Wisconsin natural resources. Vol. 2, No. 6 November-December 1978

Madison, Wisconsin: Wisconsin Department of Natural Resources, November-December 1978

https://digital.library.wisc.edu/1711.dl/WDI475V4RNI5J9D

Wisconsin NATURAL RESOURCES

NOVEMBER - DECEMBER 1978 • VOL. 2, NUMBER 6 $1.00

Sing, red bird

GEORGE J. KNUDSEN,
Chief Naturalist, DNR

Cardinals are year round Wisconsin residents, and easy to see in winter because their bright red plumage contrasts so strikingly against pure white snow!

In the early 1900's cardinals were rare here, but new land use patterns improved their habitat, and numbers increased dramatically. They love brushy areas and woods borders. Now abundant in southern Wisconsin, they are less common to very rare as you go north to the "big woods."

Early nesters, they sometimes lay their three to five eggs by the third week in April. Hatching in two weeks the young leave the nest in about 10 days.

Cardinals used to be thought of as a southern species, and in the 1850's were popular cage birds and shipped to England and Spain as "Virginia Nightingales."

Illinois, Indiana, Ohio, Virginia, West Virginia, Kentucky and North Carolina have selected the cardinal as their state bird.

Their loud, whistling song can be heard from late winter well into fall, with greatest frequency in spring and early summer. On rare occasions you might even hear a mid-winter song. So, fill your winter bird feeder with sunflower seeds. Song or no, it will be a treat to see this living red "ornament" outside your window Christmas morning!

Owen Gromme painting courtesy of Wild Wings, Lake City, Minnesota, 55041

Contents

Features

Wisconsin Natural Resources

November - December 1978/Volume 2, Number 6

Wisconsin Natural Resources is an official bi-monthly publication of the Wisconsin Department of Natural Resources, 4610 University Avenue, Madison, Wisconsin 53705. The magazine is sustained through paid subscriptions. No tax or license monies are used.

Subscription rates are: $4.50 per year, $8.00 for two years and $11.50 for three years. Single copies $1.00. Notification of address changes must include mailing label and new address. Allow six weeks. Send subscription information and requests to: Wisconsin Natural Resources, P.O. Box 7191, Madison, Wisconsin 53707.

Second-class postage paid at Madison, Wisconsin.

Editor • J. Wolfred Taylor
Circulation & production • Laurel Fisher Steffes
Art Director • Christine Usinger / Paul Tofte Design

Front Cover:
This drawing by eight year old Beth Barrett of West Bend is the 1978 Wisconsin Christmas Seal. Its sale in the traditional campaign, along with the 53 other seals also designed by children, helps support the Wisconsin Lung Association and programs to combat air pollution and lung disease. The voluntary health agency has been operating in Wisconsin for 70 years. (See story on page 24—*Breathalyze your air: dirty can do you in.*)

Back Cover:
Drawing by Christine Usinger. (See story on page 27—*Christmas birds well done.*)

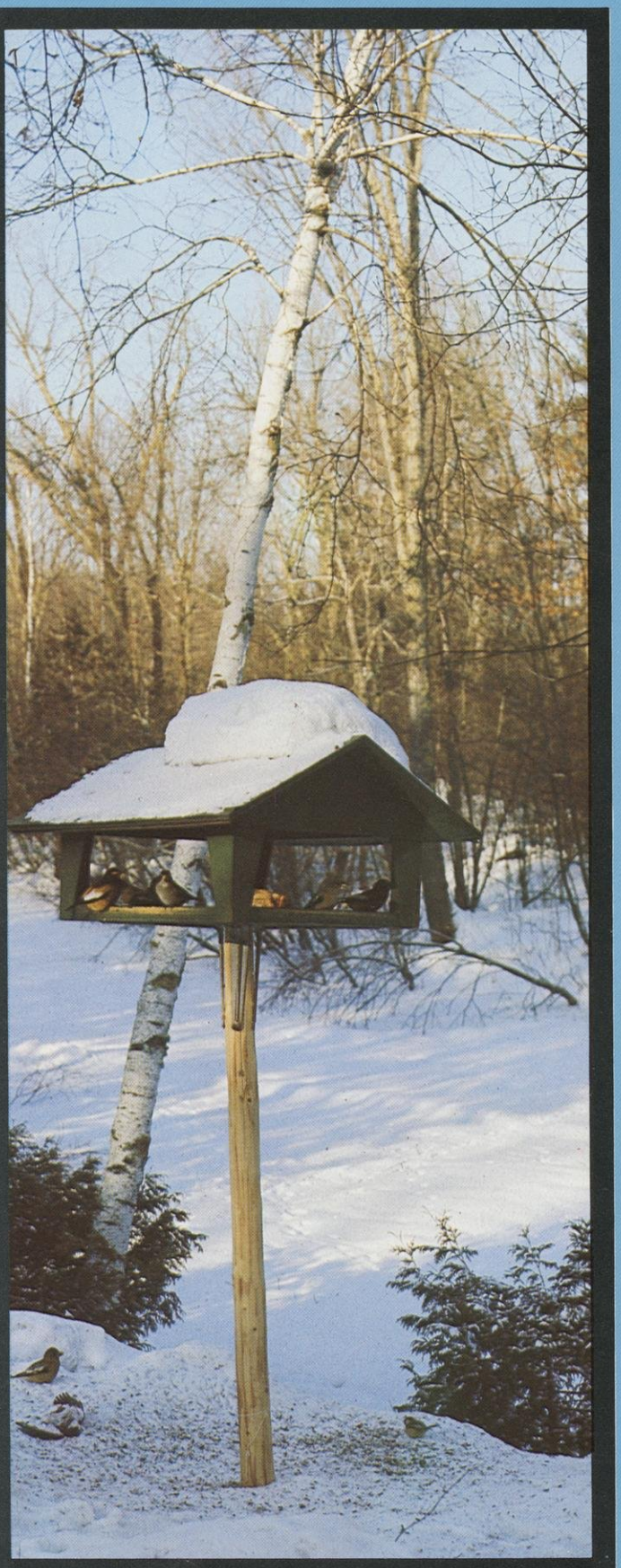


Photo by Staber Reese

WISCONSIN DEPT. OF NATURAL RESOURCES

Under the gun

Increasingly, hunters are the subject of research — their motives, the response they arouse, how much and why they violate, what they think about the laws, and their behavior and relationships to all manner of things. This close scrutiny may feel a little squirmy but most of it's "friendly" — being done by agencies, interests or individuals who themselves are addicted to hunting and want it to continue. What it seems to portend is that, in future, rule-making will involve not only the hunter, wildlife and customary peripheries but also the non-hunter, the anti-hunter and maybe some other categories not heard from yet.

The surveys show that most everybody loves wildlife and wilderness and clean air and water. But not many people give sportsmen the credit for starting the movements that made saving these things government policy. And many mistakenly blame hunters for wiping out species.

Photo by Dean Tvedt

The combined bow and gun bag in Wisconsin last year was 148,000 deer. It may be even higher this fall. Good management is the key and the next new tool should be Hunter's Choice. Combined with the Variable Quota, it will make more scenes like this possible. See story on page 9

College students at UW-La Crosse were trained to watch waterfowl hunters and record behavior. The hunters didn't know they were watched and many violated. Later they were interviewed at home. The study drew an average profile of these violators.

They were typically within 25 miles of home. The stereotype of the "city hunter" is not true; hunters are more likely to violate on their own turf. Violators used retrieving dogs more often than other hunters and most infractions were committed during the first nine days of the season. They were typically under 30 years old and tended to violate often. Most misdeeds were committed on Fridays and Saturdays. Many rearranged their bag to circumvent the point system. They reported losing more crippled ducks than other hunters — apparently because they buried or threw away ducks with high point values.

Violators had less positive regard for other hunters. They had a high daily bag, and, strangely, reported more satisfaction from the quality of their hunting than did others.

A nationwide survey of college student attitudes toward hunting showed that the majority were on the fence, neither all for, nor all against it — 60% of the males and 73% of the females were in this category. Only 15% of the males and 24% of the females were totally opposed. But three-fourths harbored anti-hunting sentiment and two-thirds believed hunting endangered certain species of wildlife. People do not oppose hunting, but bad behavior by some hunters.

The National Shooting Sports Foundation conducted a survey of people who are neutral on hunting — and that's most everybody. The top problems cited, by importance, were shooting accidents in which people were killed, wounded and lost game, game wounded and left to die slowly, and game wounded and left to die horribly. The fallacy that hunters cause some animals to become extinct was a prevalent attitude.

They also said that hunters needed to know nothing to purchase a rifle, and that hunters were not properly trained.

The study showed three major groups of problems: that hunters are untrained, and that hunters often behave without regard to laws or others. The wounding problem was seen as a lack of skill.

A study in New York revealed that posted private land went up from 26% to 42% in 10 years, and more than half the landowners listed poor hunter behavior as a cause.

The New Mexico Department of Game and Fish put a poacher in the field for one year. Only three people in the Department knew he existed, and he spent each day of that year violating wildlife regulations. He intentionally left evidence in conspicuous places, such as

the remains of deer and antelope, and often violated the law in plain view of busy roads. He noted 44 specific occasions when people saw him violating wildlife laws. He was turned in only once. From this, New Mexico estimates less than 1% of the big game violations in that state are detected. The experiment also suggests that if hunters break wildllife laws, they do so with overwhelming odds in their favor.

In Michigan, hunters, anti-hunters and Audubon Club members were surveyed. Surprisingly, all three agreed the main problem for wildlife was habitat loss. They were also close on why wildlife was important to them — as something to see, and as an important part of an "ecological balance." Anti-hunters also saw habitat loss, not hunting, as the true threat to wildlife.

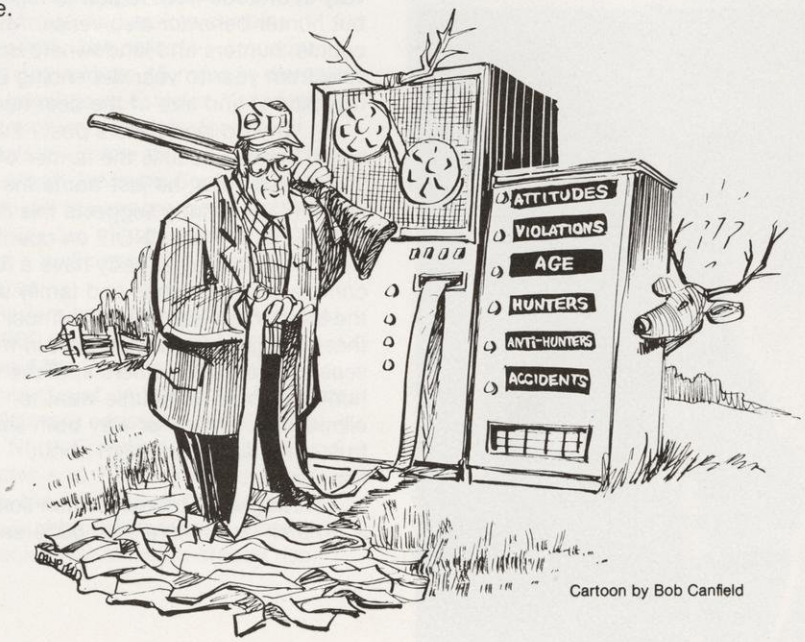
Similar results turned up in Arizona. People from all over the United States who had come to enjoy the outdoors and see wildlife were surveyed. They were non-hunters, and most were well educated and affluent. The majority did not agree there was a good balance between government game and non-game efforts. About one-third were undecided. Most agreed they should have an equal say with hunters about how wildlife is managed. They thought wildlife agencies were hunter oriented, and could offer little to their group. Most didn't think a ban on hunting would help wildlife. They felt government should give higher priority to endangered species and work to unite hunters and anti-hunters in common action to benefit wildlife.

Photo by Ted Borg

In still another study the general public was asked "Do you tend to approve of hunting?" Some 55% said yes, and 45% said no. Approval was stronger in the midwest (60%), the midsouth and the Rocky Mountain states.

A study of students given hunter training indicated they had both more knowledge and better attitudes afterwards. Some other things were found to be less influential. The number of people in the home who also hunt, and the number of wildlife magazines received in the home apparently have little effect on hunting knowledge or attitudes.

Other surveys show there are two outstanding fallacies hunters need to combat. One is that sport hunting endangers some species. This is simply not true. The other problem is the inability of non-hunters to distinguish between sport and commercial hunting. Because of this, modern hunters take the rap for extinction of the passenger pigeon, the near demise of the buffalo and the methodic killing of eagles.



Cartoon by Bob Canfield

Deer hunter-landowner:
some bad news and some hope

PROF. ROBERT JACKSON, Coordinator, Center for Regional Studies, UW-La Crosse

If you're like me, planning for this year's deer hunt began before the last one ended. My sons and I talked over our experiences, noted deer happenings on a map, and wrote ourselves reminders and guides for 1978. But through it all ran nagging questions:

"Will Carl or Kenny invite us back?"

"Have I or have other hunters violated their trust and our responsibilities?"

"Can we plan a hunt on our small woodlot or will large uninvited parties of hunters drive everything that moves, deer and ourselves, into another 'safer' county?"

As both a hunter and landowner, no concern looms larger for me in the fall than hunter-landowner relationships. But it's the hunting role that causes the problems. Like many of you, I do most of mine on private land — land that increasingly calls out in large black and white letters, NO HUNTING — NO TRESPASSING.

As a deer hunter and a researcher, I've talked and listened to the landowners. Some of what they said was pretty scary. "Hunters cut down 18 of my Christmas trees."

