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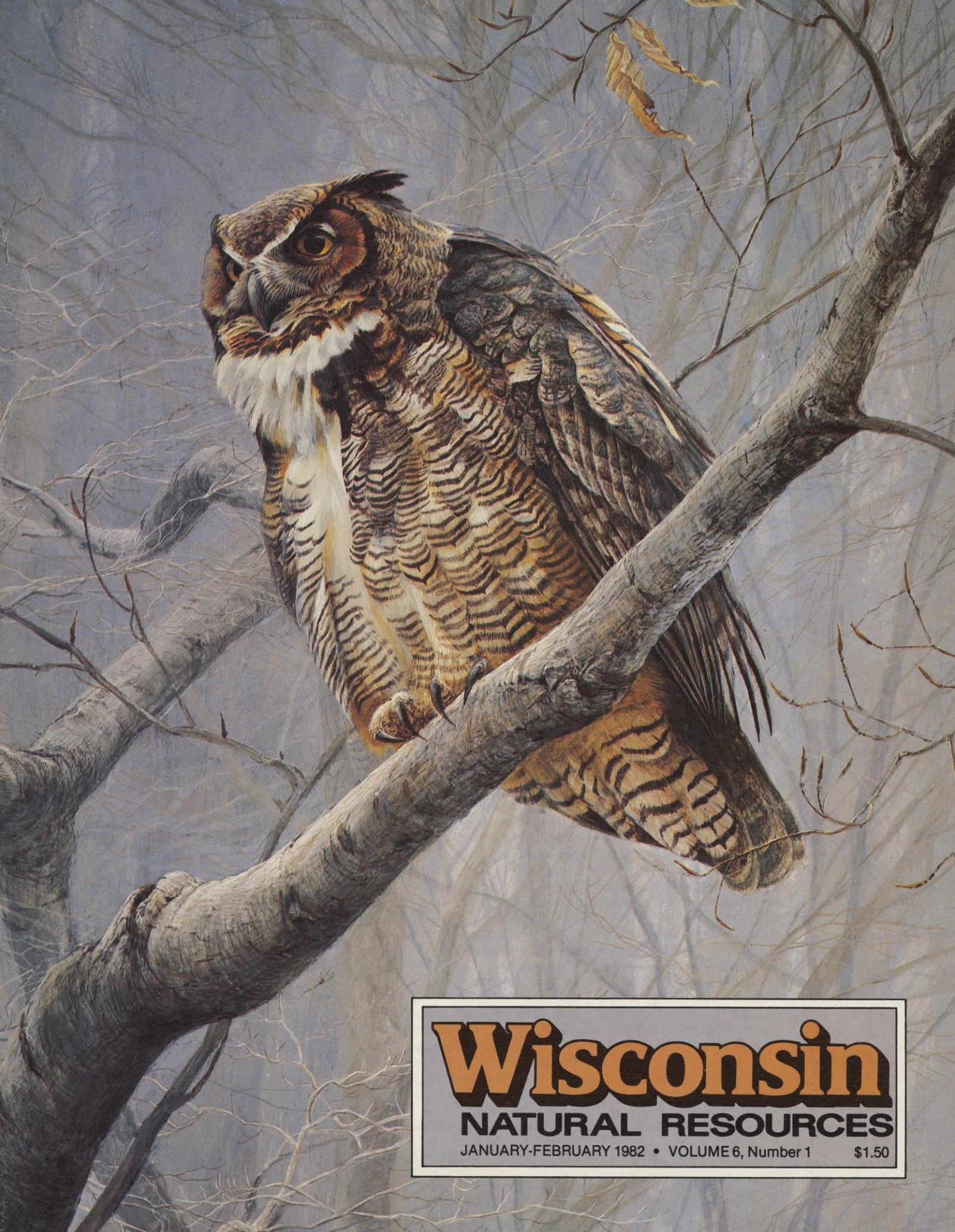

Wisconsin
NATURAL RESOURCES

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The every which way bird

GEORGE J. KNUDSEN, Chief Naturalist, DNR

One has only to watch a white-breasted nuthatch for a few minutes to conclude that it resembles a windup toy bird. Hitching along in rapid hops on the trunk of a tree, it uses its sharp eyes to locate insects, spiders and their eggs in the cracks and crannies of the bark. Once spotted, the hapless, tiny tidbits are grasped in the bird's tweezer-like bill and swallowed.

