of behavioral medicine is uncovering more evidence that a surprising number of serious physical ailments, from heart disease to ulcers and even some forms of cancer, are stress-related. Today's busy American lives in a world in which dozens of daily pressures mount up to create an atmosphere of tension and harassment. The interruptions from the telephone, a memo to be read and answered with a short deadline, home chores and repairs to be arranged—all accumulate to a powerful sense of desperation that can lead to dangerous psychological or physical stress reactions. What can you do to reduce the dangers of such regular pressures?

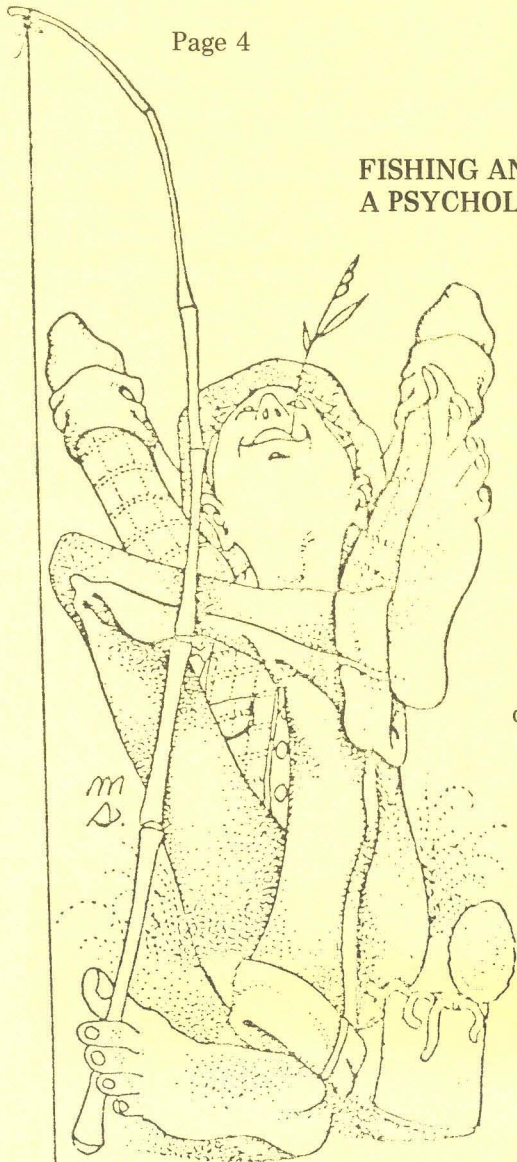
My answer as a psychologist is: Go fishing! Of the many possible techniques for changing one's mood and reducing stress, fishing has special advantages for alleviating tension and creating an atmosphere of calm relaxation. For many years I have been studying the psychology of daydreams and fantasies and the ways in which one's imagination can be put to practical use.

It is surprising how often people, who are learning to relax and to counter severe anxieties, mentally picture scenes of nature and peaceful lakeside or oceanside settings. The calming effects of being near water are evident again and again in clinical and experimental studies. In our work at Yale we have had people hooked up to electrophysiological instruments to measure changes in muscle tension on the forehead. When they imagine situations involving pressure or fear, the frontalis muscles tighten. But as soon as they shift to imagining scenes like fishing on a quiet lake as the warm sun emerges from the clouds, the needle on the dial drops sharply as the muscular tension is reduced.

How much more relaxing it can be to be really away, really out there on the water and in the pleasant, open air! Fishing, whether on a lake, river or sea provides a remarkable change from the usual daily activities and settings that remind one of unfinished tasks and urgent conferences. The calm lapping of the water, the circling gulls or waterfowl, the broad sea vistas or peaceful hills that surround a lake or river distract one almost completely from the many mental associations that are linked to work pressures.

Fishing has the special quality of allowing us to daydream. The inevitable waiting establishes an atmosphere in which our thoughts can drift lazily into realms of pleasant reminiscence or fantasy. Recall the joys that Huck Finn and Tom Sawyer found in drifting peacefully on the Mississippi, letting their boyish minds soar in pleasant reveries. Fishing can evoke that sense of youthful peace and joy in all of us and it gives us the chance to drift not only on calming waters but on the stream of consciousness. The luxury of idle thought and playful fantasy is something few pressured executives or professionals allow themselves when surrounded by the symbols of their trade.

The whole process of preparing the bait and tackle, of choosing the fishing spot, of waiting calmly, hauling in the catch and eventually cleaning, cooking and eating the fish evokes a basic, almost primordial, feeling of family togetherness that can generate wonderful memories for a lifetime.





## CORBIN RESERVOIR PROJECT EVALUATED

A report issued by the U.S. Fish and Wildlife Service has recommended methods to lessen the environmental impacts associated with the U.S. Bureau of Reclamation's proposed Corbin Dam and Reservoir project on the Chikaskia River south of Wichita.

The report reflects completion of more than four years of ecological investigations and evaluations by the Service in the Chikaskia River Basin in Kansas and Oklahoma. It states that Corbin Reservoir at normal pool level would eliminate 14 miles of the Chikaskia River, along with 1,666 acres of streamside forests and 2,096 acres of native grasslands. An additional three miles of the river, 321 acres of forests and 513 acres of grasslands would be adversely affected by flooding in the flood pool of the reservoir.

The forest and grassland vegetation along the Chikaskia River provides important habitat for wildlife in an area that is intensively farmed, according to Service Area Manager Tom Saunders. But the report notes the Bureau of Reclamation recommends acquiring a 2,640-acre stream corridor below Corbin Dam and a 950-acre corridor above the reservoir as a joint fish and wildlife and environmental quality feature. If the corridors are managed properly and maintained for wildlife, as currently proposed, adequate consideration would be given to terrestrial wildlife, Saunders said.

The report points out that the most serious wildlife deficiency in the Bureau's plan is a lack of guaranteed flows in the Chikaskia River below Corbin Dam. To maintain adequate flows below the dam for aquatic life, the Service strongly recommended that at least 11,000 acre-feet of water be stored in the reservoir for the life of the project. The project, as currently proposed, would provide an adequate flow for only about the first 40 years, and at the end of 100 years, could not guarantee flows in the river below the dam.

The Service report will be considered by the Bureau of Reclamation in proposing final plans for a project on the Chikaskia River. The wildlife report will accompany the Bureau's project feasibility report, to be considered by Congress later this year.

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## DOGS TO ASSIST FERRET SEARCH

The U.S. Fish and Wildlife Service has acquired four trained dogs to assist scientists in their search for the rarely seen endangered black-footed ferret in the Rocky Mountain-Missouri River Basin States.

The black-footed ferret (*Mustela nigripes*) is the only ferret native to North America. Its original range extended from Saskatchewan and Alberta to Texas, New Mexico and Arizona.

Ferrets have a close relationship with prairie dogs, their major food base. Because ferret activities take place almost exclusively at night, many early naturalists considered the species uncommon or rare as there were few sightings and few specimens collected. Today, scientists believe the ferret population is reduced considerably, although the current distribution is not known.

The Service's Black-footed Ferret Recovery Team figures ferret populations were reduced by prairie dog poisoning programs, which not only had spin-off poisoning effects on ferrets and other species, but also reduced ferret food supplies. Prairie dog control programs were conducted throughout the Great Plains from 1900 to 1940. From 1923 through 1939, prairie dogs reportedly were exterminated from more than a million acres in 30 counties in South Dakota. During those years, 44 black-footed ferrets were taken in South Dakota. Earlier, from 1884 to 1891, 16 specimens were collected from Trego County, Kansas.

(more)



Since 1971, sightings have been reported from several States, which suggests remnant populations still exist in areas outside South Dakota. But the validity of reported sightings often have been questioned because few were made by trained observers, and most were not confirmed by later surveys.

The primary objective of the Recovery Team is to "maintain at least one wild self-sustaining population of black-footed ferrets in each State within its former range."