"That shot whistled right over the top of me and my tractor."

These comments were collected in a study evaluating landowner-hunter relationships — part of a larger project on Wisconsin Hunter Performance.

Separate phases will research waterfowl, big game, and small game hunting behavior and values. The end result will be new DNR education and management programs to improve hunting.

It's a two year study and while only the first half is completed, details show there's already a message for hunters.

In the fall of 1977, 50 landowners were chosen at random in each of two localities. One was Arena township in Iowa county, located approximately 30 miles from Madison. This area is subject to fairly heavy hunting pressure and only three landowners in five there actively farm their own land. Absentee owners including hobby farmers, and rental or corporate interests occupy the rest. In fall of 1977 specially trained university students conducted home interviews with landowners picked randomly from each square mile section of the township. For comparison, another research team interviewed different landowners in the town of Washington in La Crosse county about 20 miles from La Crosse. Better than nine out of ten of these farm actively. Again, one or two were randomly selected from each of the township's 36 sections.

Photo by Art Carter

Findings suggest that landowner attitudes and behavior toward hunters may vary in different parts of Wisconsin. In Iowa county almost 79 percent posted their land compared to only 32.7% in La Crosse county. More than half of those in Iowa county declared they had become more restrictive in the last 10 years. One-third expected to become *more* restrictive in the future. More than half the landowners in both counties hunted themselves and better than a third hunted on land belonging to others. About 30% of both groups managed their land for game and many had initiated projects in the last 10 years.

The two groups report differences in their relationship to hunters. In Arena township they were more likely to ask hunters to leave their land (68.1 cf 13.5%); had more problems with roadhunters (44.7 of 15.4%) and felt members of a rod and gun club were more responsible hunters (53.2 cf 42.3%). By contrast, Washington township hunters were rated as having good to excellent ethics by 48% of the La Crosse county landowners. Only 34% of the Arena township hunters got high ratings for ethics. The research suggests that not only do landowners vary in attitude from region to region, but hunter behavior also varies. And, of course, hunters and landowners both vary from year to year depending on regulations and size of the deer herd.

Why do landowners post? I've heard hunters accuse the farmer of selfishness. "Aw, he just wants the game himself." Our study suggests this is unlikely. Some say "NO!" on opening day because they already have a full complement of friends and family using the land. In my experience, almost all of these will give permission later in the season. Most landowners approve of hunting. Some, of course want to eliminate it. But either way both show frustration and pessimism about trespassers.

They want to know when someone is on their land. More than 50% said the

best way hunters could improve relationships would be to "always ask permission." Landowners also want *to control numbers* of hunters. One, who posted his land for "Hunting with permission," was incensed by a large group driving his and a neighbor's land without asking. The "No Hunting" signs went up on his land before dusk that same day. If hunters would simply ask and also limit the size of their parties most problems would be eliminated.

For their part, landowners really wonder why hunters don't ask. Our discussions with hunters turned up three frequent attitudes. The first might be called fear of rejection. The hunter in selling himself and his activity, opens the door to rejection. He doesn't want to face it and may just hunt anyway. Secondly, some talk about the press of time. It can be difficult to find the landowner, or the day is short or time limited, so they hunt without permission. I personally find that I particularly tend to do this when hunting in another state or a long distance from home. The third problem is difficult and dangerous. Many Wisconsin hunters believe that a piece of woodland or marsh is a "commons" and have no concept of private land or that the owner has rights. They proclaim, "but the game belongs to everyone" and off they go to hunt. While most landowners in our study agreed that game belongs to everyone, 15% were neutral and 18% supported the statement that "game belongs to the landowner." Serious and frightening conflict is possible when hunters feel that any land not in crops is commons and open to hunting, or worse, choose to defy or ignore landowner rights. I'd hate to arrive on the scene at the point when landowner and hunter have both just announced, "THAT GAME IS MINE."

As you might surmise, as a hunter, I found all this negative data we were collecting pretty discouraging. But a funny thing happened. In the course of the study, negatives began to glow positive. Just before last season opened, I got a call from George Wuench, longtime town of Washington resident and a member of the Conservation Congress.

"Bob," he exclaimed, "they're not posting!"

It was strange and hopeful and it had a meaning.

Landowners who had posted other seasons and had even bought signs for 1977 didn't put them up. George said our research interviews, even though they weren't designed to do it, had stimulated farmers to reappraise their attitudes and policies.

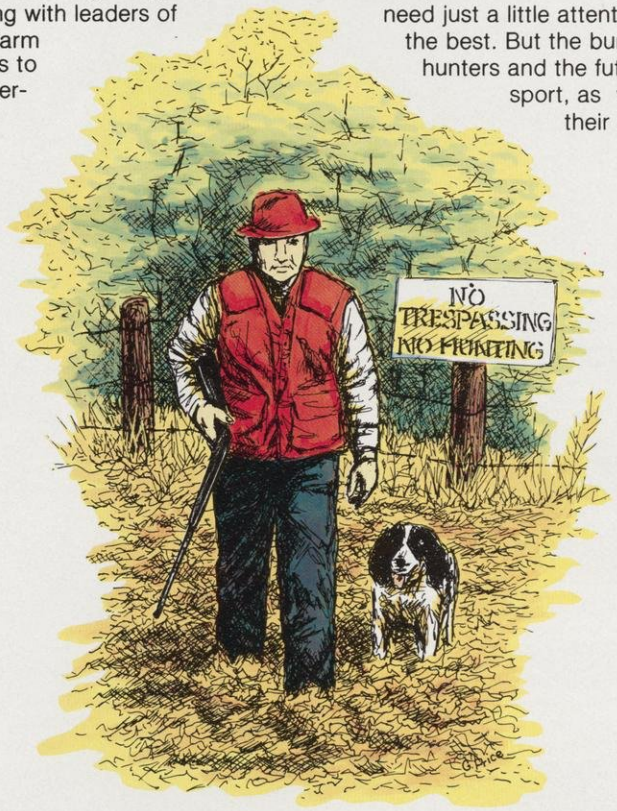
Many had apparently decided to give the hunter another chance. This happened even though landowners thought hunting behavior had been bad the preceding deer season and feelings had been running strong.

A few weeks afterwards I dropped in for a beer and a chat with George. He was quick to proclaim that not only had land been open but hunting behavior had been excellent . . . better than it had been for years. Hunters knew that they as well as the landowners were going to be interviewed for another aspect of our study. Local hunters spread this news to other local hunters.

And there was more! Not only had the season been a good one, but residents decided to get together in January along with leaders of three local farm organizations to discuss hunter-landowner problems. They were talking together, working out expectations, policies.

So it isn't too late. It's not too late for you and me to seek out the landowner, to ask permission, to talk over problems and lay the basis for a successful hunt from the landowner's standpoint and from our own, too. Above all, it's not too late for sportsmen and their clubs to get involved in a handshake movement between hunters and landowners.

DNR can and will help, but the guts of the job depends on us. The fallout from our studies showed that hunters, landowners and government all need just a little attention to bring out the best. But the burden is on the hunters and the future of the sport, as we know it, is in their hands.



Drawing by Georgine Price

Landowners and deer hunters

	% Iowa County	% La Crosse County
LANDOWNER:		
Actively farming (farming his own land)	57.5	92.3
Posts his land	78.7	32.7
Has become more restrictive in posting land over the last 10 years	53.2	34.6
Hunts himself	55.3	63.5
Hunts on other's land	34.0	40.4
Managed land for game	29.8	30.8
Initiated conservation projects	38.3	46.2
Has problems with road hunting	44.7	15.4
Has asked hunters to leave his land	44.7	15.4
Feels a member of rod and gun club is a more responsible hunter	53.2	42.3
Rates hunter ethics as good to excellent	34.0	48.1
Has had deer damage to crops, tree planting, etc.	63.8	53.9

Hunter's choice and other good ideas

Most people agree that to reduce crowds in the deer hunt is a good idea. But how to do it and keep everybody happy? Some proposals made everybody mad. Not hunter's choice though. And incentives might work too.

PROF. THOMAS A. HEBERLEIN
Rural Sociology, UW-Madison

Two years ago, the Department of Natural Resources (DNR) proposed an ill-fated overhaul in the deer gun season. It was an attempt to reduce hunter density and improve quality on the critical opening weekend and included such changes as midweek openings, restricting hunters to certain zones and even half days in some places. But 10,000 people came to public meetings and shot it all down. More than eight out of 10 opposed the changes. A survey I did of hunters who stayed away from the meetings showed they didn't like the plan either.

Some claimed the proposals were only people management, not deer management. That's true, but it's also true that most deer hunting problems are *people* problems. In many areas hunters outnumber deer. Poor sportsmanship, the lack of fair chase, and competition for game, all lower quality and lead to trespass and unsafe conduct. Game managers, the Hunter Ethics Committee and many Wisconsin hunters and landowners agree on this. But the proposals were a bit heavy and a little sudden. People management isn't as easy as wildlife management. It's important to listen to the hunter.

For the past two years we've been listening! Specifically, we studied attitudes, preferences and behavior of deer hunters to find out why they were against changes in the season and to see if we could develop a more workable and acceptable proposal. A committee of DNR game managers used our findings to come up with ideas that will soon go to the Legislature.

Deer hunters are far more committed to their sport than are other recreation groups. Generally people do not favor change in things to which they are very committed.

Basically, there are four reasons why hunters opposed the 1977 proposals.

First, tradition. In Wisconsin the nine-day Thanksgiving week season with a Saturday opening is comfortable, timeworn custom. Few can even remember the year when there was no season (1935) or the one with the split season, or a weekday opening (1943).

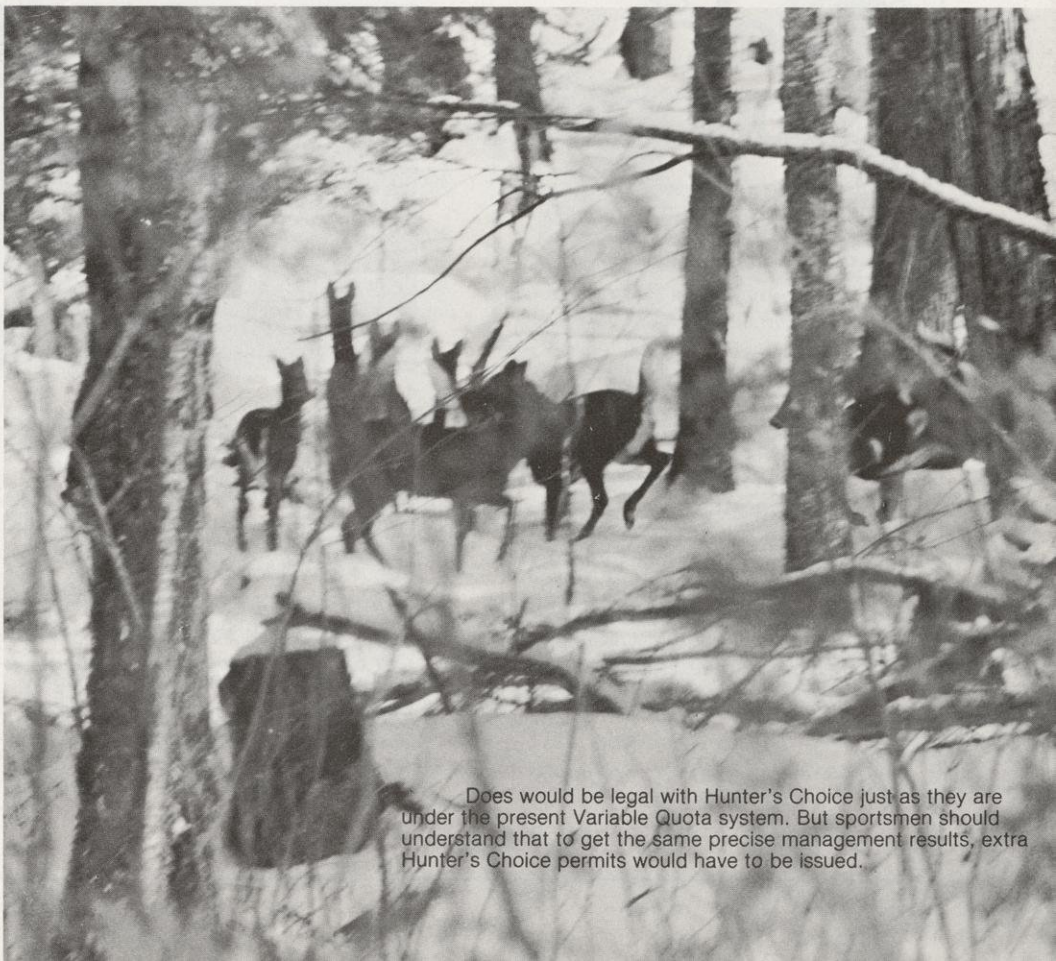
Second, not everyone believes too many hunters are a problem. Some like a lot of people and believe crowds "move deer." Well this may be true, but our data showed hunters in high density areas neither saw more bucks, nor were *more likely to bag a deer!* The thing to remember is that more hunters moving deer also mean more shooters so your personal chances are not necessarily increased.

Third, deer hunting has important social and nostalgic aspects. It is part of the hunter's childhood and closely tied to friendship patterns. Once people start hunting deer, they generally continue every year. Deer hunters are far more committed to their sport than are other recreation groups. Generally people do not favor change in things to which they are very committed. It brings uncertainty. They often feel that even though there are problems, the status quo is better than unknowns associated with change.