A typical 30 second search for food would involve travelling up the tree trunk, creeping part way around it, turning and skipping headfirst down the trunk, moving out onto the upper surface of a horizontal branch, then spiralling around its side and moving along the lower surface. The nuthatch is the most up-side down and down-side up bird in the forest.

A permanent statewide resident in Wisconsin, it is common in all forested areas and large woodlots. The nuthatch is often the first bird seen or heard during a winter bird walk in the woods. But it also lives in cities when there are ample large trees and will come to suet and sunflower seed feeders.

Often travelling in pairs, nuthatches keep in touch by calling "yank——yank——yank——yank——yank." Their maneuvers are side by side, then far apart, then back together again, all in a matter of a few minutes! So intent are they on their insect hunt, they stop only long enough to give an approaching human a quick furtive glance, before getting back to the search for dinner. Sometimes they don't stop at all and go on about their acrobatic business letting you watch and enjoy.

"Clinging Nuthatch" by artist Thomas Schultz, courtesy Leigh Yawkey Woodson Art Museum, Wausau. Photographed by Richard J. Wunch.

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Wild plant collages

Almost any plant that strikes your fancy will work for your collage. Photo by Dean Tvedt

Two of the author's collages — one before and one after painting in the background

The author puts finishing touches on the background of a collage. Photo by David Field

Collecting and displaying plants is educational, artistic and fun. Here's a new way to make a collage.

JAN HUGHES, Stevens Point, Wisconsin Rural Artists Association

A hike down a country road in search of natural collage materials has obvious intrinsic value all its own but also many side benefits not anticipated. First of all, it gets you outdoors. Secondly, you find yourself really looking at wild plants, observing the character of the leaves, stems and stocks as you never have before. In truth, you may find when you've finished that you've also had a "minnie course" in botany!

Spring, summer and fall are not the only seasons for gathering collage materials. Winter is a good time too. The weeds, grasses and stems you see peeking out above snow drifts, between rocks and along the shores of rivers and ponds always surprise with their stark, silhouette-like beauty. They make us more aware of a plant's true skeletal form and have a loveliness all their own.

I like to look for swamp grass, seed pods, dried spiderwort and the wonderfully colorful wild blackberry. The bushes have a hint of red in the stem and the beautiful maroon leaves seem to glow. Such specimens, gathered in winter, work in very well with pressed wildflowers and foliage of plants gathered in other seasons.

"Woolies," boots, and even snowshoes can come in handy when you hit the snowy trail for winter specimens.

Be sure to take along a good pair of garden shears or clippers. This will enable you to make clean cuts, which is better for both you and the plants. You'll need only a few specimens, (sometimes less than eight to a dozen with stems and leaves) to make a gorgeous 16 by 20 inch natural collage.

In summer, never strip plants. Rather take only two or three blooms from one and then a little of the foliage from another. Discretion prevents injury. Press flowers as soon as possible after cutting. That way specimens retain more color in the drying process. Use smooth white paper toweling, white facial tissue or newsprint. In an emergency newspapers will do quite well. There are also specially prepared pressing papers that can be purchased in some art stores and hobby shops. Unfortunately, they only come in small sheets about the size of notepaper. But they have the advantage of being reusable.

Do the pressing in a location where the plants can sit under their weights for several weeks or months and not be disturbed. That way you can let your natural specimens thoroughly dehydrate before using them.

GESSO

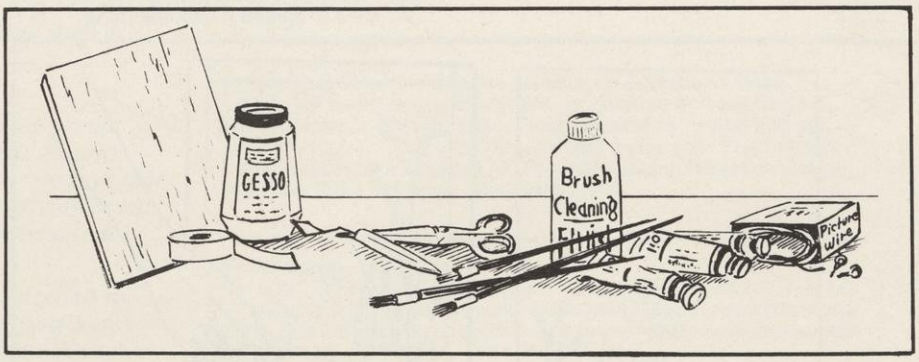
Gesso is a very ancient art material. At least three different wooden sculptured pieces at the "Treasures of Tutankhaman" exhibit in Chicago in 1977 used gesso as a base for final decoration.