The Team has defined its initial problem: "The very scarcity of the black-footed ferret is a serious obstacle to recovery planning. Many research and management activities cannot be carried out simply because black-footed ferrets cannot be found for work or study."

It is hoped that the Texas dogs will be able to alleviate this problem.

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### GOOD NEWS ON P-R SUIT

Finally, there is some good news to report on the Pittman-Robertson Program litigation, the Wildlife Management Institute reports.

Paul A. Lenzini, counsel to the state wildlife agencies and other wildlife interests in the suit, reports that a federal judge has issued a written order dismissing without prejudice the action brought by the Committee for Humane Legislation, Inc. and Friends of Animals, Inc.

The original suit was filed in March, 1978, alleging that the National Environmental Policy Act had been violated and seeking to enjoin all funding under Pittman-Robertson pending compliance with NEPA. On March 21, 1978, the U.S. Fish and Wildlife Service agreed to prepare a programmatic environmental impact statement and to make available to plaintiffs any assessments on the more than 600 P-R projects. This stipulation did not affect state agencies and put off the possibility of a complete shutdown of P-R funding.

On Dec. 5, 1978, another stipulation by the Fish and Wildlife Service resulted in supplying "fact sheets" to the plaintiffs on the more than 600 projects. This time the stipulation provided that if plaintiffs identified any of the 600 as requiring an EIS, and if the government agreed, then the project would not be funded until an EIS was completed. This stipulation did not affect the state agencies' programs either.

However, at a status call before the judge on March 14, 1979, the court extracted an oral agreement from the Service that it would not fund any of 182 P-R projects pending a court hearing. That oral agreement prevented some important wildlife projects from being funded. Those projects can continue now. Future "Friends" challenges probably will be on individual projects.

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### BUG BITS

Did you know:

- A housefly hums in the key of F and beats its wings more than 20,000 times a minute.
- There may be more than 1,500,000 different species of insects in the world.
- Each molt of an insect is called an ecdysis. The molted exoskeleton is called the exuvium. Each period of activity between molts is called a stage or stadium. The form that the animal has during a stadium is

(more)



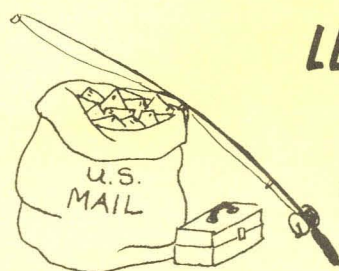
called its instar.

—Aquatic insects are almost entirely limited to fresh water. The oceans have few, if any, insects.

—A bedbug may go for as long as a year between meals.

All these morsels of information (and much more) are contained in the latest edition of the "Kansas School Naturalist", a periodical offered by Emporia State University. The 15-page publication is sent upon request, free of charge, to Kansas teachers, school board members and administrators, librarians, conservationists, youth leaders, and other adults interested in nature education. Inquiries should be addressed to Emporia State University, 1200 Commercial Street, Emporia, Kansas 66801.

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## LETTERS to the EDITOR

### FISH CLEANING TIP

We enjoy the magazine so much and as I was reading how Mr. Gablehouse cleans his bluegills, I thought of a little trick my brother-in-law (Richard Evans of Kennewick, Wash.) uses. It's simple. He always holds his fish with a rag while cleaning them so they don't slide all over the place. He cleans plenty of them in Washington. Just try it and you'll like it.

Mrs. Keith Evans  
Garnett

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### APPRECIATES FARMERS

Your publication is something you and your staff have every right to feel pride in. This May-June issue expressed things in the way that should touch the soul of all outdoorsmen. Gene Hill's and Robert Weeden's words were the quality that should be cast in granite to be preserved

for several ages. Sage men are they.

Enclosed is my check for \$7. Please renew the subscription for the H.A. Miller folks of Sylvia, Ks. I've never met these farm people. Fact is, I don't even know where Sylvia is. But that isn't what matters. What does matter is that every hunter owes a lot to the farmer. Perhaps a quail, pheasant, goose, or duck that I've shot had stopped at their place for breakfast or dinner. And even if not at their place, at least some other farmer's place.

These are hard days for people in agriculture. Hard as they are, they still have their pride. Let them know that an appreciative hunter wants them to continue to enjoy the publication. Perhaps it will let them know that some "city" folks care about what is happening on the farm. We really are all in this together.

Paul J. Marnett  
Kansas City, Mo.

\* \* \*

### MEMORIES

The study of the Mississippi Kite in your May-June issue brought back memories of my childhood in northern Oklahoma in Alfalfa County near the small towns of Byron and Amorita, only a few miles northwest of the Great Salt Plains Wildlife Refuge. However, that was before the refuge was even thought about and the lake was built.

Back then, there was a large hunting club called the Dog Ranch located close to the headquarters of the wildlife refuge. This hunting club

(continued)



was composed of many rich people from all over Oklahoma. They had several bird dogs there and several employees to train and care for them.

Over the period of time this club operated, they spent a great deal of money in northeastern Alfalfa County and northwestern Grant County. They leased thousands of acres of the best hunting and fishing land in this area. This was during the 1910's and all through the 1920's. Game laws were very poor and were unheeded at this time and the sky was the limit.

However, the club had its own private rules and regulations. This club pumped thousands of dollars into the area by their bounty system. They paid one dollar each for each blue darter, sharp-shinned hawk, and Cooper's hawk, and fifty cents each for all other hawks and owls, including the burrowing owl. Also, large bull-snakes, sand rats, and nearly all meat-eating animals were included, many of which drew the one dollar bounty. This went on for 15 or 20 years. Thousands of dollars were funneled into this area at this time by the club.

This old club site is now a part of the Salt Plains Wildlife Refuge and is mostly underwater, I think.

During the same period of time, there were thousands of Mississippi Kites killed that lived along the drainage systems of the Salt Fork and Medicine Rivers, also Big and Little Sandy Creeks, the Boiling Springs (Okla.) State Fish Hatchery, and the headquarters of the Salt Plains Wildlife Refuge.

I am sure this area still contains hundreds of kites. There are large colonies on the Medicine River near Medicine Lodge and Sun City but I believe there are larger colonies in the area I have mentioned, although the use of pesticides in the large alfalfa fields in Alfalfa County may have hurt the kites greatly.

I spent 22 years working at the Meade State Game and Fish Hatchery. I know about the kite and vulture colonies there and the Great Horned Owls I used to trap when we raised pheasants. There were several times that I could count from 15 to 20 fresh pheasant heads on the roofs of the shelter houses.

I have spent most of my life hunting, fishing, trapping, and working with all kinds of wildlife.

Here at the Lone Tree Lodge I am located in a room where I can continue bird watching each day. We have a flowing fountain here in our lawn. So far, I have counted over 20 kinds of birds in

this lawn. We have a colony of purple martins at home here. The English sparrows and starlings give them plenty of trouble.

I wish to say hello to all of you and keep up the work with all kinds of wildlife throughout Kansas.

Earl Ford  
Meade

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### TALKIN' TURKEY

Just a short note to say thanks to Fish & Game personnel. I recently (during the past spring season) shot a 19-pound turkey near Webster and the experience was the highlight of a 15-year hunting career. Since my knowledge of turkey hunting before opening day was very limited I contacted Fish & Game personnel. Game Protector Wes Wikoff explained everything I needed to know about turkey hunting; thus, a turkey is in the freezer. My wife got so excited she is going to apply next year. Fish & Game is guaranteed a pair of hunting and fishing licenses as long as we live in Kansas. Keep up the good work.

Kelvin Kolb  
Stockton

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### SOME SUGGESTIONS

I am sending along my renewal for another three years to "KANSAS FISH & GAME". While doing so, I would like to extend some thoughts and would appreciate you passing them along to other Fish & Game personnel for me.