The fourth reason for opposition was that the 1977 proposals didn't give any choices. Most were restrictive and combined all sorts of no-nos, each individually disfavored by hunters, into a total package. There was something to displease almost everyone. Looking back, it's surprising even 15% liked the changes. When freedom of choice is limited, there is negative reaction. The opposition was quite understandable.

Given that hunters tend to favor the status quo, are deeply committed to their sport, and that some at least don't believe crowding is a problem, one would never expect overwhelming support for changes that would reduce hunter numbers. On the other hand,

Continued next page . . .



Does would be legal with Hunter's Choice just as they are under the present Variable Quota system. But sportsmen should understand that to get the same precise management results, extra Hunter's Choice permits would have to be issued.

incentives might work. The current committee explored ways of solving the crowding problem with the carrot rather than the stick.

Survey data showed possibilities. Opposition dropped dramatically, down to around 50% or less when incentives became part of a proposal. The answer turned out to be "maybe" not "no." Hunters *might* like it if they tried it.

These were the proposals:

1. Since individuals awarded a party permit stand a greater chance of getting a deer, successful applicants would have to give up opening weekend. This would reduce pressure dramatically.

2. An early season in the north where hunting pressure is now low. Those who opted for this could not hunt in the south on the first two days but could hunt there afterwards when pressure would be lower.

Neither of these plans would be as effective in reducing pressure as the 1977 proposals, but on the other hand, hunters like them a little better. If these were adopted, overall opening day pressure in southern Wisconsin would go down by about 20%.

Two other ideas — controls on some public land and a longer season up north — received only minor opposition. However, our analysis showed that neither would have a significant effect on pressure. If anything,

Replace the four man party tag, which acts as a bonus or extra deer, with a one-man any-deer permit.

both might attract hunters to the south *into* high density areas.

But of all the proposals, the one that received the most substantial support was this: Replace the four man party tag, which acts as a bonus or extra deer, with a one-man, any-deer permit. Under this proposal, individuals could apply and if selected, could take either a buck or doe on their regular tag. There would be no extra deer. Game managers and deer hunters alike agreed this would eliminate many problems with the current four man system.

On the basis of these findings, the committee proposed and the Natural Resources Board endorsed in principle, what is known as the "Hunter's Choice Plan" involving two things:

First, a hunter's choice any-deer permit, which lets you bag an antlerless deer on a regular buck tag. In certain management units, just as now, quotas will be established to protect the herd. Any-deer permits will be issued in the same fashion as party permits are now, with one difference: No fee is proposed for the hunter's choice permit.

Second, a hunter's choice early season in the north, opening a week before the regular season. Hunters who choose this cannot hunt in the south opening weekend.

Will this plan reduce crowds in the south but create crowds in the north? It doesn't look like it. If the projected increases occur, hunting pressure will return to, but not greatly exceed levels of the early 1960's. Even back then, game managers remember many complaints about not enough hunters up north to move deer.

Hunter's choice has been considered by the Conservation Congress Big Game Committee and aired at public meetings. Based on this reaction it will be refined and improved. Final proposals will go to the Legislature.

After my experiences on this committee, during which every detail was probed, I can vouch for one thing: Plans for change in the deer season are

Given that hunters tend to favor status quo, are deeply committed to their sport, and that some at least don't believe crowding is a problem, one would never expect overwhelming support for changes that would reduce hunter numbers.

not made by three guys over lunch on the 14th floor of the Pyare Square Building in Madison. I can't speak for other seasons, but I know that the Hunter's Choice Proposals received substantial consideration by professionals and included careful assessment of hunter reaction. I know the ideas are acceptable and will reduce crowding. I think they have a good chance of being enacted.

Incentives might move hunters to less crowded parts of the state.

Drawing by Jim McEvoy

Buck economics

PROF. RICHARD C. BISHOP
Agricultural Economics,
UW-Madison

How many dollars worth of rifle and shotgun shells would you guess Wisconsin deer hunters use each year? Would you believe at least $250,000 worth? Over 500,000 shots are taken opening day alone. Clearly, a lot of the bucks involved in deer hunting are the kind you can spend. Let's do a little economic guesstimating.

If we think of Wisconsin as a deer factory, then like all factories, it contains capital equipment. Each hunter must have a gun and each gun be worth an average of around $100. Clothes are also essential and must run about $45.00 per hunter including

boots. If so, the capital equipment for our deer factory including only guns and clothing is $80 million.

Like other factories, it also requires labor. Wisconsin employs about 2.9 million person/days harvesting deer during the gun season each year, counting only hunters and not DNR wardens, resort owners, bartenders, etc. Figuring eight hours per day and $3.00 per hour that's $68.5 million worth of labor.

Also like all other factories, the deer factory uses energy. We would conservatively guess that the annual deer hunt requires 1.8 million gallons of gasoline and the total transportation bill probably exceeds $5 million. Government gets its share, too. Licenses for the gun season alone contribute more than $4 million to the DNR budget annually.

In terms of final products, the amount of meat is impressive. The DNR reports the 1977 deer kill was 131,910, which is roughly 10% of the total number of hogs and pigs produced in Wisconsin. Assuming 80 pounds of meat per deer, that's 10.5 million pounds total. If we assume a value of $.50 per pound (venison brings more than $2.00 per pound in some places) then this is $5.25 million worth of venison. At that rate, if venison were bought and sold on the market, it would produce as much income as all the apple orchards in the state.

So, any way you look at it, deer hunting involves a lot of bucks. And the interesting thing is that meat, clothes, shells, and the rest is really secondary to the main product: the millions of hours of recreational pleasure accumulated each year. This is harder to put a dollar value on and I think I'll go hunting instead.

Rejected changes in the deer hunt

Original 1977 Proposals	Oppose (%) Strongly	Probably	Total	Impact on opening day pressure in south
1: Split seasons north (3+13) and central (2+7), half days south.	65	21	86	-83,808
2: Split season central (3+7); 3 day season south.	60	16	76	-223,486

New proposals

	Oppose (%) Strongly	Probably	Total	Impact on opening day pressure in south
Weekday openings.	48	22	70	-120,934
Limiting total license sales.	71	12	83	Policy dependent
Individual either sex permit holders skip opening weekend.	28	27	55	-147,540
Extra week in north just before regular season; early hunters limited to north during statewide opening weekend.	26	27	53	-76,000
Special buck hunt in north; early hunters limited to north during statewide opening weekend.	27	21	48	-72,000
Controlling hunter numbers on some public property central and south for opening weekend.	27	20	47	No significant impact: tendency to attract some hunters to south.
Regular season with north continuing for another week.	23	17	40	No significant impact: tendency to attract some hunters to south.
Individual either sex permit approval.	17	12	29	No impact analysis.

The Stump Sitters

Al Hofacker and Jack Brauer are a couple of guys whose heart's desire is to hunt deer year round. Difference between them and us though is they just might pull it off. They're close.

Jack Brauer and Al Hofacker

J. Wolfred Taylor
Editor, Wisconsin Natural Resources

The whole thing started after a couple of skunked seasons at deer camp. It was either give up or go all out. Al Hofacker and Jack Brauer went all out. They called themselves Stump Sitters and began to spend hundreds of hours each year in a little patch of woods a mile square—got to know it like the living room at home. And got to know the deer in it too, not casually, but like the people you run into on the bus going to work. So far, the log shows them with a total of 10,000 hours in the woods. They read the literature, experimented with ways to get close and observed. Pretty soon they began to find out things about deer behavior not many people knew and very few had seen.

Filling the deer tag got to be old hat. It was more fun to experiment, take pictures and learn. It didn't take long for Al and Jack to realize that, among the millions of deer hunters all over the country, many besides themselves spent a lot of time watching deer behavior and would like to share information. So they formed a Study Group and opened it to whomever would join and keep records. To date they have 2,100 members. To keep members posted and provide a forum, they started a magazine, *Deer and Deer Hunting.* Popular "How to hunt" clinics evolved from voluntary programs put on for school children and boy scouts. This year, they're booked for 30 pre-season clinics all over Wisconsin, Iowa and Illinois and expect to do 50 before 1978 ends. They're not trained scientists, but Illinois game officials have queried Al and Jack about doing a deer count on a Mississippi River island. Our Wisconsin DNR has reprinted a Stump Sitter magazine article on "Managing the Whitetail" for use as a training aid. So far six issues of the magazine have been published featuring such titles as *Deer Browse, The Whitetail's Senses, Still Hunting, Trail Watching Round the Clock,* and *Typical Deer Movement Patterns.*

Among the more fascinating kinds of information they've collected is the material on behavior. They think they've confirmed an old hunter's myth that correlates deer movement and phases of the moon. They've seen wild deer grooming each other, making scrapes and urinating on the pile, touching noses, staring, showing dominance with head and ear positions, striking with the front feet, sparring, breeding and fighting.

And they've collected data on this same sort of thing from their members.

Part of the membership rationale is to keep detailed records on every hour spent hunting the whitetail. Stump Sitter log sheets include information on time of day, hunting methods, the number of deer seen, sex, direction of travel, distance away when spotted, weapons, terrain, temperature, sky conditions, snow cover and other items.

Al and Jack emphasize log books, maps and records as learning tools for

Old Oscar

Old Oscar was a pet deer that lived to be 14. His owners saved every pair of antlers the animal shed and had them mounted. Old Oscar himself is wearing the last set. He grew an eight point rack in his fourth year and annually from then on every pair had eight to 10 points. Old Oscar grew his best rack when he was 10. It had nine points, a spread of 17 inches and girth of the main beam was five inches. Old Oscar's principle diet was grain and hay. The entire collection is on display at the family business, the Laurel Supper Club, east of New Richmond on Highway 64.

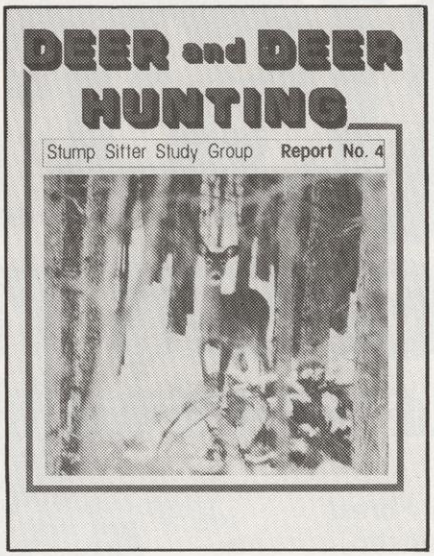
the hunter. An annual survey is conducted after each season in an effort to record every aspect of the hunt and find out how members fared. Observations on deer behavior are especially sought after and published.

Here are some noteworthy results from last year's post season survey (keep in mind that most of those responding, 537 individuals, were probably top-notch hunters):

- 83% reported bagging a deer.
- 65% hunted during both archery and deer seasons and of these 20% bagged deer both ways.
- About two-thirds used some way to cover their human scent—approximately 33% used deer lure and an equal number used skunk essence. Others tried food scents, soap and chlorophyll tablets.
- More than 75% of the archers used a compound bow.
- On time of day, 66% of the gun hunters shot their deer in the morning, but most bow hunters (also 66%) did it in the afternoon.
- Hunting from a stand was most popular—75% for gun hunters and 93% for archers. Surprisingly, fewer than 3% in both categories used a drive.
- Bucks were taken by 91% of the successful gun hunters and 65% of the bow hunters.
- Only about 17% of the gun hunters reported shooting at deer and missing. About half the archers missed shots.
- Distance to the deer was about 50 yards for gunners and 20 for archers.
- A little more than half the gun hunters wore blaze orange. Nearly 90% of the bow hunters dressed in camouflaged clothing.
- Pre-season scouting was important. Nearly three-fourths of the gun hunters and two-thirds of the bow hunters had seen their deer before opening day.

The Stump Sitters provide a lot of "how to" information. They recommend concentrating on one square mile of good deer range and mapping the trails.

Other advice: Move slowly! Take a minimum of four hours to hunt a zig-zag course through a half mile area; find trails that lead to bedding and feeding spots and figure out movement patterns between the two; spend as much time in the woods as you can, in all seasons. Try hunting with a camera. Al and Jack say that deer will run only 300 to 400 yards when frightened, that bucks can be called by rattling antlers, that when you hear a deer snort it isn't the end—enterprising hunters might snort back and entice the animal within range (Al



Hofacker says he exchanged 31 snorts with a deer during the 1975 bow season).

Al and Jack once rigged two loud speakers in the woods and when an animal came down the trail played dinner music to it from a tape recorder. "The antics of the deer," they said, "included foot stomping, tail twitching, head bobbing and a few snorts. The deer would occasionally trot a few steps to the left or right in an attempt to get a better fix on the source. It could hear the music but could neither see nor smell it." The show lasted three minutes, was caught on movie film and is now part of a sequence called the "dancing deer" which is used in the clinics.

Deer and Deer Hunting, the magazine, features many letters from members. Most recount experiences with deer behavior and each letter starts with the salutation, "Deer Editor." Some talk about people as well as deer.

Here are a couple excerpts:

"Deer Editor,

"I have always felt that dedicated whitetail hunters should form their own organization . . . to build a strong and able political power. There are too many anti-hunting groups around not to take them seriously."