Two pieces were covered with gesso, then gilded. The third, a head of Tutankhaman as a child was a good example of a carved wood piece overlaid with gesso, then painted.

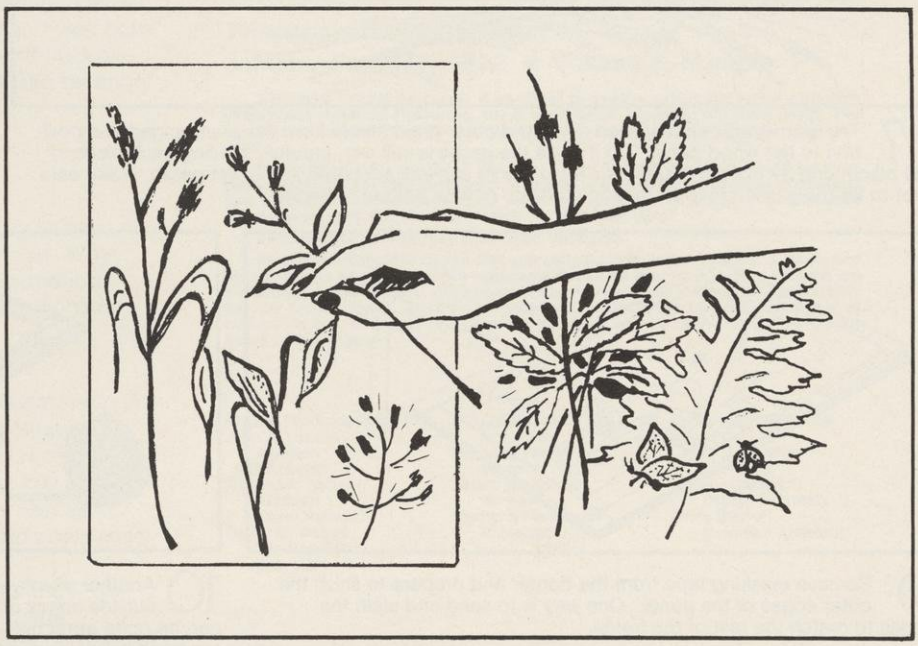
This means gesso dates back to at least 1350 b.c., and more likely, back to Akhenaten's reign, the pharaoh who preceded Tutankhaman, or maybe even before that!

The Random House Dictionary defines gesso as: 1-Gypsum or plaster of Paris prepared with glue for use as a surface for painting. 2-Any plasterlike preparation to prepare a surface for painting, gilding, etc.

Some art stores carry both ready-mixed and dry forms of gesso. However, ready-mixed is most popular. A new jar of it is usually quite runny and designed to use in surfacing canvas oil painting. However, for natural collages, gesso that has turned slightly thick with age should be used. It is easier to build up a surface and sculpture with gesso when it is slightly on the thick side! Let it stand awhile before starting your collage.



1 To create your natural collage you will need these: a wood panel of whatever size you choose, a roll of masking tape, jar of gesso, palette knife, shears, oil brushes (numbers 3, 4 and 5 work best), oil paints, bottle of brush cleaning fluid or turpentine, screw eyes and picture wire (for back side of the panel) and macrame cord and glue (optional), to use in finishing your frame.



2 Plan out your composition on another white surface. A piece of white paper the size of the wood panel works fine. In this picture-planning process, be sure to use the same natural material or flowers you'll use in the collage.

Illustrations by author.

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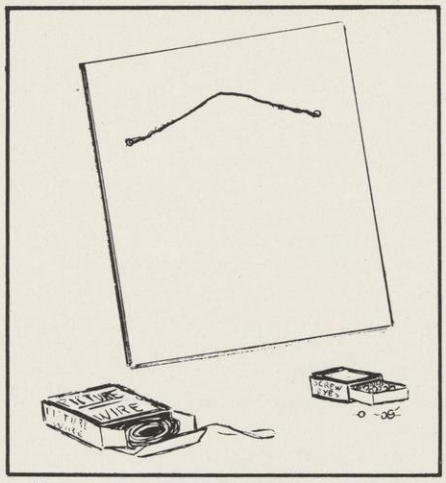
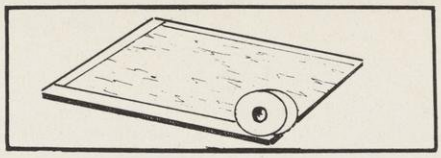
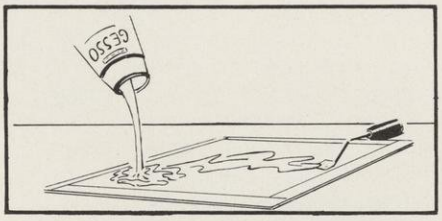