First, I just enjoyed my best success in 18 years of pheasant hunting. I owe that to the return of the late January closing date. This year, I got in four trips from Olathe to LaCrosse. With the shorter seasons I get only two trips. I always either get my limit or right at it and enjoy the opening day hunting greatly. But there is a special satisfaction in going on a cold, snow-covered January weekend when virtually no one else is hunting. The birds are wiser and bunched more. Also, I have three excellent spots to hunt that I don't hunt on opening weekend because the landowners' relatives are there for their once-a-year trip. They wouldn't care if I did but I feel



they should get the first crack at them and I'll come back later for my chance. All other land-owners are much more apt to give permission later in the season, too. So, thanks very much for giving us the chance to get in those other two trips.

Second, I hope the Hillsdale Reservoir has the trees left for fish cover. The crappie and catfish anglers like myself are just lost on Perry or Pomona. I find better luck river fishing than lake fishing. And, when I do fish these lakes it's in the creek areas and they are pretty crowded for limblines and trotlines. But if trees are left throughout Hillsdale Reservoir and motor sizes limited to 15 horsepower or so, it would really be a fishing lake... not a skiing lake with fishermen crowded in the upper reaches of the creeks and in the stilling basin areas only. It would really help to disperse the fishing pressure throughout the lake and really aid fishing quality. Look at Toledo Bend's success. I can't afford to go to Toledo Bend but I could really appreciate Hillsdale, especially with gas prices like they are. It seems the skiers already have some close reservoirs to go to, so put in a good word for us fishermen.

Finally, thanks for the articles on catfishing. I subscribe to "Outdoor Life" and "Field and Stream" and combined they don't have the coverage of catfish that your magazine does. Not everyone owns a bass boat, although I realize its popularity is far-reaching.

Thanks again for the job you are doing and for passing along my thoughts on the length of the upland seasons and the structuring and regulating of Hillsdale Reservoir for fishermen.

Doyle Baker  
Olathe

\* \* \*

### UPSET SPORTSMAN

I feel that I do not wish to contribute to the magazine due to political misuse of the Kansas Fish & Game Commission's practices of issuing deer permits. I applied for permits four years in a row and was refused, while a neighbor and his two boys received permits each year. I have lived in Kansas all my life and have purchased a hunting or fishing permit every year since my 16th birthday. My grandfather was one of the earliest

settlers in Butler County and was well-respected. He traded with the Indians and ran a grist mill and saw mill along the Little Walnut River. I think it is an injustice and a disgrace the way things are managed now. I feel that Kansas uses the good sportsman.

G. F. Tong  
Wichita

*Equal consideration is given all applicants for deer permits. Drawings which determine successful applicants are always open to the public and drawing dates are announced well in advance. Without knowing the details of your specific case, we can only speculate as to the reason for your neighbor's success in obtaining permits. If the management unit attracts fewer applicants than there are permits available, it is possible for a hunter who was successful the previous year to be authorized a permit again in the succeeding year. We would be happy to discuss your complaint further if you care to contact us.*

\* \* \*

### FISHING REFORMS NEEDED?

My wife and I belong to a local chapter of the National Campers and Hikers Association. Our chapter, one of over 150 clubs in Kansas, is in the northwest corner of the state. We meet once a month with about 20 families, most of whom enjoy fishing.

We enjoy camping at our state parks and other fishing areas with camping facilities and think they are wonderful. Our chapter and a large number of people in our area are becoming much concerned about some of our rules and regulations controlling fishermen.

First, we believe the competition with particularly Nebraska and Colorado fishermen coming into Kansas is due to the low non-resident permit cost to Kansas. We believe the nonresident permits should be on an equal with the bordering states.

Another problem we think should be given some consideration is the use of trotlines and throwlines. Fishermen from our bordering states who are prohibited from these methods of fishing in their own states can come to Kansas and fish by any method they wish for approximately the same cost to them as they can fish in their

(continued)



own state as residents and not much more than it costs a Kansas resident to fish in his own state.

We do a lot of fishing from a boat and it is very apparent to us of the tremendous increase in the number of these unsportsmanlike fish hogs using trotlines and throwlines.

I would appreciate hearing from the Fish & Game Commission in regards to these problems. I can discuss your views with our local chapter and if you should see need for some changes in these regulations, I am sure you will be supported by Kansas Campers Association of N.C.H.A.

Lawrence and Libbie Shaw  
Oberlin

*We appreciate your concern for the fisheries resource in Kansas but it is impossible to enforce separate rules for nonresident and resident fishermen. The same rules governing use of trotlines apply to residents and nonresidents alike.*

*To increase effectiveness of law enforcement efforts aimed at setline fishermen the Fish & Game Commission is considering implementing a statewide law requiring the labeling of lines with the user's name and address. Currently, that restriction varies, with some private and county governments requiring the practice on waters they administer.*

*Our nonresident fishing license fee was raised to \$15 Jan. 1 of this year.*

\* \* \* \* \*

### QUICK KUDO

We just want to express how much we enjoy your magazine. The articles are well-written and the photography is beautiful.

Dale T. Paxton  
Lawrence

\* \* \*

### CLOSE CALL

I almost did not renew my subscription, being a Missouri resident now, but KANSAS FISH &

GAME is such a darn good magazine I could not resist. Thanks for the past good entertainment and I'm looking forward to the future.

Dave Cody  
Kansas City, Mo.

\* \* \*

### COMPLIMENTS

I want to tell you how much my husband and I enjoy your magazine. The articles have much useful and interesting information, and I especially enjoy the illustrations, especially the wildlife painting reproductions. The quality of paper is good, and the color printing is super.

Mrs. E. H. Hoover  
Pratt

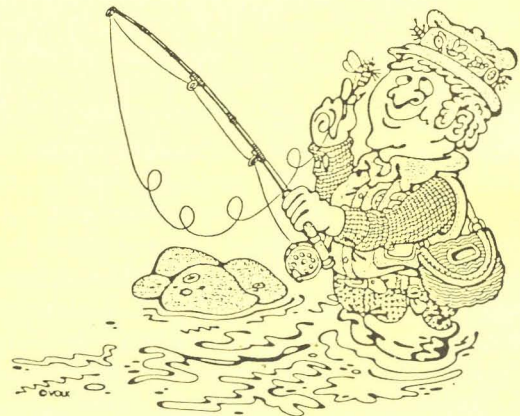
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### 'NOTHER COMPLIMENT

Just a note to tell you how much I enjoy the magazine. It has had some of the finest articles I have ever read. Keep up the fine articles.

Mike O'Neal  
Ellinwood

\* \* \*







### ANTELOPE ADMIRERS

We thought you might be interested in this picture we took on Feb. 4 of the antelope that was released in Chase County this year. The picture was taken about one and one-half miles south of Bazaar on Sharp's Creek Road.

Our neighbors saw 30 head last weekend. They were about one and one-half miles south of the point where this picture was taken. Also, another neighbor reports about 18 head are staying in pasture within a mile or so of the same point. He sees them every day or so. We know of

several that died but lots of them made it after the severe winter. We saw between 45 and 50 head the day we took the picture. Couldn't be sure because they were going over the hill, but we could see later that more were over the hill, too.

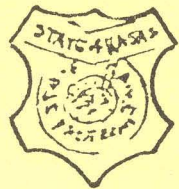
We're very happy to have them around. We live about three miles north of Bazaar but haven't seen any this far north yet.