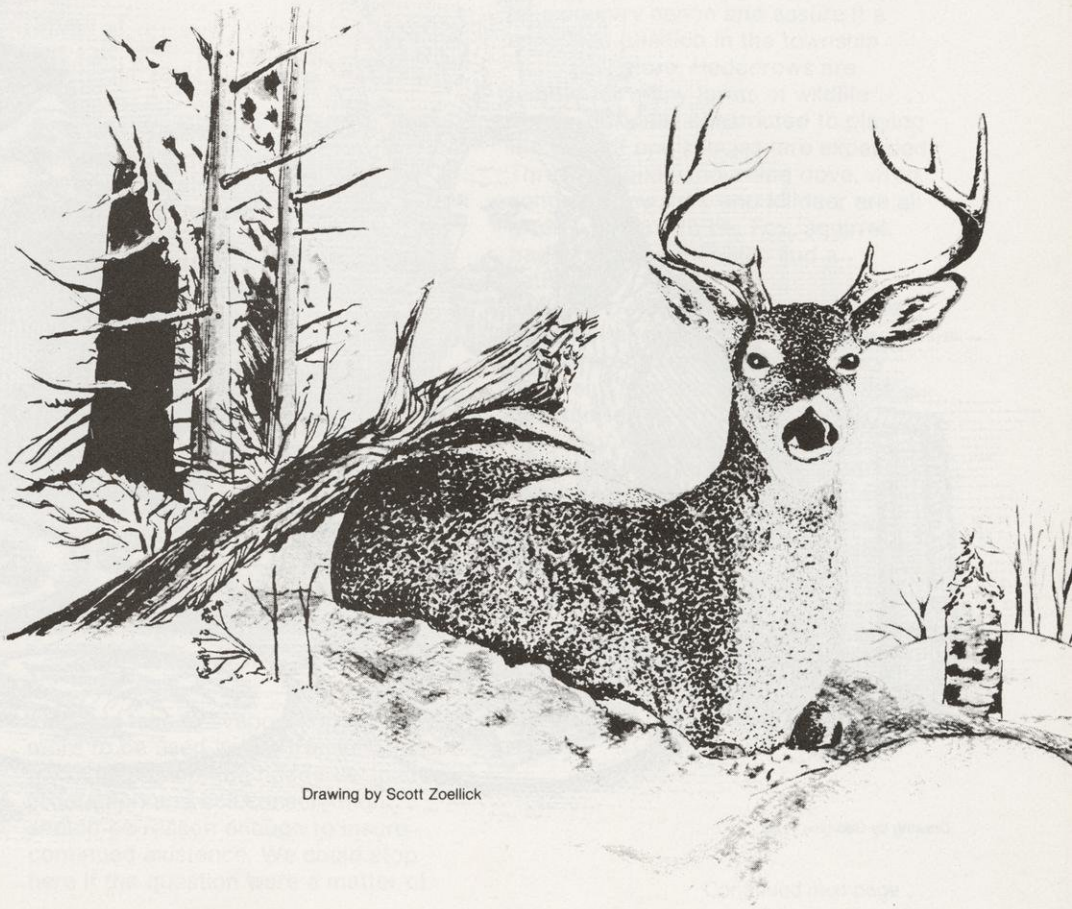
And another:

"Deer Editor,

"Since most hunters do not own the land they hunt on, I feel it is very important to promote the idea of hunters leaving the land just as they found it. No litter, no paint marks and no signs of the previous presence of hunters."

The whole thing grows steadily. Al and Jack, the original Stump Sitters, have nearly reached their heart's desire. They're about into it full time.

Readers interested in finding out more about the Stump Sitters and their Study Group should write to: Post Office Box 1302, Appleton, WI 54911.



Drawing by Scott Zoellick

CHRISTMAS 1855 -A WISCONSIN TRAPPER'S SHACK

"ALL OUR SIMPLE WANTS WERE FILLED"

Mather was an outdoor writer for *Forest and Stream* magazine, an early conservation publication. This is taken from a sketch about Antoine Gardapee, his French trapper-companion. It first appeared in 1896 and was later published as part of a book, *Men I have Fished With*. Mather and Gardapee spent the winter of 1855 in a shack on the Bad Axe River in Vernon County. Their fur harvest included otter, wolverine and bear.

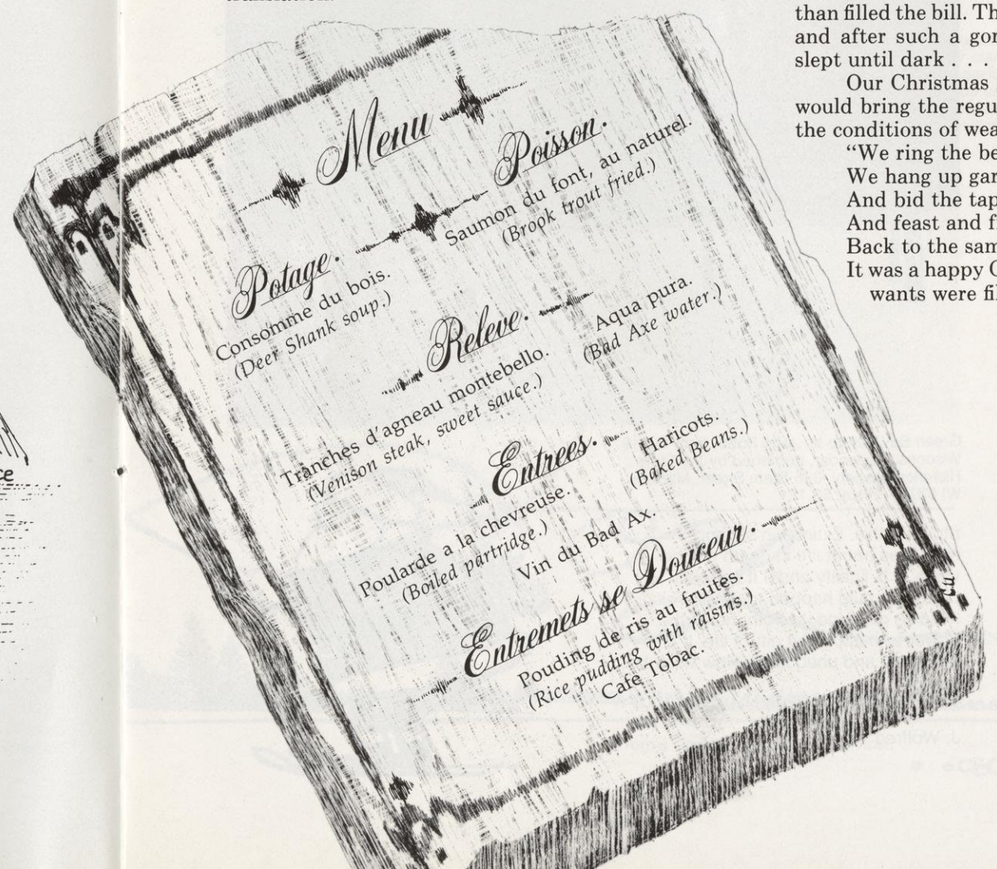
FRED MATHER

This was the first idle day of the winter, and as my partner had intimated that he was going to surprise me with a Christmas dinner, I left him to arrange it, and wandered out with my snowshoes and snowblinders . . . The winter landscape was beautiful: the bluish tints of the twigs against the sky and along the stream relieved the whiteness, and the day was perfect . . . [when] the sun was high I went back home . . .

Drawing by Georgine Price

"Hello" said Antoine . . . "Bon Jour!"

We shook hands like old friends long parted, and he motioned me to my seat at the table with courtly grace, and it began to dawn upon me that I was, for this occasion, not his partner, but his guest. He had prepared the dinner alone, as he had intimated he would, and he was host, chef, garcon and companion all in one on this Christmas Day in the wilds of Wisconsin. The first course was a soup of deer shanks with the marrow-bones cracked; but I will try to put that memorable dinner in the shape that some chef of today would put it, when it would be like this, with my translation:



Now I ask you — I mean sportsmen, old and young — how does that seem to you for a Christmas dinner either in the woods or in the wildest restaurants of New York City?

Most of these things we had cooked in one shape or another, but never such a layout as that at one feed. The great surprise came with the rice pudding with raisins, for I had no idea that these things were in camp; but Antoine had smuggled a handful of rice and a few raisins among the things bought at Prairie du Chien for just such a treat, and the old man enjoyed my surprise. The whole dinner was a surprise, for that matter; but the rice and raisins — well, they more than filled the bill. The "tobac" was burned by the fire, and after such a gorge we laid ourselves down and slept until dark . . .

Our Christmas festival was ended. The morrow would bring the regular routine work, only varied by the conditions of weather.

"We ring the bells and we raise the strain,
We hang up garlands ev'rywhere
And bid the taper twinkle fair,
And feast and frolic — and then we go
Back to the same old lives again."

It was a happy Christmas, because all our simple wants were filled . . .

Editorial: The gift

This is the Christmas (and Chanukah) issue of the magazine. It's also the Thanksgiving and deer hunting issue and almost gets Hallowe'en and New Year's. Probably, a lot of other days of high significance to someone can also personify November-December.

Consequently, the magazine, especially at this time of year, tries to be calendar-wise and seasonal. But Christmas and its message about the gift of life inevitably dominates. After all, living, in the broadest sense is what *every* day is really about anyhow. And the magazine works to express this.

Clean air and water and *lebensraum* and green and other wild things are some of the gifts, outdoor recreation some of the joys. Never mind the exact words in the table of contents, the breath of life *is* Christmas and so are trees and warm wood fires and campouts and birds.

Still, opposites haunt.

So what about the hunt, which each year is celebrated here? Paradoxically even the hunt in its own way is universal and a celebration of life. The earth gives sustenance to every species. Predators are renewed and prey contribute to renewal. Many mysteries of death in life and life in death derive from these predator-prey relationships and many religions have woven a ritual and some a philosophy to accommodate them.

Extinct, endangered and vanishing species, however, are another matter. They are unaccommodated and unenshrined, except in our dire statistics. Worldwide, since the year 1600 some 130 species of birds and mammals have been wiped out and today 307 are threatened. Sport hunting did none of it. Commercial hunting some. Humanity's other activities are the biggest culprit. Eighteen endangered animals live in Wisconsin. And the list of plants is overwhelming. In the U.S. alone, 355 are extinct and 2,800 endangered or threatened, including 15 in Wisconsin. Prophets say by the end of the century 500,000 life forms will vanish from the earth.

Imagination cannot conceive a ritual for this. Extinction stirs no mysteries about life in death or vice-versa. It is finality and if it happens to but one, could happen to us all. This holiday, mankind, in truth, holds the power to bestow the gift of life. It is awesome and unequaled. How will it be used?

Merry Christmas!

J. Wolfred Taylor

Green Bay, photo by John Robb, from the 1979 Wisconsin Calendar, published by the State Historical Society, 816 State Street, Madison, WI 53706. Price: $3.12

The readers write

Establishment of the Lake Use Task Force (Wisconsin Lakes in Hot Water, July-August) is a step in the right direction. I hope this committee can help to justly regulate lake usage.

The only question I have is why are all the committee members from the southern half of the state when most lakes are in the northern half? ***TIMOTHY ULLMER; Janesville.***

Members were chosen largely from southern Wisconsin because problems there are currently most acute and there's more interest. For example, at Wisconsin Rapids no one at all attended recent hearings on public access but hearings in Milwaukee and Elkhorn were crowded.

Even so, broader representation is planned, as issues become better defined.

The Lake Use Task Force is to be commended on a tough job well done. Having only read the article "Wisconsin Lakes in Hot Water" (July-August) and not the full report I offer the following ideas:

Assign conflicting uses to separate water bodies. One lake might be geared to serve high speed power boats and another have no motor vehicle access and no power boats. This would provide a variety of recreational opportunity for a variety of users.

Regulate numbers of users t the carrying capacity. Be clear about the numbers and close the gate firmly.

Refine regulations to favor the least destructive uses over the more destructive ones. ***CHARLES C. BRADLEY; Baraboo.***

I am a collector of state and federal "duck stamps."

I am familiar with Mr. Owen Gromme's work, and in my opinion he has done a magnificent job in designing your 1978 Wisconsin Duck Stamp. ***JAMES SHELDON; Minneapolis, Minnesota.***

I have just received the July-August issue and I feel I should correct an error. In the description of the back cover picture, you mention "the prickly pear, Wisconsin's only cactus . . ." I have seen another variety of cactus in northwestern Wisconsin near Interstate Park. This second variety is considerably smaller than the prickly pear, but is probably another opuntia. Its individual pads are only one to one-and-a-half inches long, and a large plant will spread only eight to 10 inches. It has very sharp, barbed and vicious spines. ***DICK BAUER; Milwaukee.***

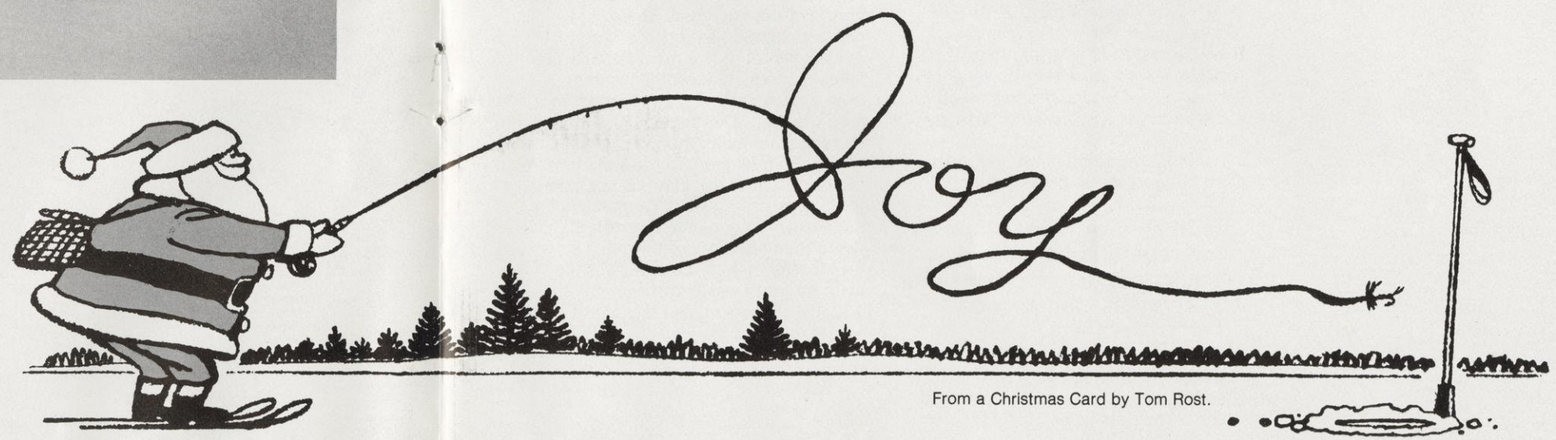
Looking through the magazine I can not find the conservation pledge anywhere. I think it would be very advisable to have it show up two or three times. ***WILLIS EDGELL; Eau Claire.***

The pledge Mr. Edgell refers to is from Outdoor Life Magazine:

"I give my pledge as an American to save and faithfully to defend from waste the natural resources of my country — its air, soil and minerals, its forests, waters, and wildlife."