3 Drill holes and place the screw eyes in position to hold the picture wire on the back of your panel before starting the collage. If you try to do this operation after the picture is finished, it is difficult because you cannot lay the panel on its face.

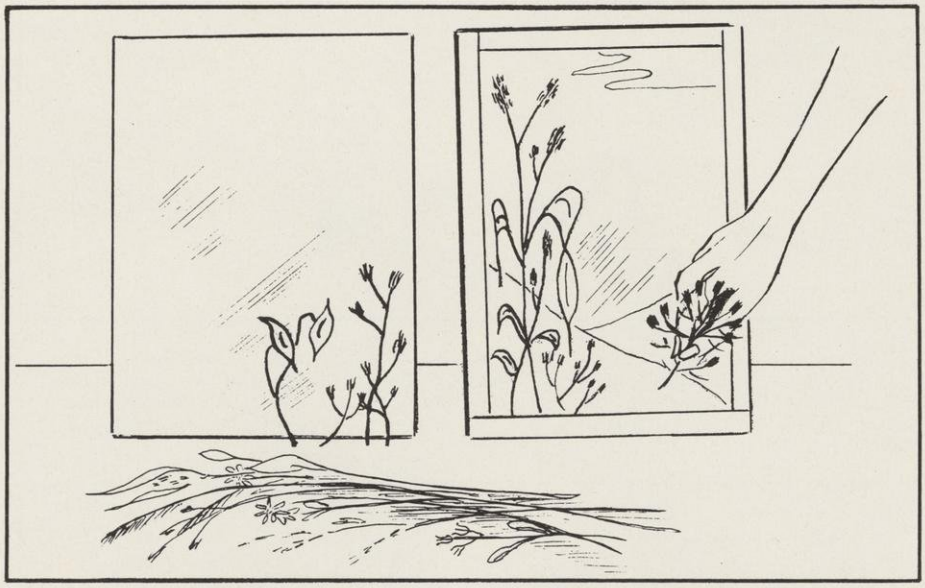


4 Choose a piece of wood paneling with an interesting grain pattern that will go well with your intended picture. Have it cut large enough to include the width of the frame. Next, using masking tape, carefully cover the outside border where the frame will go with a strip as wide as you want your frame to be. If the masking tape is pressed on well, you will not have to worry about gesso creeping under the edges of the taped area intended for your frame.



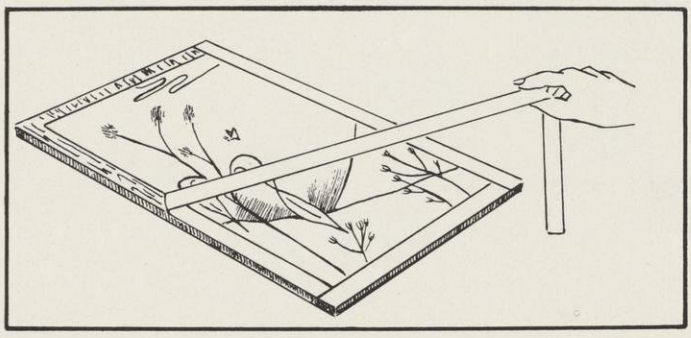
5 Pour on the gesso, using a palette knife to spread it over the panel.

6 As you work with the palette knife, think about how you would like your sky to be. Do you want clouds? If so, try sculpting the edges of cloud formations in the gesso. Also, try to show hills or other features you might want in the lower portion of your picture. It is easier to do this if your gesso is a little on the thick side, about the consistency of pudding. When this is completed, you are ready to start composing the picture.