Mr. and Mrs. Ted Scott  
Cottonwood Falls

\* \* \*

**GOT SOMETHING TO SAY?** *We welcome letters to the editor on any subject you care to address. All we ask is that you keep the letter as short as is reasonable. Letters should be addressed to: Editor, KANSAS FISH & GAME Magazine, R.R. 2, Box 54A, Pratt, Ks. 67124.*





## It's The Law.

No doubt about it. The court-ordered punishments assessed violators of fish and game laws confirms the fact that it's just not worth it to step outside the law. Consider the following two recent examples:

— Two men paid a total of \$665 in fines in Greenwood County District Court on charges of illegally netting fish. Gary L. Carter, 41, Wichita, and Luis Raul Caballero, 33, Chihuahua, Mexico, were arrested by Game Protectors Don Clarke and Al Halbrook as they ran their nets in the Verdigris River one Sunday morning. The game protectors were assisted by fisheries biologist Tom Giffin. Each of the two men was charged with two counts of possessing illegal fishing devices. Carter was also charged with operating a boat with improper number display and insufficient life vests. Caballero was assessed the additional charge of fishing without a license. In addition to the fine, two 100-foot trammel nets, a 12-foot boat, an out-board motor and boat trailer were confiscated. Caballero was detained as an illegal alien and turned over to immigration authorities for deportation.

— Two Lyons men—David R. McKinnis and Martin D. Sheridan—were charged in Ellsworth County District Court with killing a deer during closed season. Area Enforcement Supervisor John Lingg said the investigation was conducted in the Lyons area but it was found that the deer had been shot in Ellsworth County. The two men were assessed fines and costs totalling \$639.50.

### BIG BASIN AREA EARNS NATIONAL RECOGNITION

An historically-famous geologic feature in southwest Kansas apparently has some powerful friends in Washington, D.C.

The Big Basin Prairie Preserve, a 1,818-acre area in Clark County, has been designated a Natural Landmark, according to word received from the office of U.S. Sen. Robert Dole. The area, acquired by the Fish and Game in 1974, earned the designation because of its unique collapse features formed by groundwater geologic processes.

One of the geologic sinks—St. Jacob's Well—is well know historically as a famous watering hole for travelers passing through the semi-arid region. The grassland is an excellent example of the bluestem-grama prairie which is intensively grazed elsewhere in the central Great Plains, said Bill Hanzlick, game management supervisor for western Kansas.

Since the agency acquired the tract, Fish and Game has been restoring the land to its original condition. Many of the natural forbs and native grasses present a century ago are now found throughout the preserve, Hanzlick reported. Antelope have been released in the Big Basin area and native wildlife populations are doing well, he continued.

The purpose of the Natural Landmark designation is to identify and recognize geologic and ecological areas of national significance. Potential landmarks are chosen through studies conducted by the Department of the Interior in accordance with the Historic Sites Act of 1935.





B. J. Rose

*Drakes are always in breeding plumage in art prints and hunting magazines. In the real world, they're often less impressive. This juvenile male shoveler (above) is exchanging his hen-like juvenile plumage for breeding colors. In another few weeks, he'll be on the prod for his first mate. The juvenile canvasback drake shown below is somewhat too light across the back to be taken for a hen but is far from the rust and white of his adult plumage.*





ing ducks inhabit northern lakes. While molting dabblers occasionally seek cover on land, divers feed in the open water throughout the day and rarely move onto shore. They rely on their diving ability to escape danger, often remaining submerged for thirty seconds or more. On coming up for air, only the duck's bill and the top of the head break the surface. Thus by repeated dives, an entire flock can slip silently away from an intruder.

While water offers ducks the greatest measure of safety during flightlessness, both dabblers and divers will take to land under extreme circumstances, as in the case of a pond or slough drying up. Oring reports one

instance on the Camas Refuge in which several dozen ducks abandoned a dried-up slough and traveled a quarter of a mile overland to water, "a gradual movement, apparently, since the flightless population decreased before the slough dried completely and the total absence of ducks was noted."

During wing molt, the breast atrophies noticeably, for muscle tissue protein is being transferred to the skin to provide building materials for the developing feathers. At the same time, the muscles of the legs actually increase in size and strength, enhancing walking and swimming ability. And nature reduces the flightless drake's vulnerability in yet another way:

## FOR THE HUNTER

### Wood Duck vs. Teal

*The dull, postbreeding plumage exhibited by most early migrants all looks about the same to the inexperienced hunter's eye. For that reason, early teal season can test the duck identification skills of all but the most experienced waterfowlers.*

*Back in 1965, the early teal season was closed at Marais des Cygnes and Neosho Wildlife Areas in southeast Kansas because hunters were mistaking wood ducks for teal. The misidentification problem was most acute in those areas because of the abundance of wood ducks there during the early season. Those two popular waterfowling spots were reopened last year but special efforts were undertaken by the Fish and Game Commission to avoid the same duck identification problems that had closed those marshes to early teal shooting 13 years earlier. Short courses in duck identification were conducted in several area cities prior to the season opening. Hunters who didn't attend the pre-season*

*courses were required to attend a condensed version of the program at Neosho and Marais des Cygnes check stations before being allowed to hunt.*

*While the seasonal variations in plumage color patterns can confound hunters, there are other distinguishing characteristics which aid identification.*

*Teal usually fly in closely bunched flocks that twist in unison back and forth at low levels over the marsh before they drop in. Even at dawn and dusk, teal can be recognized by this twisting, tightly-grouped flight pattern. Their wing beat is rapid, their tails short, and they fly with their necks fully extended. The striking facial crescent of the male blue-wing isn't present in early fall, and the characteristic teal wing color patterns are often difficult to spot.*

*Wood ducks and shovelers, the ducks most commonly mistaken for teal, don't usually twist and zig-zag in flight, and they have a slower wing beat than teal. Gen-*

*erally, ducks flying in pairs during the teal season will be wood ducks, not teal. The woodie bobs its head up and down as it flies, a characteristic that is often easy to spot as the bird passes within gun range. When hunting in flooded timber, it's a good idea to remember that wood ducks usually fly through the woods while teal fly over the trees and drop nearly straight down into openings. The wood duck's longer and squarer tail also distinguishes it from teal.*

*The shoveler has a large blue patch on the leading edge of its wing similar to the blue wing's, but the shoveler is much larger than the teal, holds its head high in flight, and has a long, drooping bill that looks like it's carrying a clump of mud.*

*A pocket-sized waterfowl identification booklet, featuring color illustrations of ducks frequenting the Central Flyway, is available from the Fish and Game Commission. The booklet is water-resistant so that it can be carried to the areas to be hunted.*

*Ultimately, there is no substitute for experience in duck identification. A hunter can greatly aid himself by conducting one or more pre-season scouting trips to the hunting site. Observing the ducks on the marsh a few days before the season begins can provide a valuable head start in preparing for opening day.*



during the molting shift the gaudy body plumage transforms into an inconspicuous suit of drab that helps conceal his presence from predators. This hiding, or "eclipse" plumage closely resembles the plumage of the female in most species. The drake retains the protective camouflage appearance only a short time, for soon after wing molt is completed a second molt occurs in which the bright breeding plumage is restored.

The duck identity problems that confound waterfowlers during early teal season in Kansas result largely from the dull postbreeding plumage most drakes wear at this time. The pictures of brilliantly colored teal, wood duck, and shoveler drakes in popular bird guides don't correspond to the mottled brown birds circling a hunter's decoys in September. Blue-winged teal retain their eclipse plumage well into early winter, and drakes of most other species are still in at least partial eclipse in the early fall. The difficulty of distinguishing targets eases somewhat by the time regular waterfowl season rolls around in late October. Many drakes are still in transition to breeding plumage, but the distinctive coloration and markings have begun to appear in most individuals.

The female duck molts twice a year like the male. In most species, however, breeding and postbreeding plumages are nearly identical and closely resemble the eclipse plumage of the male. Body molt begins earlier for the female; much of the breeding plumage is replaced prior to nesting. When females molt their old

down, a longer, darker down replaces it. This special nesting down insulates and protects the eggs during incubation.