Please mail me another subscription envelope. A three year gift of this magazine to my brother would make a nice Christmas present. ***MRS. HELENE A. CORK; Madison.***

Readers are invited to express opinions on published articles. Letters will be edited for clarity and conciseness and published at the discretion of the magazine. Please include name and address. Excerpts may be used in some instances. "Letters to the editor" should be addressed to Wisconsin Natural Resources magazine, Box 7921, Madison, Wisconsin 53707.



From a Christmas Card by Tom Rost.

The hedgerow

The $$$ sign makes the hedgerow disappear. But it may be poor economics. Or then again an educated palate could save the whole show.

JUSTIN ISHERWOOD, Farmer, Rt. 1, Plover

In the townships, the rise of vegetable production vs. dairying has put a ransom price on hedgerows that were once very much a part of central Wisconsin agriculture. The hedgerow is an inheritance of grandfathers, who in the pained process of clearing land did not remove more trees than necessary.

It was a cheap fence. Living trees made better fence posts than cedar, out-lasted white oak, and gave more shade than the steel stem. Staples held better because the tree took selfish ingrown possession of both nail and wire.

But the vegetable farmer, never having experienced a missing potato field at 15 minutes to five in the morning, loves the hedgerow less than the dairyman.

Hedgerows today are an endangered species. But for our European ancestors, they were part of the field, a means of demarking ownership; boundaries needing no surveyor, perpetual and perennially maintained. Old World countries had a law requiring construction of a hedge, aware by cumulative experience of the gentility it bestowed on otherwise humorless neighbors. Hedges were of two types: the quick set and the dead hedge. The quick set was living vegetation while the dead hedge could be composed of sticks, stones or deceased upended relatives. The hedge helped define limits of domain for both property and mind. You didn't trespass on your neighbor's land any more than a neighbor's marriage, at least not without specific invitation. The hedge gave the farmer a sense of belonging. He could see the edges of enterprise and feel himself to be a specific ingredient of the land. It also insured privacy.

The chief relationship of the U.S. farmer has been with his implements rather than mechanisms to fit the land. As a result there are farmers who think of land as a tool.

But American farming was born as a twin to the industrial age. The chief relationship of the U.S. farmer has been with his implements rather than mechanisms to fit the land. As a result there are farmers who think of land as a tool; as the brush instead of the canvas; as a road rather than the place to be.

Modern notion is we no longer need hedgerows. In present practice it seems an encumbrance, an impediment to a 160 acre field with that singlehanded clock ticking at the center. The demise of the hedgerow reflects increased land values and our reaction. Agricultural land sells for $500 to $2,000 an acre. That's the point emphasized when bulldozers are let loose, as if clearing a hedge is a genuine act of self-defense. Actually land values are not out of sync with other items in the economy; fuel, implements and hardware. But the ultimate crunch of inflation, not only for the farm but the entire nation, comes on the land. It is there the slack is taken up between the price of product and cost of production. There's advantage in a bit of extra fertilizer or a little longer day — obvious therefore, that to erase the hedgerow writes a few extra lines of pomme de terre prose. The result is fields lapping the edge of the road.

Estimates vary, but show an average of 14 tons of soil material lost per acre every year through wind erosion.

One source of nonpoint phosphate pollution in Lake Michigan is fallout from farms of western and central Wisconsin — farms whose fields thumb free rides with the west wind. Culturally we've accepted the role industry plays in water and air pollution, their subsequent responsibility and shared cost. It remains for farmers to be educated on their role in nonpoint pollution and methods of curbing it. Estimates vary, but show an average of 14 tons of soil material lost per acre every year through wind erosion. That's a layer one-sixty-fourth of an inch deep removed over the course of a season. While all may not end up in Lake Michigan, it's the most fertile layer, fertilizer and humus gone on the bum.

Some methods of containing nonpoint pollution may be as costly and problematic as those in water related industry. But mostly the farmer faces a conceptual problem rather than a financial one. Cover crops go a long way in preventing soil erosion; moreso when combined with practices of minimum tillage and rows planted in the north-south direction. Compliment to these preservative techniques is the hedgerow. They create a windbreak 10 times the height of the barrier. Ten foot trees reach 100 feet across the field, 40 foot trees a corresponding 400 feet. Four hundred feet is not

Drawing by Jim McEvoy

enough to span a 160 acre field, but it does force the wind to start over again. Like a customs agent, it causes the wind to declare its foreign booty in the lee of the trees.

Soil scientists may question the degree to which hedgerows contain erosion. Unquestioned is their benefit when little else can help, during spring from the time ground is plowed until plants are eight to 10 inches high. Similar open land conditions exist after harvest. Unfortunately, these situations coincide with seasons of climatic change and windy days; warm high pressure cells that follow the heels of chilled arctic lows. For such times the hedgerow is the only protection.

Hedgerows go beyond soil erosion. Farmers are beginning to use the term, evapotranspiration or ET. Evaporation is the moisture lost by leaf surface or soil as a result of vaporization by heat and wind. Transpiration is the water a plant loses as a result of photosynthetic conversion of water and sunlight to plant sugars. The ability of a crop to grow and produce is in direct relationship to the rate of evapotranspiration. Those who have used a hair dryer understand the role wind plays in rates of evapotranspiration. The more wind the greater the evaporation, increasing crop stress and the need for more frequent rain or irrigation. The use of increased amounts of irrigation water to mechanically offset the effects of dehydration tends to drive plant nutrients below the root zone losing the fertility and creating groundwater problems. A hedgerow cuts the wind velocity, reduces the amount of moisture loss to evaporation leaving more to be used in leaf transpiration.

A wish for farming, that it might be less a contest and more a life system.

The role of the hedgerow in crop production and soil conservation should be reason enough to insure continued existence. We could stop here if the question were a matter of pure economics. But there is, as near every mother has said, from time to time, such a thing as manners. Hedges are a manifestation of manners, a respectful decorum, admitting there are other concerns besides personal gain, a philosophy whose first principle is accepting the concept that neighbors exist. A principle of respect. Maybe we shouldn't have to look at each other's fields, new tractors or mercury vapor lights. A wish for farming, that it might be less a contest and more a life system.

The hedgerow has still more to offer the community. It is as useful in winter in conserving fuel as in summer for mitigating the effect of solar combustion. Hedgerows function as snow fence, gentling chill factors. They act as mufflers with deciduous baffles to quell traffic sounds between highway and residence. They perform a simple landscape function, extending the property line. The countryside seems bigger, more involved. Hedges insure privacy and hide cultural warts — sufficient reason to decree the hedge as a country canon and assure it a sanctified position in the township.

Still more. Hedgerows are habitat for many forms of wildlife. Fields, normally constricted to playing the tune of one species, are expanded. Thrushes, quail, mourning dove, wren, song sparrow, lark and killdeer are all given a chance to be. Fox, squirrel, badger and gopher also find a satisfactory home.

To own land is to be its master. The lawn and field, highway and golf course are accepted as customary apparel. The suburbanite whose lot is devoted to the exclusive worship of Kentucky blue is as guilty as the farmer who plows from town road to fence post. At issue is a question of community. Not the community we normally conceive as a hetero-mix of humanity, a blend of bakers, dentists, musicians, cops, missionaries, mattress makers, blacks, reds, browns, pinks and yellows. But rather it is the subtle spectrum of the countless other nations that share this ground.

Continued next page . . .

Humanity is not the complete electorate. Our legal system overlooks a constituency of large minorities, of gopher, princess pine and blue-eyed grass. We've given the ballot to road, curb, smokestack, ball park and

The absence and demise of hedgerows could be blamed on the town assessor, who, out of pique or so it seems, taxes the property to the middle of the road.

billboard; citizenship to power line, gas main and telephone cable. But if one considers the needs of the total nation, of all life, hedgerows are egalitarian. They belong on the land.

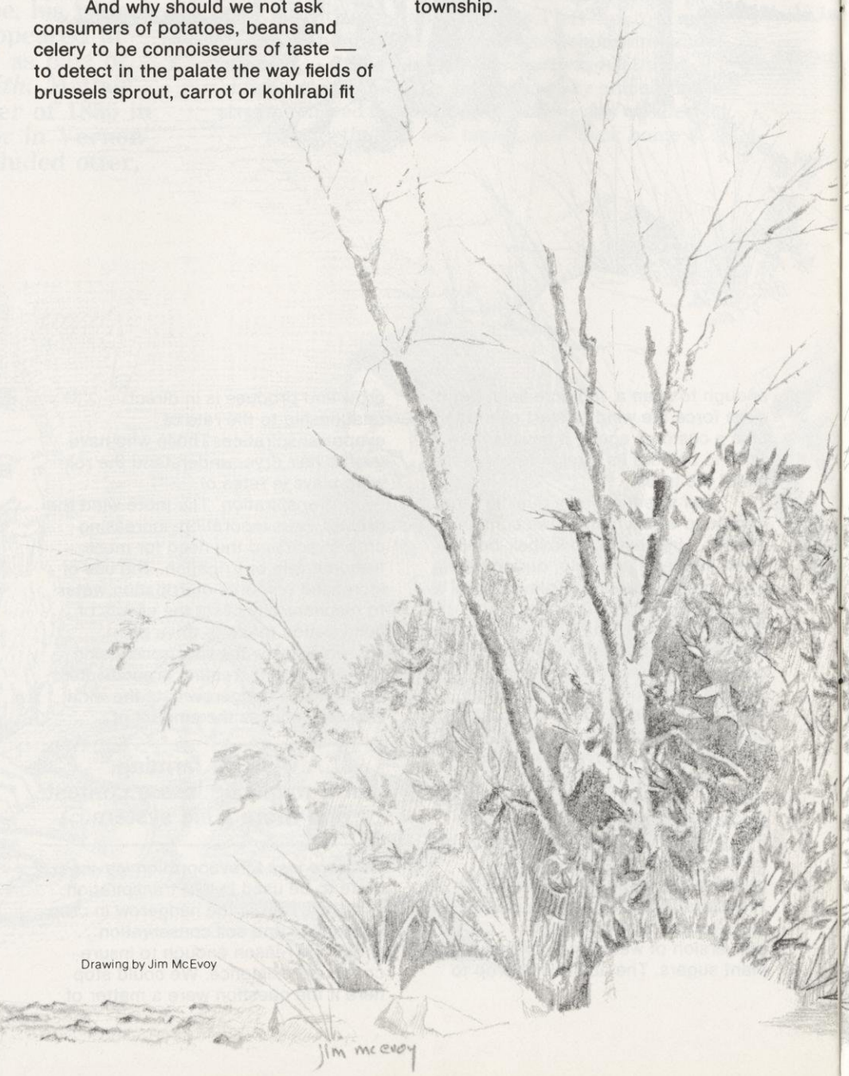
Sure, some will say hedgerows are inefficient. Point an accusing finger to the balance sheet as if the sums of all arithmetic are really ciphered there. Hedgerows, they'll say, are in the way of the tractors and plows. Real estate is just too expensive to permit this gratuity, this luxury of land.

The hedgerow is cleared in some cases because of unavoidable conflict. Power lines conspire against them and generally the two don't mix. But plants could be used which are well content to dwell beneath the wires; lilac, wild cherry, mountain ash, alder, blue beach, thornapple and sumac or Christmas conifers to be harvested before they're a threat, with hazel, elderberry and blackberry for binder and flavor. An edge so tempered could make the field whole.

For children, hedgerows are a secret hideout. A bower of box elder transforms them into Robin Hood and Maid Marian, or inscrutable Indians beyond the command of mother to wash before coming to the table. Sumac lemonade from a hedgerow can halve the dust and heat of a dirty way of life.

The absence and demise of hedgerows could be blamed on the town assessor, who, out of pique or so it seems, taxes the property to the middle of the road. Should know better; should know it makes farmers mad, know how they eye the road with the disc and think what a mess they could make. Better for farmer, road and the longevity of assessors to delete road and hedge from the tax rolls. A tithe to a domestic charity. Town chairmen would howl at such revenue losses, a 10 foot hedge, three acres every quarter section, "jus' for pretty." Clerks would moan at the odd integers, forgetting it matters not a whit to their green-eyed calculators. Gains, it could be guessed, would overshadow losses, and by considerable margin when the coinage of bluebird nests are added to the sum total.

And why should we not ask consumers of potatoes, beans and celery to be connoisseurs of taste — to detect in the palate the way fields of brussels sprout, carrot or kohlrabi fit our hills — to savor in beet and rutabaga a hint of trout stream, or find in sweet corn, snap bean and pea, the flavor of wren and song sparrow. The Burbank potato as the wine of Burgundy! To know by the taste of it that there's a hedge between the road and the field and that the farmer is an equal opportunity employer who gives ground to many lives. That kind of discrimination would be magic. It could change a $2 bag of spuds into a $5 bag of russet gems and in the metamorphosis even save the township.



Drawing by Jim McEvoy

Firewood on the back burner?

Burning wood to heat homes is practical where source of supply is close. But use a sharp pencil! Transportation costs could kill you and dry up supply. As for industry, forget it.

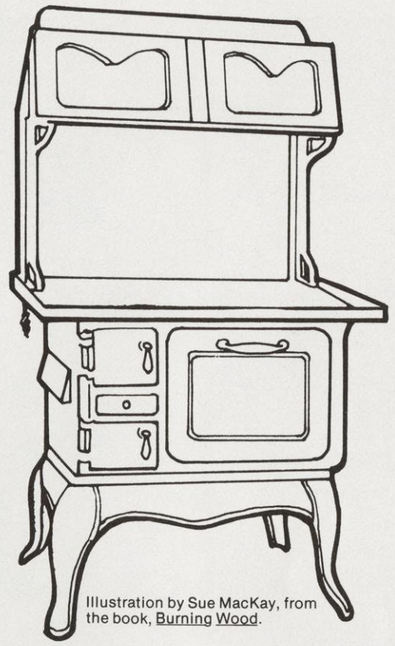


Illustration by Sue MacKay, from the book, Burning Wood.

JOSEPH HILYARD,
UW-Madison Energy Extension

We've all heard about shortages of oil, coal and natural gas. But could Wisconsin also face a shortage of wood for home heating?

According to wood resource specialists the answer is yes, unless we find better ways to harvest and market firewood.

"We probably don't need to worry for a decade or so," says Gordon Cunningham, forestry professor at UW-Madison. "But after that, we may see some serious problems with firewood prices and supplies in the southern part of the state."

It may sound strange to talk about a shortage in a state that's 40% forest and in fact, it's unlikely Wisconsin will physically "run out" of firewood. But Cunningham says it will become more difficult to find and harvest, and more expensive to transport as time goes by.

It's estimated there are a billion cubic feet of rough, rotten and cull trees on Wisconsin's commercial forest lands. That amount, now unused, could supply the total heating needs of 350,000 typical Wisconsin homes for an entire heating season.

That's a lot of potential firewood. But much of it's scattered within the state's forests, and most forests are in the northern third of Wisconsin.

Many homeowners who live close by can cut firewood on their own or on public or forest-industry land for $5 or less per standard cord (a four-by-four-by-eight-foot stack). But those further away must generally rely on dealers who charge from $40 to $100 a standard cord. Cunningham says it's important for users to shop around.

Transportation can be a major factor in firewood cost. One dealer in the Madison area who charges about $90 per cord says a third to half is spent hauling wood from 40 to 60 miles away.

But where it can be easily obtained, wood is popular, especially with the price of conventional fuels rising. About 40% of the state's rural population now burn wood for at least some of their heating needs.

In areas far from timber resources, according to wood heat specialist Bill Seybold, it's important to compare not just the price but the "energy cost" of firewood with conventional fuels. At $80 a cord, dry maple or oak burned in a reasonably efficient wood stove is about one-and-a-half times as expensive per BTU as 44¢ per-gallon fuel oil burned in an average furnace. But that same cord of wood could provide less expensive heat than electricity at 3¢ per kilowatt-hour.

One possible way to ease future price and supply pressure is to encourage farmers, private citizens and non-forestry businesses to develop their neglected firewood resources. About 60% of the state's forest land is owned by these groups.

Guy Rodgers, head of DNR's Private Forestry Section, points to a federal incentive program for timber stand improvement (TSI) that may spur this development.

Under TSI guidelines, set up in the mid-1950's, Uncle Sam will pay 75% of the cost of removing poor quality trees that stunt the growth of more valuable crop trees. In the process, says Rodgers,

Continued next page . . .

"a lot of wood that's worthless as timber can be used as firewood."

The TSI program has been growing in popularity in Wisconsin; about 2,000 acres of forest have been upgraded each year since 1976. But Rodgers doesn't think that TSI is the solution to long-range firewood supply.

"If demand really jumps," he says, "I think we'll see more and more large-scale commercial firewood operations."

Glenn Anderson, former executive secretary of the Wisconsin Federation of Co-operatives, thinks a firewood co-op is a good idea. Both producers and users would become members. Farmers and other landowners would work to harvest and transport firewood for sale to other co-op members at reduced cost. All would share in the profits.

"A co-op arrangement, tied to TSI," says Anderson, "could keep transportation costs down and increase firewood supplies, as well as improve income of farmers with timber stands."

The federation is seeking funds from the U.S. Department of Energy to set up a firewood co-op demonstration project.

Some have suggested that consumers may have to compete with industry for firewood in years ahead, but that doesn't seem likely in Wisconsin. Paper mills and other industries in the state do use wood scraps, bark and sawdust for fuel, but few if any now buy wood to burn.

Rober Stone, a researchers at the U.S. Department of Agriculture's Forest Products Laboratory in Madison, thinks conventional fuel prices would have to take a drastic jump before industries would consider using wood as a major fuel.

In that case, he says, there could be direct competition for fuel wood in timber-rich areas of the state.

"If the price were right," says Stone, "both industry and firewood dealers probably would start using regular pulp and timber trees, not just cull wood, for fuel."

But for the immediate future at least industry and homeowners will not be competing for the same wood resources. Domestic users will burn mostly cull and rough wood. Industry will burn some scrap, bark and wood waste for fuel, using good quality wood to make valuable products like lumber and paper.

The notion that so called "energy plantations" could be used to replace fossil fuels because wood is a renewable resource is pretty much a pipe dream. Cost again is the bugaboo. Assuming an annual production of four cords per acre (Wisconsin's growth rate is about one-tenth of this) it would require 300 square miles to fuel a single steam-electric generating plant of average capacity.

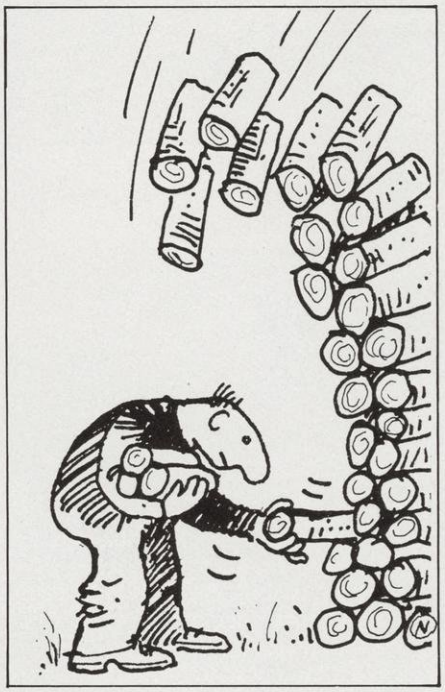
Forest residues provide another point of hesitation. Their removal could destroy the forest ecosystem.

And the act of harvesting the trees itself has an energy cost. So big scale plantations as fossil fuel substitutes are just not practical. Solar, wind and other forms may offer more hope.

For the time being, the biggest demand for firewood will come from homeowners and some small businesses eager to use wood eating on a small scale.

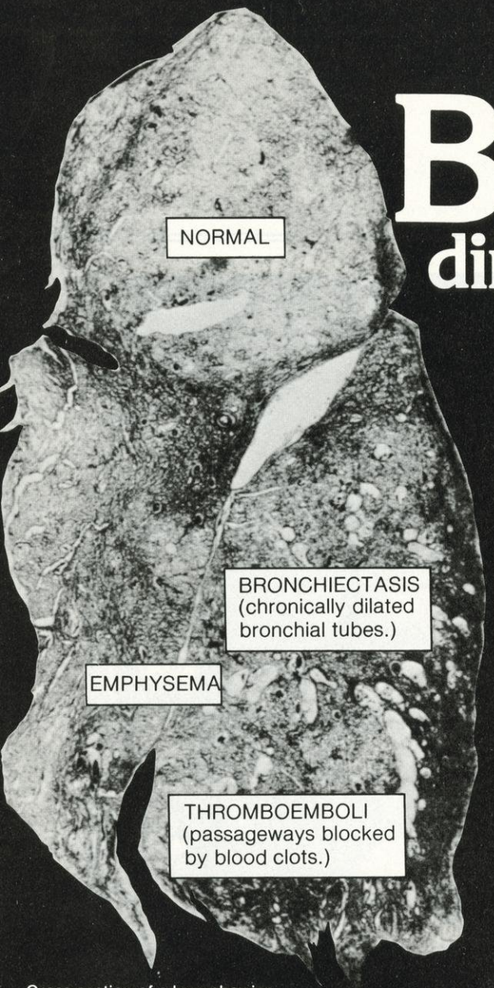
Wood fuel can make real sense especially for those who have an assured supply — either 10 or more acres of their own timber, or access to public or industrial forests.

But most consumers don't have that kind of secure wood supply. To make sure these users have enough firewood in the winters ahead, we need to take action now. The key is better development of firewood resources, coupled with education about efficient and safe woodburning.



A face cord is 8' long, 4' high and 12" to 36" wide.

Breathalyze your air:
dirty can do you in



Cross section of a lung showing abnormalities that can be caused by dirty air.

WOLF KLASSEN
Supervisor, Monitoring Program

A distant smokestack lofts a lazy white trail skyward. It's a quiet, crisp winter morning. The wooded hillside in the distance seems a bit hazy. Your head aches, your eyes water and you have a little cough. Probably just the fog and a slight cold.

Well, maybe, but they could be signs of air pollution.

Air pollution is an insidious evil because often you don't know it's there or you're so used to it you don't pay attention. It can come into your life as carbon monoxide, particulate matter, hydrocarbon, sulfur oxide or as a photochemical oxidant like ozone.

Air pollution contributes to heart disease, lung disease, cancer of the throat and other ailments. And research shows that some pollutants accelerate these disorders in persons already suffering from them.

Many impurities precipitate out of the air with rain and snow. Air pollution then becomes water pollution and a new health hazard. It is estimated that 40% of all air pollutants, especially heavy metals (copper, zinc, lead), reach our waters.

The Environmental Protection Agency (EPA) has determined safe levels for most common air contaminants. Its rules try to achieve and maintain these safe levels.

Ozone

Ozone is a highly toxic gas occurring naturally in the upper atmosphere where it serves a very useful purpose — to keep harmful ultra-violet rays from reaching earth. But ozone at ground level is dangerous. It is produced in the summertime when hydrocarbons react with nitrogen oxide in sunlight. You can see hydrocarbon vapors rise from the nozzle of a gas pump when you fill your tank. Hydrocarbons also spurt voluminously from a car's exhaust — the largest source of this contaminant. Industrial combustion is another big one. Refineries, tank farms and dry cleaning establishments also release hydrocarbons.

Once ozone is produced, winds carry it from industrialized parts of Wisconsin, Minneapolis, Chicago, Gary and other cities all across the state. Ozone and several other photochemical oxidants can be altered and become more poisonous as they travel. Ozone irritates and swells sinuses and mucous membranes causing headaches, nasal drainage and tears. Exposure to high ozone levels inflames and swells bronchial passages. This increases susceptibility to asthma attacks, emphysema, bronchitis and pneumonia.

Ozone can also destroy red blood cells. Long exposure prematurely ages lung tissue and breaks chromosomes. This may contribute to abnormal cell development and cancer.

Formaldehyde, acrobin, nitrogen peroxide and organic oxides are other photochemical oxidants. These cause symptoms similar to ozone that may even be more severe. Exercise increases their effects.

One study of 200 young, healthy nurses showed that even when oxidant levels were slightly below EPA standards, there was an increase in eye irritation cases. When oxidant levels were slightly above the standard, headaches increased and if oxidant levels became twice the national standard, there was a rise in chest pains and coughing.

Carbon monoxide

Carbon monoxide is a colorless, odorless, tasteless gas produced primarily by automobile engines. When breathed it replaces oxygen in the blood stream.

Lack of oxygen slows heart beat and blood flow, and reduces alertness, visual perception and mental function. Carbon monoxide poisoning threatens the lives of people with heart and lung deficiencies.

Particulates

These consist of all particles suspended in the air. They irritate eyes, throat and lungs, and can cause permanent damage with constant exposure. Some particles embed themselves in lung tissue and cause it to harden and become less efficient. Coal miners suffering from black lung (silicosis) show the damage of long exposure to coal and silica dust.

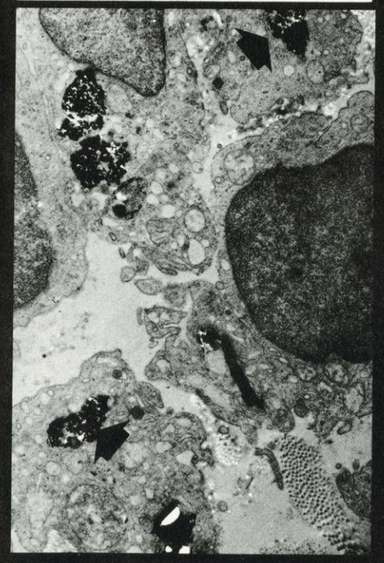
Particles of lead, beryllium, cadmium and arsenic also enter the body through the lungs. These highly toxic chemicals can cause failure of the nervous system, blood disorders and other bodily malfunctions. Iron, zinc, copper and manganese accumulate in the liver and bone marrow. Small amounts are necessary for good health, but high concentrations stimulate overproduction of blood cells.