There is no major molt migration among females, and because of brood-rearing responsibilities wing molt comes at a different time than for drakes. "The evidence suggests that many hens which have raised their broods travel only short distances or remain on the same marsh for the flightless stage. The wing feather molt of the female does not begin until after she has left her family; hence the flightless schedule is much later than it is in the male, some females being flightless in October" (Hochbaum). In late summer the hen molts her body plumage again. Biologists consider this new complement of feathers to be the breeding plumage, because the molt is concurrent with the breeding molt of the male.

The plumage of immature ducks closely resembles the eclipse plumage of adults. In August, young of the year undergo a body molt corresponding to the postbreeding molt in mature birds, in which the juvenal plumage is lost and the first adult-like feathers are acquired. Unlike adults, however, the young birds do not molt the flight feathers. In most species, immature birds begin to acquire their first breeding plumage in late September or early October.

Geese differ from their smaller cousins in that they have only one plumage per year and one complete molt. Both sexes undergo loss and replacement of the



*One duck that always seems to be in molt—the gadwall. Although the plumages of most ducks change with the seasons, their silhouettes, flight patterns do not. Neither do their wings. Each species has characteristic plumage patterns and colors on the wing which are diagnostic at almost any time.*





*This fleet of youngsters will go through a rapid molt to make the fall migration. Their mother will not replace her flight feathers until she has raised them, one reason that the first wave of mallards arriving in Kansas is made up of drakes.*

body feathers in the period from early May through the end of July. Like ducks, geese lose their flight feathers all at once at the climax of the molt and are unable to fly for several weeks. There is no molting shift in geese, however; mates stay together throughout the incubation period and usually undergo flightlessness on the nesting grounds.

In addition to providing for renewal of worn feathers, the complex molts of most species of ducks serve a reproductive function: the colorful dress acquired seasonally by the male helps him woo a new mate each spring in the elaborate courtship ritual. Since geese mate for life, the gander has no need of a

special nuptial plumage. Male and female are nearly identical in appearance year around, and a single molt is sufficient to keep pace with feather wear.

In all species of waterfowl, the molts and plumages are highly specialized to accommodate varied and demanding living habits. The ability of ducks and geese to migrate thousands of miles, often under weather conditions that would ground most aircraft, and their phenomenal resistance to both arctic cold and tropical heat testify to nature's resourcefulness in adapting animals to unusual conditions; that these adaptations should also produce remarkable physical beauty demonstrates a profound sense of style as well. □



# Prairie Reserves: Valuable Relicts?



Theodore Van Bruggen

**N**atural prairies, like other broad expanses of ecosystem types such as deciduous or coniferous forests, have been taken for granted over the decades because man had the idea that prairie resources were inexhaustible. During and after the years of western expansion in North America, enough regeneration of exploited forests and grasslands occurred to give the impression that depletion was impossible. The last fifty years, however, have made us painfully aware that this is not true. The powerful machines of modern agriculture have enabled farmers to utilize most of the available land for production, with the result that of all the natural landscape types, none has been so subtly destroyed as the grasslands.

The prairie ecosystem developed in continental regions where climates are harsh. Temperature extremes, extended droughts, an inverse precipitation-evaporation ratio, fire, and occasional overgrazing interact to produce the vegetation types that comprise the grasslands of North America. But because of these complex variables, the native prairie is a fragile life form which is easily upset and destroyed. Except for the dominating grasses species, many prairie inhabitants are perennials that are relatively rare and cannot withstand farming or excessive grazing without becoming threatened with extinction.

The prairies of North America are fast disappearing. Preservation of these valuable relicts NOW is imperative.

## The North American Prairie

The grassland province of North America occupies

*Reprinted from Rangelands magazine with permission of the author.*

the entire central continental region from the coniferous forests of Canada south to the deserts of Mexico. The Rocky Mountains border the Great Plains grasslands to the west. The eastern boundary reaches to the Great Lakes and beyond. The grassland province is a broad belt where grasses and patches of forest form a mosaic. Geologic history indicates that when climates were drier and somewhat warmer, the prairie reached east into Ohio.

The grassland province is broadly divisible north to south into three types of prairie: the tall-grass or true prairie to the east, the short-grass, or plains, to the west, and the mixed-grass or mid-grass prairie in between. The boundaries between these three broad strips are gradual and highly irregular. The zonation from east to west is a function of increased aridity, which results in a gradual change in species of grasses and forbs that dominate any particular area.

As might be expected, the true or tall-grass prairie in the east is now some of the richest agricultural land in the world. Receiving from twenty-seven to thirty-two inches of rainfall per year, it has a deep, dark, fertile soil that now forms the corn belt. The plains, or short-grass prairie to the west, are dominated by short grasses: buffalo grass (*Buchloe dactyloides*) and blue grama (*Bouteloua gracilis*). They grow to only a few inches in height as compared to the tall blue stem, *Andropogon gerardi*, or Indian grass, *Sorghastrum avenaceum*, which in the true prairie reaches over six feet in height.

The long-term climatic elements of rainfall and air flow patterns across the continental region of North America have had a dominant effect on the development of the grassland province. Rainfall varies from ten inches per year in the west to thirty or more inches in the east. Extended periods of drought may occur in



the prairie at any time, occasionally of three to five years in duration. Almost every year during the growing season, a drought of thirty-five days or so occurs someplace in this region, with a sixty- to seventy-day drought at least once every ten years. Paleocologists estimate that of the past 400 years, 154 were drought years in the grassland province.

Prevailing winds are generally from the west, although polar air masses from Canada and maritime tropical air from the Gulf Coast influence the precipitation pattern. The diverging westerlies from the higher elevations produce a bulge in the eastern boundary of the prairie, modifying the usual north-south lines of similar precipitation—evaporation ratios.

Frequent fires, either of natural origin or man-made, maintained the prairie as an essentially treeless area before white men, fences, and plows were part of the landscape. When drought conditions occurred, the prairie litter was tinder dry, and high winds could spread a prairie fire at speeds that only the fastest of wildlife could escape. This natural occurrence of fire was beneficial to the prairie economy. The above-ground litter was reduced to ash by the fire, releasing minerals to the already rich topsoil. Meanwhile, neither the prairie sod, with its below-ground inhabitants (the rootstocks and rhizomes of the perennial plants) nor the teeming animal life was injured in the least.

Fossil excavations in the grassland province attest to the fact that the ancestors of the great herds of bison, antelope, elk, deer, and other ruminant animals roamed the plains up to fifty million years ago. Oreodonts, ruminating pigs that chewed their cuds, were especially common. Titanotheres, slightly smaller than today's elephants, were also common on the Oligocene plains. Ancestors of the modern horse, not much larger than a collie dog, were also present on these plains. Their skeletons, teeth, and other physical features leave little doubt that they were grazers of grasses and other forbs. Biologists firmly believe that the evolution of grazing animals is closely linked with the availability of a food source that was not unlike the prairie of today. Most of the larger animals moved in great numbers, migrating from wintering regions of lesser food to regions of more abundant grasses. Their grazing of the prairie, however, was always intermittent, allowing the overgrazed areas to recover.

Early explorers and settlers of the New World had little knowledge of prairie. European man came from a natively forested region and first forged a civilization in a similarly forested region in New England. Most of the Scotch, Irish, and German immigrants who encountered the treeless plains in their westward march considered it a wasteland. They soon discovered, however, that it was much easier to turn the prairie sod to provide a seed bed for their crops than to saw and chop trees from the forests. After the Civil War, the

rush for land made available by the 1862 Homestead Act, the perfection of the moldboard plow, the relegation of most Indian tribes to reservations, and the use of barbed wire fences altered the prairie. When the prairie became crisscrossed with fences, the free movement of cattle was restricted. Invariably, cattle were kept in enclosures in greater numbers than the range could adequately support. They could not move on when the grasses were depleted. The grasses and forbs had no chance to manufacture reserve foods for storage in the roots. This gradual weakening of the existing grasses and other plants utilized by the cattle caused an imbalance in the dominant life forms. Weedy annuals and less palatable grasses replaced the native grasses. In addition, the prevention of prairie fires allowed shrubs and trees to invade the essentially treeless grassland.

Has the prairie been permanently altered? In a way, yes.

### Preserving Prairie

All of us, in one way or another, practice preservation. The Dead Sea Scrolls, the Declaration of Independence, grandfather's spade or butter churn—all have some significance in terms of preservation. The prairie is part of our heritage. Many of our ancestors lived their entire lives on the ragged edge of civilization in "soddies," primitive places of protection where masses of prairie turf literally formed the walls and ceilings of their homes.

The Great Plains prairie has a permanent place in the cultural life of the heartland of North America. The prairie belongs to all of us. It is a natural environment that young children should see and enjoy. Students of science and history should study it. Artists and farmers should be awed by its aesthetic beauty as well as its utility.

As a scientist, I marvel at the sight of a bobolink or red-winged black bird swaying in the wind on a native compass plant in the prairie. The pasque flower in spring, the red-orange of prickly pears flowering in summer, and the many white and blue asters of autumn have an attractiveness that is unmatched. The bronze hue of maturing big blue stem, towering over as many as twenty different species of grasses in a fifty-foot radius of prairie, is a thrilling sight to the student, the rancher, or the farmer who appreciates our roots and the reasons for our existence.

Only a few of the relict prairie areas that are acquired for preservation are in a pristine or truly native condition. After 150 years of farming, very little natural grassland prairie remains. Rocky soils, steep hillsides, wet meadows and railroad/roadside embankments comprise most of the areas which were not plowed. Over the years these areas have been identified by conservationists, biologists, or amateurs as possessing characteristics that are worthy of preservation. Most relict prairies are overgrazed, some severely so. In hilly









Ed Schulenberg

areas overgrazing usually resulted in erosion, and the gullies that formed were a deterrent to plowing. Some prairies have large boulders that were left behind by the masses of ice and glacial till that slowly moved southward during the Pleistocene. Smaller stones were removed from the surface by homesteaders during pioneer days with the use of "stone boats," but manual labor and horse-drawn vehicles were inadequate where the boulders were 3 or 4 feet in diameter. Those prairie areas strewn with large boulders protruding from or immediately below the surface were almost impossible to plow. Thus the prairie environment was preserved unless excessive overgrazing occurred. Other prairies worth preserving, especially in the eastern part of the true prairie, have encroaching woody vegetation in draws and swales and on north and east facing slopes. The moist eastern edge of the prairie, which gives way to tree-covered lands to the east, is a continual struggle between grasses and trees for domination. Protection from fires, either natural or man-made, permits shrubs and trees to invade. However, because the prairie is very old and in a state of dynamic equilibrium, overgrazing or the invasion of trees are but temporary changes of its face which are rectified with proper management techniques. Only deep moldboard plowing, which turns the sod over, slicing all roots and rhizomes, completely destroys the prairie.

Prairie preserves are managed to simulate natural conditions. Some are carefully grazed during certain periods of the growing season, usually in early summer

and early autumn. Late summer mowing every two or three years with a harvest of hay is also desirable. In the eastern tall grass prairies, a late winter or early spring controlled burn is beneficial to remove excess litter and to recycle the minerals. Controlled burning also serves to remove woody shrubs and trees that would otherwise "take over" the prairie.

#### Uses of Prairie Preserves

Perhaps the best long-term use of prairie preserves is the scientific and practical value they have in serving as sites for baseline monitoring of the prairie environment. The well-known principles of experimental control are possible when an area in a natural state can serve as the control, or as a comparison to the experimental plot. Without the natural prairie, the "control" would not be there as a sensible or practical way to evaluate the changes in the experimental plot. Such monitoring studies may relate to erosion, use of fertilizers or pesticides, soil texture, tillage practices, plant vigor, soil microorganisms, water runoff, or any number of quantitative or qualitative measurements that can be made which compare the results of adapting the natural prairie to man's use.

The diversity of plant and animal organisms inhabiting the natural prairie serves to complement the baseline monitoring value of natural prairie. These species are the source of genetic material which may be crossed with domestic species to produce offspring with the potential of adapting to changing cultural





Ken Siebhen

*Three common residents of the prairie: the coyote, prairie clover, and prairie coneflower. What appears to be a monotonous expanse of grass dissolves into an infinitely varied system when examined more closely. The grass itself is mixed with hundreds of broad-leaved flowering plants which support a number of specialized small mammals and birds. This base supports the predators which are probably more visible on the prairie than in any other cover type. Actually, very little of the prairie is hidden; sooner or later, the patient observer can see it all.*



practices, resisting disease, or increasing production. Perhaps native prairies are of more value as a storehouse of wild species that show promise for domestication. Consider the total assemblage of wild plants known to occur in the temperate world in areas that principally were original prairie or grassland. Conservative estimates number up to several thousand species of grasses, forbs, and shrubs. These same temperate grassland regions are responsible for most of modern agriculture's production of food, fiber, and livestock. Yet today the entire agricultural economy is precariously perched on the genetic bases of less than twenty different grass and forb species. The greatest benefit for a starving world might be to preserve a small corner of native prairie rather than destroying the diversity of species present for the sake of growing a few more bushels of grain.

The diversity of organisms in native prairie also serve as indicators of how soil, plants, and animals interrelate in an ecological way. One of the most immediate and practical ways in which this type of information is used is in the reclaiming of western land destroyed by strip mining. Intelligent and efficient methods of restoring prairie are now taking place because seeds and other plant parts, along with their small animal and microorganism "fellow travelers," are transplanted from prairies that are either preserved or in a relatively natural state.

Plant scientists can utilize prairie preserves for the study of long-term prairie/plant interactions. The soil

binding capacity of prairie plants is well known to the soil conservationist, the rancher in the sandhills of Nebraska, and those who remember the dust bowl of the dirty thirties. For example, it has been determined that the topsoil in native prairie is twice as thick as that in adjacent land that has been farmed for 100 years. In spite of the efforts to conserve soil, wind and water erosion continues to be the most serious threat to midwestern croplands.

In these days of concern for endangered species, natural prairie preserves are obvious communities which harbor plant species that are either endangered or threatened by extinction. We cannot preserve the species of plants or animals without preserving the habitat in which the plants or animals exist. It must be realized, however, that sometimes, no matter how extensive the efforts to protect individual species, they cannot be saved. However, the availability of suitable habitats has given rare forms their best chance for continued survival.

### **The Prairie Preserve System**

A limited number of federal, state, and private agencies, as well as local communities are active in promoting the acquisition and maintenance of prairie preserves. Many thousands of acres of prairie managed by federal agencies are found in national parks, national monuments, and national forest lands in the grassland province. The Soil Conservation Act of 1935 was instrumental in reclaiming grasslands ruined by



drought and misuse during the dirty thirties. Presently over three million acres of grasslands in eight states extending from North Dakota to Texas comprise the National Grasslands. These were submarginal farms and depleted rangelands which were purchased by the Federal Government for the restoration of grassland agriculture. They now serve as demonstration areas for prairie restoration, to show how lands unsuitable for cultivation may be converted to grass for the benefit of both land and people. Much of the National Grasslands is now leased to ranchers for controlled grazing.

Recently conservationists have inventoried and identified twenty-one areas in the National Grasslands for possible inclusion into the Wilderness System. Although the total acreage, less than 300,000 acres, is a small fraction of the entire Grassland, it represents a significant amount that may ultimately be preserved as prairie wilderness. The important aspect of this action is not so much the acreage involved as in the incorporation of the concept of preserving prairie permanently and designating it as prairie wilderness.

The Nature Conservancy is an organization that has become very active in acquiring prime relict prairies. By the end of 1977 this organization owned just under 40,000 acres of grassland, in tracts ranging in size from five to over 8,000 acres, in twelve midwestern states. Receiving its support from the public, the Nature Conservancy is a national conservation organization whose primary objective is to preserve and to protect ecologically and environmentally significant land and the diversity of life it supports. The Conservancy purchases lands using its revolving fund, which is then replenished through local fund-raising efforts. A unique capability of the Conservancy is to move quickly by acquiring land for purchase in advance of government agencies' ability to do so.