Even stone and metal are not immune from pollution's effects. It can erode the former and corrode the latter. Paper can become brittle on exposure to dirty air. Leather can disintegrate, rubber can crack.

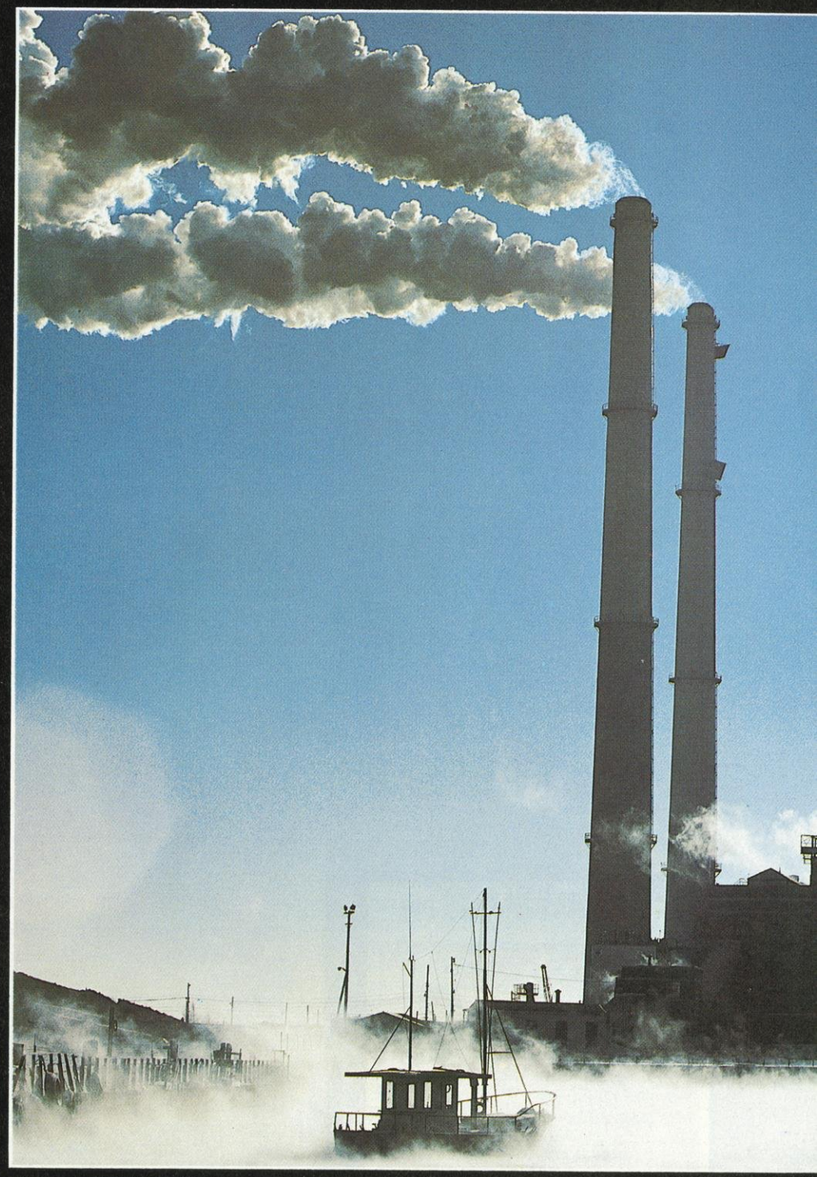
Air facts*

1. Lung disease has doubled every five years in the U.S. since World War II.
2. 50-80% of all child diseases are respiratory related.
3. Shifting the location of power plants from urban to rural areas increased lung disease in rural children.
4. Air pollution is a factor in the three major causes of death in the U.S.: heart disease, lung disease and cancer. Right now no one knows how big a factor it is.
5. Catalytic converters on cars greatly reduce carbon monoxide and hydrocarbon emissions but do little to stop particulate matter and nitrogen oxide which combine with hydrocarbons to produce ozone.
6. 70-100% of all carbon monoxide is produced by cars and trucks.
7. Victims of chronic lung disease enter hospitals twice as often and stay twice as long as other people.
8. Social Security pays $100-million per year to lung disease victims.

* From EPA and the American Lung Association



Arrows point to heavy metals in the diseased lung of a 55 year old Milwaukee man who worked as a mechanic in an industrial plant. The photo was taken with an electron microscope, magnification about 8,000 times.



Wisconsin Electric's power plant in Port Washington on a cold winter afternoon.
(Photo by Vern Arendt courtesy of the State Historical Society's 1977 calendar, see page 16.)

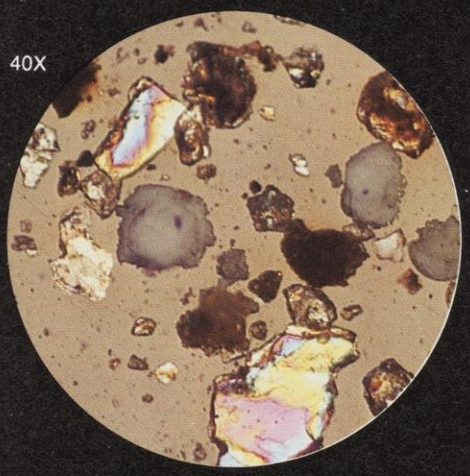
Continued next page . . .

A cement dust component (tetracalcium aluminoferrite) magnified.

500X

Street sample from an industrialized area

40X



Malt grain dust

40X

Photos by McCrone Research Institute, Chicago, Ill.

Sulfur oxides

Oil and coal burning industries release sulfur oxides into the air as a by-product. These oxides are colorless gases with a strong smell and taste. Oxides combine with oxygen to form sulfates.

Sulfur oxides attack lungs in much the same way as ozone. There is reason to believe that sulfates build up in the body and cause or increase the probability of contracting bronchitis, emphysema and asthma.

On the farm

Polluted air has been known to cripple and kill cattle. Farmers have seen it damage or destroy vegetables, flowers, grain and trees. Dirty air can injure crops as far as 100 miles from its source.

Laboratory experiments on air pollution indicate that dirty air can cause chickens to lay fewer eggs, result in sheep growing a thinner coat of wool and cows giving less milk.

Car inspection in Wisconsin?

If the state doesn't meet EPA standards for oxidant levels by 1982, EPA will require that emissions from automobiles be inspected to make sure built-in controls work right.

There would be an inspection every year on cars belonging to those of us who live in urban areas having a population of 200,000 or more. This would include Southeastern Wisconsin, Dane county and possibly Brown county.

Administration would probably be jointly shared by DNR and the Department of Transportation.

Auto emission controls in good working order not only reduce hydrocarbons and improve air quality, but also save energy because well tuned cars get more miles per gallon.

A 1970 model car produces 10 times more hydrocarbon than a 1975 model. By 1985, when the old cars are off the road, hydrocarbon output from automobiles should be 66% below the 1970 level.

Ways to improve

Much proven technology is available that can greatly reduce oxidant levels without disrupting life styles. Non-vented gasoline storage, dryflake paint for auto makers, recirculating fumes from boilers, emission controls on cars, smokestack filters and scrubbers and closed dry cleaning vats all reduce hydrocarbons. Legislation to make some of this neglected technology mandatory would help.

You as an individual can help too. Keep your car tuned, avoid extra driving, don't over-fill your gas tank or spill gas, use water based paints and don't burn leaves and trash.

Air pollution costs

A researcher for the American Lung Association estimates that the health costs of air pollution probably exceed $10 billion per year. The researcher indicates that some better way of measuring the human costs of air pollution is needed since the dollar estimate is primarily useful for its shock value.

Usually, particulates bigger than three micra in diameter are short-stopped before they ever reach the lung. The tiny ones, those smaller than .5 micra, are exhaled. But those in between, from .5 to three micra, remain and can cause trouble. (A micron is a thousandth of a millimeter – so small that the head of a pin measures 500 micra.)

This acute asthma attack caused death. The victim's lung is plugged with mucus.

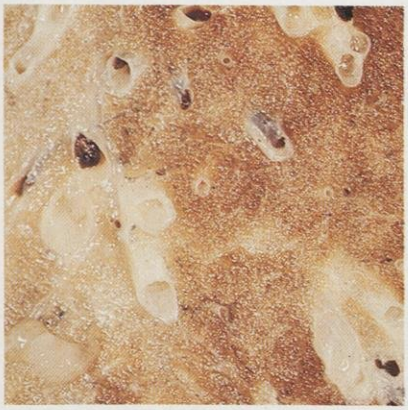


Photo by Enrique Valdivia, M.D.
Professor of Pathology UW-Madison

Courtesy of the American Thoracic Society

Evening Grosbeak.
Photo by
Richard Joel Wunsch

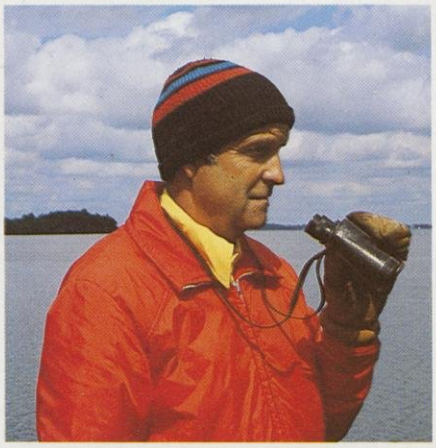
Birds have always played a part in Christmas symbolism. But for many Wisconsin residents, the relationship is concrete. For them, it's Christmas and counting. Not surprisingly, they've found holiday birds all around us. Do you know how many?

Christmas birds, well done

PROF. WILLIAM HILSENHOFF,
Christmas Count Editor,
Wisconsin Society for Ornithology

Christmas is a time of ritual and most of us have found a way to include the things we love as part of it. For some 700 Wisconsin birdwatchers there is the ritual of the Christmas Count. The Christmas Count has tradition, challenge and dimension and makes certain requirements. The object — to count every bird in a circle 15 miles in diameter — is impossible to achieve. Yet birders, or amateur ornithologists (or birdwatchers) make the try every year all over North America. Sometimes in some places they come close, especially where there are a large number of observers, well organized to cover the count area.

Birders have been doing this ever since 1900 when Bird Lore Magazine sponsored the very first national Christmas Count. In Wisconsin that year, Alick Wetmore censused populations around North Freedom. Wetmore found 12 species and 105 individuals. From then on, the state never missed a year and the number of observers, counts and species has shown a steady rise,



Bill Hilsenhoff

especially since 1939 when the Wisconsin Society for Ornithology was founded.

This year birders in the Badger state will census about 75 areas between December 16 and January 1 (dates set by the National Audubon Society which coordinates activity throughout the U.S.). Birders in large, well organized local counts usually spot 60 or more species. Statewide, totals have gone over 140.

Last Christmas the statewide number was 125. Highlight was an unprecedented invasion of winter finches, and record numbers of pine grosbeaks, white-winged crossbills and pine siskins were seen. Early low temperatures froze everything solid so shorebirds and waterfowl were down, but great horned and long-eared owls and red-breasted nuthatches (261 at Brule) were abnormally common. For rarities, there were six Barrow's goldeneyes at Newburg, a little gull in Milwaukee, a loggerhead shrike at Holcombe (second time ever) and gyrfalcons at Solon Springs, Oshkosh and Newburg (third time ever).

Indeed, the possibility of spotting a rare bird is the bait that tempts many a birder out at Christmastide. There's also a nagging curiosity to know just what species are still in the neighborhood. And it's a strong pull. Like the letter carrier, neither snow, sleet, wind, cold nor other inclement weather keeps a birder from the appointed 15 mile circle. And a half dozen of the counts in Wisconsin start when Santa stops, on Christmas morning. Gifts take second place.

Observers often begin an hour or two before sunrise listening for owls and

Continued next page . . .

Photos by Richard Joel Wunsch

then spend the entire day tramping woods, fields, and marshes. Others drive, looking for open country birds and occasionally leaving the car to search interesting habitat. Many observers participate in two or more counts during the season. Sometimes, weather is ideal — sunshine, little wind, seasonal temperatures and good snow cover move the birds to streambanks, roadsides and feeders where they can be easily counted. These days are their own reward. And finally, there is the fun of birders getting together at the end of the day to compile results and talk over unusual sightings.

In the last 39 years, 195 species have been found on Wisconsin Christmas Counts. Generally, they fall into four categories:

- Permanent residents, many of which are common and found every year.
- Winter visitors that enter Wisconsin from the north, sometimes abundant, sometimes nearly absent.
- Species that normally winter south of Wisconsin but haven't migrated yet — the number found depends on the severity of the weather.
- The last group is the smallest, but most interesting — rarities, seldom found in the state at any time of year.

Winter Summary

Thrushes have mostly migrated south before the Christmas Counts, but many robins remain. Always rare but found somewhere almost every year, are the eastern bluebird, hermit thrush, and brown thrasher. Catbirds, mockingbirds, and the varied thrush are even less frequent.

Golden-crowned kinglets, cedar waxwings, and northern shrikes are fairly common but the ruby-crowned kinglet and Bohemian waxwing are not.

Warblers are unusual and produce excitement. Recently, the yellow-rumped warbler has been reported almost every year.

Red-winged, rusty and Brewer's blackbirds, common grackles, and brown-headed cowbirds, are Christmas perennials.

Finches add spice to the counts, especially the irregular invasion of northern species such as the evening and pine grosbeak, hoary and common redpoll, red and white-winged crossbill, pine siskin and purple finch. The resident cardinal and American goldfinch of course are always here.

Among waterfowl, mallards are the most abundant duck, followed closely by the common goldeneye, black duck, and common merganser. Greater scaup and oldsquaw are numerous on Lake Michigan, but rare inland. Other species occur only infrequently, especially when lakes and streams freeze by mid-December. Common and red-throated loons, whistling and mute swans, and horned grebes are infrequent, but the pied-billed grebe is found almost every year. Canada geese are abundant some years and almost absent in others, depending on location of the count.

Gulls, especially herring and ring-billed gulls abound on the Great Lakes, and inland too when there's open water. Glaucous and Bonaparte's Gulls are found nearly every year.

Other water-related birds for the most part are pretty rare at Christmas. The American coot, belted kingfisher, and common snipe are always present. Occasionally there are great blue and black-crowned night herons, American bitterns, Virginia rails, and killdeers.

The red-tailed hawk, rough-legged hawk, and American kestrel are always quite numerous in the southern half of the state, and bald eagles are often found along open stretches on the Wisconsin and Mississippi Rivers. Most

Pine Grosbeak. Last winter there were record numbers.

other hawks are also found every year, but in small numbers.

Grouse, pheasants, and quail are permanent residents that usually show up on every count.

Rock doves and mourning doves are also common.

Owls, especially screech, great horned, and barred are often heard but not seen. Long-eared owls are frequently flushed from roosts in red pine, short-eared owls from open field and marshes, and the tiny saw-whet owl from dense vegetation. The snowy owl is irregular, but most common along Lake Michigan and in open country.

Downy, hairy, red-bellied and pileated woodpeckers are permanent residents over much of the state and there are also always several common flickers, red-headed woodpeckers, and yellow-bellied sapsuckers that remain in Wisconsin through the Christmas Count.

Many open country birds like horned larks, eastern and western meadowlarks, and lapland longspurs remain in southern Wisconsin, and are seen along roadsides or on manure spreads. Snow buntings occur statewide, sometimes in tremendously large flocks.

There are also blue jays, black-capped chickadees, crows, white and red-breasted nuthatches, and brown creepers on almost every count. Gray jays, boreal chickadees, and ravens are normally found only in the far north, and the tufted titmouse is restricted to southern and western counties.

Wrens are rare.

Tree sparrows and northern juncos are the most abundant sparrows on counts in southern Wisconsin. Song, white-throated, and swamp sparrows also linger to be counted.

See back cover for rare winter birds.

Saw whet owls are frequently flushed from dense vegetation.

Photo by Ron Austin

Outdoors overnight in winter

It's an exhilerating experience, but to enjoy it, you need the right equipment. These are some things to keep in mind for a warm outfit.

STEVE ANDERSON
Winter Sportsman

Winter camping offers very special rewards. There are the black and white silhouettes of night, the crisp sounds underfoot or snowfall seen from a snug tent. It is a chance to find a quiet, serene beauty no other season can match. But it's also very demanding — on you and your equipment. The winter camper has to be careful, has to be prepared, and, on nights when the mercury plummets and a warm bed is far off, maybe has to be a little crazy too.

So choose your equipment carefully. It may have to keep you alive.

Clothing must be warm, but not prone to overheating that can build a sweat and chill you. This is critical for strenuous sports like skiing and snowshoeing.

Keeping warm will be a lot easier if you wear wool. Cotton soaks up moisture and can freeze next to your skin, but wool stays warm even when wet. This could be a lifesaver when an early or late season snowstorm turns to rain and sleet. With wool pants, cap, shirt, socks, underwear and sweaters, you may itch a bit, but you won't be cold. If you really can't tolerate wool, try some of the wool-cotton or wool-polyester blends. They're not so warm, but they're more comfortable.

Over all this wool, you'll need some kind of coat or jacket. Down is popular, and can be very warm. But it's also very expensive, and doesn't really possess any magical insulating properties. It does provide the most warmth with the least weight. But some synthetic fibers insulate nearly as well and cost a lot less. They are a bit heavier and bulkier, but the new synthetics keep you warm when they get wet, and down doesn't.

How you dress your feet depends on your activity. Cross country skiers move around enough to keep their feet warm in light boots. But for sitting or standing, you'll need an insulated, waterproof pair. Felt-lined "pac" or snowmobile boots work well and are popular.

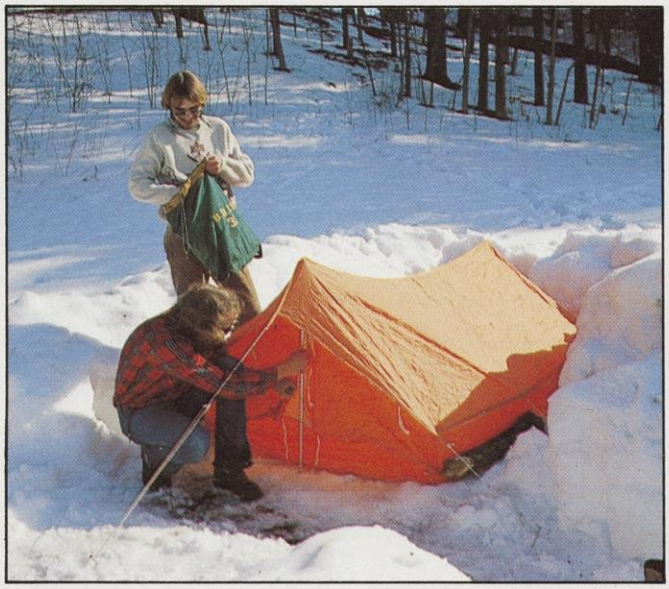
It's dangerous to overheat and the best way to prevent this is with the new "layered look." When you feel uncomfortably warm, just remove a jacket or sweater without cooling off too much. It's important that clothing be versatile. It needs to keep you comfortable, chopping wood or just sitting. One or two thick pieces won't do the job.

As for sleeping bags, an inadequate one will make a long, cold winter night a lot colder and a lot longer and utterably miserable. Selecting one from among the hundreds of models available will be easier if you keep this in mind: thickness is warmth! The thicker the insulation over and under you, the warmer you'll be. This is true of almost all fillers commonly used in sleeping bags. For winter camping in really bitter weather, you should have a total thickness, or *loft,* of about seven to eight inches or more. For most sleeping bags, this means between three and a half to four inches of thickness over you — sufficient for all but the coldest of nights. The thickness should be constant, with no thin spots to let heat escape.

Shape also make a difference. The mummy style which fits closely around the body with a hood that draws around the face traps heat more efficiently than the roomier kind. You might find a mummy bag confining, but it will keep you warmest with the least weight.

Again, an expensive down-filled bag isn't necessary. As I said, new synthetic fibers, such as Polarguard and Dacron Fiberfill II, insulate nearly as well and cost up to 50% less. Although they weigh 30 to 40% more than down, they're more dependable in damp and cold, and for many campers this more than compensates for the extra pound or two. A winter weight polyester bag weighs in at around six pounds and costs about $80. A down model is about four pounds and costs at least $120. You'll also need a foam pad to sleep on, because neither down nor polyester provide much insulation underneath.

If you have a camper or trailer, your housing problems are solved. If you plan to buy a tent, you'll soon find that they come in even more varieties then sleeping bags, ranging from superlight backpack models to multi-room cabin styles. A good winter tent should protect you from the elements, be comfortable, and easy to set up in snow or frozen ground. Self-supporting models, which



Photos by Dean Tvedt

cut down or eliminate the need for stakes and guy-lines work best.

Tents can be canvas or nylon. Nylon tents are very light, but they must have a breathable roof that allows moisture to escape. Otherwise the vapor will condense and rain down on you as frost. A second, waterproof roof or fly is used over the non-waterproof panels to prevent this. Canvas tents are generally larger for the price, but canvas is heavy and can rot. You'll also need a stove since all the firewood may be buried under two or three feet of snow. Choose this carefully with attention to safety: worry about escaping gas and fire.

As for the rest of your winter camping tool kit, the only way to find out exactly what you need is through experience. Your first trips should be taken in the company of someone who's done it before. If you can't find anyone to get you started, make the first couple of jaunts short. Make sure you can get back out if things go wrong.

With proper equipment and common sense, you should have no problem adapting to the cold. Camping in the silent, white world of a Wisconsin winter might just make for one of your most memorable outdoor experiences.

Where to go

WINTER CAMPING

STATE PARK OR FOREST*	NO. OF CAMPSITES	ELECTRICAL OUTLETS	ACTIVITIES
Governor Dodge**	20	14	1, 2, 3, 4, 5, 6
Mirror Lake	20	0	1, 2, 3, 6
Interstate**	35	0	2, 3, 5, 6
Willow River	20	8	2, 3, 6
High Cliff**	15	0	1, 2, 3, 4, 5, 6
Peninsula	25	15	1, 2, 3, 5, 6
Potawatomi	10	5	1, 2, 3, 5, 6
Terry Andrae	32	28	1, 2
Hartman Creek	10	0	1, 2, 3, 4, 5, 6
Devil's Lake	50	15	2, 3, 4, 6
Point Beach**	20	20	1, 2, 4, 5, 6
No. Kettle Moraine	35	28	1, 2, 3, 4, 5, 6
So. Kettle Moraine**	52	10	1, 2, 3, 4, 5, 6
No. Highland-Am. Legion	36***	0	1, 2, 3, 5, 6

* All state parks or forests have pit toilets and water.
** Water at ranger station or office.
*** Clear Lake Campground and Firefly campground.

Activities:
1. Snowmobiling
2. Cross-country skiing
3. Fishing
4. Skating
5. Snowshoeing
6. Hiking

Governor Dodge, Mirror Lake, Interstate, Willow River, High Cliff, Peninsula, Potawatomi, Terry Andrae, Hartman Creek and Devil's Lake state parks remain open throughout the winter. Point Beach, Northern Kettle Moraine, Southern Kettle Moraine and Northern Highland-American Legion state forests are also open for winter camping. For all but Northern Highland-American Legion, you'll need an admission sticker and a camping permit, which costs $2.25 a night. Campers using an electrical hook-up must pay an additional service charge.

Make sure you register at the park office before setting up camp. It is especially important that you clearly understand where your assigned campsite is and that you "set up" at the right location. In case of heavy snow, camping at the wrong site could result in substantial delay in getting you out. It is also imperative that the park know your exact location so you can be warned of bad weather.

Rare birds for the 17 days of Christmas

Waterfowl and related birds

Western Grebes (Milwaukee '51, '52, '54).
Cinnamon Teal (Lake Geneva '68).
Barrow's Goldeneye (Newburg '77).
Harlequin Ducks (Racine '62, '65, '69, '71).
King Eiders (Sturgeon Bay '69, Oshkosh '73).
Surf Scoters (Madison '52, Lake Geneva '57, Racine '67).
Black Scoters (Hales Corners '70, Racine '74, Hudson '76).
Iceland Gull (Bayfield '70, Kenosha '71).
Great Black-backed Gull (Kenosha '49, '55, Appleton '71).
Black-legged Kittiwake (Madison '74).
Franklin's Gull (Milwaukee '50).
Little Gull (Milwaukee '77).
King Rail (Madison '74).
Sora Rail (Madison '69, Green Bay '74).
American Woodcock (Madison '71, Kenosha '75).
Pectoral Sandpiper (La Crosse '76).
Spotted Sandpiper (Cooksville '65).
Red Knot (Milwaukee '48).
Purple Sandpiper (Racine '65).
Semipalmated Sandpiper (Racine '68).

Hawks, Eagles, Owls

Ospreys (Shawano '69, Newburg '73).
Broad-winged Hawk, Peregrine Falcon, Gyrfalcon.
Great Grey Owl (Brule '74, Oxbo '75).
Hawk Owl (Wausau '64, Shawano '70).
Southern Barn Owl (Oconomowoc '61, Racine '65, Saukville '72).

Woodpeckers

Lewis (Peshtigo '68), Black-backed, 3-toed, Northern 3-toed.

Nuthatches, Magpies

Brown-headed Nuthatch (Milwaukee '71).
Black-billed Magpie (Racine '68).

Wrens

House (Racine '39), Bewick's (Madison '59).
Sedge (Madison '57).
Marsh (Waukesha '54, Madison '57, Blanchardville '75).

Thrushes

Curve-billed Thrasher (Buffalo '71, '72, '73, '74).
Grey-cheeked Thrush (Keshena '65).
Swainson's Thrush (Sauk City '71).
Mountain Bluebird (Ephraim '74).

Shrikes, Blackbirds

Loggerhead Shrike (Augusta '70, Holcombe '77).
Northern Orioles (Elkhart Lake '73, Madison '74).

Finches

Rose-breasted Grosbeak (Madison '57, Oshkosh '69).
Dickcissel (Oconomowoc '65).
European Siskin (Kenosha '73).

Sparrows

Lincoln's (Kewaunee '63, Milton '68, Buffalo '72).
Henslow's (Horicon '42).
Rufous-sided Towhee, Savanah, Vesper, Fox, Chipping, Field Harris', White-crowned.

Warblers

Pine (Durand '74), Ovenbird (Madison '65).

See story on page 27.

Department of Natural Resources
Box 7191, Madison, Wisconsin 53707

SECOND-CLASS
POSTAGE PAID
AT MADISON
WISCONSIN