Many people have bequeathed tracts of prairie or provided funds for purchase of prairie to be preserved and managed by the Nature Conservancy. Ownership of the area is placed in trust, under restriction, limiting its transfer in the future. This prevents purchase of the land by the highest bidder or by the profit-minded corporation to "develop." An outstanding example is that of Miss Katharine Ordway, who in 1971 established the Ordway Prairie system as a memorial to pioneer environmentalist Samuel H. Ordway, Jr., a founder of the Conservation Foundation. The present Ordway Prairie system totals over twenty sanctuaries in five states, consisting of almost 24,000 acres.

The Nature Conservancy works with local, state, and federal agencies in acquisition and management. In Missouri the Conservancy's prairies are leased to and managed by state agencies. The Konza Prairie in Kansas, the largest presently owned by the Conservancy, is leased to Kansas State University as a research station. In Illinois the Natural History Survey and the state's Department of Conservation have joined forces to as-

sist in management of their prairie preserves. In South Dakota the Nature Conservancy operates the 7,600-acre Samuel H. Ordway Memorial Prairie Research Station with a full-time manager who is a wildlife and range management graduate. In Minnesota, local chapters are instrumental in managing over thirty-three tracts of the Conservancy's prairies. Techniques of management, results of research, and educational benefits are shared to foster an effective and continuing stewardship of the prairie.

The Vermillion Prairie, only twenty-two acres in size, in southeastern South Dakota, was a boulder-filled, overgrazed hillside that overlooks the Missouri River flood plain. Help from the Nature Conservancy resulted in a local fund-raising effort that brought in enough money to purchase the tract. Our appeal to people to support the project brought some unusual responses. A number of those who contributed felt a special kinship to the land because of their homesteading ancestors. Others stated that the prairie project made possible tangible participation in something that dealt with their cultural heritage.

### The Preserves of Tomorrow

Although each new spring brings with it the farmers' and ranchers' assessment of the need to place more of the already marginal prairie land into production, a good start has been made to preserve some of the quiet corners of all kinds of prairie in the heartland of the United States. Do you have in mind a prairie area you think should be preserved? It need not be larger than an odd corner of a ranch; it may be a hillside filled with boulders, or it may be an abandoned railroad right-of-way.

The Nature Conservancy, cooperating with like-minded federal, state, and private organizations, has achieved recent success toward its goal of having a network of prairie preserves in the Midwest. It deserves to be vigorously supported. If you are interested write the *Nature Conservancy, 1800 Kent Street, Arlington, Virginia 22209*. Get involved! Our children, and their children, perhaps a hundred years from now, will find cause to thank us for our foresight and the heritage we have left them. □

*(In our next issue, we'll look at the pros and cons of the proposed prairie national park in Kansas' Flint Hills. Ed.)*

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***Environmental legislation and new international agreements are changing the face of conservation. Is the new look an improvement?***

## ***Conservation in the Seventies: The New Battles***

**T**hrough most of its history, the conservation movement has been a guerilla action ramrodded by a tiny group of outdoorsmen who seem to have gotten their kicks fighting against overwhelming odds. Luckily for North American wildlife, there is a tremendous unifying influence in the “us-against-the-world” attitude of a small group which carried conservation through almost a hundred years of its most critical fights. The factions that exist in the ranks of modern conservationists have always been around in seminal form: the sportsmen, the preservationists, the politicians, and the anti-hunters. The relationships among the groups have been an odd combination of cooperation and bitter conflict, but in spite of the occasional sparks in the early years, things seemed to get done.

Hunters like George Bird Grinnell, Roosevelt, and Ding Darling joined preservationists and anti-hunters to push through the most impressive set of environmental laws in history. The reservation of Yellowstone, the Migratory Bird Treaty, the Lacey Act, formation of the Fish and Wildlife Service, the Pittman-Robertson excise tax. These laws established the foundation of wildlife management in the U.S. and the beginning of international cooperation to protect wildlife resources. In many cases, they flouted all rules of procedure.

They were unprecedented in the U.S. system; in fact, there was nothing in the fabric of ten thousand years of government that predicted or even allowed any of them. The conservation cause was aided in the late nineteenth and early twentieth centuries by the steep decline of hundreds of wildlife populations, but even with this clearcut evidence of the need for action, the success of a handful of conservationists through their first century was spectacular.

In the last decade or so, things have changed. It's almost as if we can't stand success. A flurry of environmental action in the early seventies has been overshadowed by a long list of problems. Right now, three items stand apart as indications of trouble in the ranks:

### ***The anti-hunters vs. Pittman-Robertson—***

In 1970, the National Environmental Policy Act (NEPA) directed all federal agencies to examine their programs and assemble impact statements on those that had a significant impact on the environment, good or bad. The Fish and Wildlife Service, recognizing the impact of Pittman-Robertson funding of wildlife management, set out to document the program. Eight years later, they were still documenting.

None of the older, traditional conservation groups



*The nation's first bird and a sizeable proportion of the world's population of black-footed ferrets. The Endangered Species Act was put together with glamour animals like these in mind. It took the Tellico Dam to show people that an animal doesn't have to be cute or spectacular to be endangered. What this realization will mean for the endangered species program is hard to anticipate.*



ever considered pressuring them to finish the job since the Pittman-Robertson Act has always been one of the shining examples of pro-environmental legislation, but there were outfits who felt differently. The Friends of Animals brought suit under NEPA, asking the courts to stop Pittman-Robertson funding until the Fish and Wildlife Service filed their impact statement, not on the program as a whole but on each project that had a significant environmental impact. After feeble attempts at a defense by the Justice Department, the Fish and Wildlife Service found itself temporarily without a Pittman-Robertson program.

Every state wildlife agency in the country stood to lose their shirts if the ruling had been made permanent, so they all joined the suit as co-defendants. Legal representatives of the International Association of Fish and Wildlife Agencies, the official organization of state and federal conservation agencies in North America, saved the day at the last possible second. They managed to get the case transferred to another court where the suit was dismissed. If the Friends of Animals want to continue the action, they will have to bring individual suits against each Pittman-Robertson project they don't support.

To an insider, the Friends of Animals don't look much like a conservation organization, but since their professed goal is to protect wildlife from the ravages of hunting, fishing, and trapping, they have convinced



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themselves and a lot of outsiders, including a few Congressmen, that their primary concern is conservation. They are certainly entitled to oppose hunting and embrace a conservation ethic at the same time, but it is interesting they can continue to voice their support for wildlife while attacking a program that raised \$86 million for wildlife management in 1979 alone. The government's vulnerability in this matter is also interesting. Legal aid to the Fish and Wildlife Service was so pitiful that only outside help saved Pittman-Robertson from disaster.

### *The feds vs. the states—*

There has been periodic friction between state wildlife agencies and the Fish and Wildlife Service over the last twenty years. The reasons are innumerable, but one sore spot is the management authority given to the Service by the Endangered Species Act. When the act was passed into law, it was one of those apple pie issues that no sensible politician would ever oppose. Most Congressmen had a vague idea that the law would help save the bald eagle which was true, but they were startled to find that it also protected clams, isopods, and snail darters. Actually, the law was in effect for eight years and touched thousands of projects before it finally came up against a project where compromise was just not possible—Tellico Dam. That single face-off suddenly informed Congress of the potential of their act.

The states had gotten their lesson some years earlier. The act started out in the sixties as a list of species that were having trouble adapting to shrinking habitat or overexploitation. Included on that list were the timber wolf, the alligator, and a number of other species that were felt to be symbolic of the problem of impending extinction. Symbols, however, take years to develop and are seldom what they're represented to be.

The alligators had in fact been threatened by leather poachers during the forties and fifties, but by the time the Endangered Species Act got around to classifying them, they were well on their way to recovery. State wildlife agencies in Louisiana and Florida found themselves caught between federal pressure to protect the alligator and the complaints of suburbanites who were tired of meeting eight-foot bull gators in their back yards. It took years to convince the Fish and Wildlife Service that the classification of the alligator should be reconsidered.

The situation surrounding Minnesota timber wolves was even more difficult. There is no doubt that the timber wolf is an endangered species in the continental U.S. as a whole. Unfortunately, there is a corner of Minnesota that is an exception. Populations of wolves in the national forests of northeast Minnesota have begun to compete with deer hunters for the local whitetails, and there are reports of wolves taking cattle

from northern farms. The state had no choice in its management approach; timber wolf management was clearly laid out in the Endangered Species Act. Local outrage finally forced a compromise in which federal and state biologists put together a complex management plan that protected wolves in remote areas and allowed for limited control in farm country where the packs were causing trouble.

The compromise could have been reached before the act was passed or it could have been allowed for in early administration of the law. Neither course was taken. As a result, local bad feeling toward wolves and federal agents will take years to subside.

### *U.S. vs. the World—*

The United States has felt for a number of years that it has to lead the way in international wildlife management or no one else will. Our ongoing agreements with Canada and Mexico have worked surprisingly well over the years, in spite of occasional problems like Mexico's recent call for international protection of the bird family Corvidae which includes an endangered Mexican jay—and the highly unendangered American crow. Much to the consternation of state wildlife agencies, the final agreement made it illegal to shoot either species unless it was attacking stock or crops. This brush in the middle of an otherwise exemplary arrangement should have told us something about the potential for confusion in international wildlife pacts. Apparently, we missed the point.

In 1976 at a meeting of the Convention on the International Trade in Endangered Species, Great Britain proposed that the entire cat family be added to the list of species to be monitored to find out whether commercial trade was endangering populations. The British probably had the snow leopard, tiger, and ocelot in mind when they drafted the proposal. They probably did not give any thought to the American bobcat. The suggested amendment passed without comment even from the U.S. delegation, and bobcat management was taken out of the hands of the states overnight. A number of state agencies submitted data that showed healthy bobcat populations, but the provision stayed.

The bobcat situation may be overshadowed by another international agreement now in the works. A meeting will be held in Bonn, Germany this summer to work out the final difficulties in a proposed International Migratory Species Convention. The Convention addresses the problems involved with managing wildlife that moves across national borders, a laudable goal, but its approach has stirred negative reactions from every conservation agency in the United States and Canada. In the proposal, a migratory species is defined as any species that crosses national boundaries for any reason. The current draft includes a list of all the





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species that are to be covered, and it is quite conservative. Only two species, the Mexican free-tailed bat and the Kirtland's warbler, would immediately affect the U.S. A species whose status is "unfavorable" must be covered by a management plan including all countries in the species, range, and the agreement must conform to strict regulations listed in the proposal. These include protection and restoration of habitat, control of any land development that might further endanger the species, and closure of any hunting for that species. Species cannot be added to the "unfavorable" list at the Bonn meeting, but in later meetings a species can be added by majority vote of the countries who sign the agreement.

This last provision is the one that has wildlife agencies most concerned. During last year's unusually harsh winter, a number of Saskatchewan antelope wandered down into Montana looking for emergency rations. According to the convention, that movement makes the antelope eligible for inclusion on one of the lists set up under the agreement. If a third country should have reason to fear for the well being of these Saskatchewan pronghorns, they could drum up support, include the antelope on the "unfavorable status" list, and force Canada and the U.S. to undertake major

management efforts whether or not biologists in either country felt there was a problem. In the right circumstances, this agreement might apply to more than just one group of Saskatchewan antelope; it could include all pronghorns in North America. The same thing could be done with any other species from bighorn sheep to carrion beetles as long as at least one member of the species has crossed a national border and some country was interested in putting it on the Convention's list.

Continued strenuous objections from professional societies and state agencies have slowly convinced the State Department and Fish and Wildlife Service of the danger of signing the convention as it exists. However, comments made by these agencies leave a faint impression that they are being pressured by the administration to sign the agreement whether or not the meeting in Bonn accepts our suggested revisions. In addition, it is not clear whether a representative of state wildlife interests will even be included in the official U.S. delegation.

There are elements of conservation that border on art, but the foundation of the concept is the science of wildlife biology, a discipline that seems to have drawn more uninformed interest and kibbitzing in the last



*Industry has felt the pressure of the National Environmental Policy Act for years. Any project that has a major effect on the environment and involves federal funding must have an environmental impact statement. Wildlife agencies welcomed the act—until they found that it could apply to many of their management practices as well.*



forty years than any other area of technical research. This isn't to say that it takes a technically trained biologist to make intelligent contributions to a management decision. It *does* mean that meaningful comments can only arise from an intimate, long-term, unprejudiced contact with wildlife. This kind of knowledge may be found in a serious bird watcher, an avid bow hunter, a dedicated backpacker or canoeist, as well as in a biologist; it is not likely to exist in a suddenly converted movie star or a Reader's Digest editor with a part-time interest in the Humane Society.

Many of our recent headaches in the conservation movement have been the direct result of ignorance or, even worse, shallow, secondhand knowledge. All four of the cases mentioned here bear the unmistakable mark of the conservation dilettante, especially the international draft agreements where well-meaning people have put together dangerous documents with equal parts of biological and political naivete. The feeling that any action is better than no action can do irreparable harm to management agreements already in existence and irritate local governments or people into opposing all wildlife programs.

A second major difficulty in modern conservation is the emerging struggle for power between factions in

the movement. Until fifteen years ago, hunting and fishing interests led the conservation effort, but the rise of the environmental lobby and the anti-hunting lobby has changed all that. The confrontations that have occurred have left many of the vested sportsman's interests a little gun shy. They've been taught some valuable, if hard, lessons in politics and law in a number of alley fights. Oddly enough, their reaction seems to be a strong movement to disarm the entire conservation movement instead of an attempt to fight internal battles better. It's frightening to hear a hunter or biologist talk about watering down the Environmental Policy Act or the Endangered Species regulations. Although both acts have been used to sting state and federal management agencies, they've helped conservation a hundred times for every instance in which they've hurt.

Maybe the underlying problem is a matter of scale. What was once a small but dedicated group of zealots has become a tangled mass of incompatible groups who are brilliantly capable in lobbying and public relations but have completely lost sight of the resource they got together to protect in the first place. The call for unity in conservation is an increasingly common fixture at conventions of concerned organizations these days. It's not a bad idea, only a little simplistic. There are fundamental differences among many conservation groups that aren't likely to go away at the flourish of a keynote address. It is a little too much to ask a conscientious non-hunter to embrace the avid waterfowler or the waterfowler to bear all the financial burden of some bird watcher's warbler management program. None of those issues is really that important anyway. The key issue is the same as it has always been—the passing of wild land, from the pristine relict of native grass or timber to the weedy pheasant covert. The interests of all conservationists pivot on that one point.

There is plenty of room for wrangling over a wide variety of issues in conservation. We can fight to our hearts' content over the activities that will be allowed on a given piece of natural habitat, hunting or non-hunting, the access we will or won't supply, the political classification of the property, even the management practices that will be applied. The one thing we can't afford to fight over is the reservation of the land itself, its protection from extremes of abuse and development. When political battles among conservationists begin to interfere with this basic goal of conservation, it's time for every responsible outdoorsman to examine his motives, weigh what he expects to gain against what he is almost certain to lose, and look for a solution in the interest of the wild resource.

The line between a legitimate argument and a damaging, even fatal, split in the ranks can be tough to recognize, but our ability to make the distinction is critical to the future of our enjoyment of the outdoors.