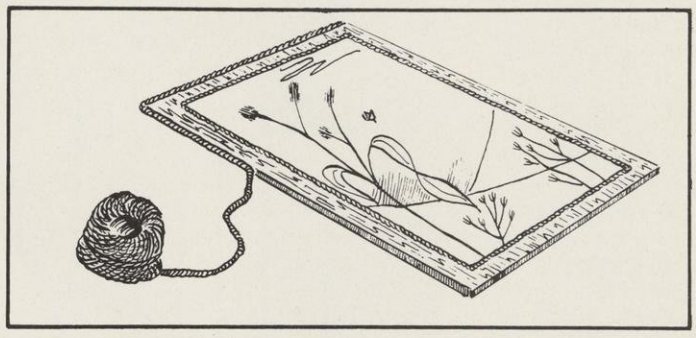


7 Transfer weeds, stems, seed pods and other dried plants from the prearranged composition to the wood panel. Do it while the gesso is still wet, carefully placing each piece in its place, one by one. Be sure your dried plants are well anchored in the wet gesso. Take care not to let the gesso creep to the top surfaces of your natural materials.

8 After the gesso is thoroughly dry, which takes about a day, you'll be ready to work up the background. Using an oil brush, paint carefully between the foliage. Your paint will work best if it is thin and watery, like an oil wash. To attain this consistency, mix a little turpentine with the paint or use brush cleaning fluid of the kind sold at art and hobby shops. Your choice of background colors will depend on the composition and your own personal choice.



9 Remove masking tape from the border and prepare to finish the outer edges of the panel. One way is to sand and stain the edges to match the rest of the frame.



10 Another effective treatment is to glue macrame cord on the outside edges of the panel. This gives a rope-like effect which can be quite attractive with some arrangements. This effect should be repeated by gluing a strip of the same cord around the edges of the picture, right next to the hardened gesso. Fasten the picture wire to the screw eyes on the back of the panel and prepare to hang your "natural collage" on the spot already picked out on your wall. Then, stand back and admire!

Illustration by artist Jim McEvoy

The soft side of winter

Cross country skiers have promises to keep with snow, especially on DNR's Kettle Moraine trails.

DAVID L. HARRISON, Ski Trail Consultant, Oconomowoc

In the icebox of winter, cross country skis are a warming thrill for any sedentary life style. Even on a frigid day, a ski tour through the Kettle Moraine State Forest offers a smorgasbord of sensual delight. Out there, one's breath explodes into a dazzling array of ice crystals and the rush of wind tingles your skin and paints sharp frosting on the face. The crunch of snow under skis makes brisk music. Early morning on the trail beckons in strange ways.

To get ready I pack a hearty cheese, some sausage and my old wine skin. Outside, the muted sounds of night almost send me back. "Too cold" my bones protest. And the shadows say "Too dark, go back to bed."

But I load up the skis anyway and fill my pack with mitts, a thermos of hot cocoa and the food. Miraculously, my '72 wagon starts and creaks along to this special place where a Wisconsin glacier dropped its giant burden at the head of Nordic Trail in the Kettle Moraine, just south of Palmyra. The parking lot is now deserted but will host scores of cars by midday. I am as hungry for skiing on this cold, blustery, dark morning as a summer mosquito is thirsty for blood.

I hurry now to wax the skis green. Polishing and spreading wax never fails to give me the first tingle of warmth that will last the day. Then, stuffing my parka into the pack for those meditative pauses along the way, I head down the outer 15-kilometer loop of the Nordic Trail in anticipation of its vistas and challenges. The air is heavy and pockets of frozen mist have painted hoarfrost in the low kettles. As the mist parts for my passage, ice crystals cling to my face.

The predawn is heavy with silence. The only sounds are my skis coarsely singing over the light-dusted frost and the methodical plug of my poles through the crust.

Here the trail teases with a roller coaster through its kettles, up and down, a surprise at every turn. The sky glows warmer; the mist rises to reveal a startled, weaving rabbit, exploding snow at every dart. A junco becomes my silent companion with fluttering wings the only sign of its presence.

Gliding out of the wooded kettles, I move along exposed ridges where at both sides gullies and ravines drop precipitously. Below, a lone deer watches me glide past. Curious at first, it soon bounds away.

All along the trail, animals leave their traces. Tracks show mice, fox and pheasants. Red-stained snow, imprinted with tufts of feathers indicate an owl has made its kill. It is almost as though I have entered these lands uninvited.

A pine plantation, whose towering limbs form a cathedral ceiling, shuts off the first shaft of sunlight. The boughs, laden with virginal snow, arch graciously over the cavernous trail, dusting my forehead. Above, a shadow hops from branch to branch. Several others soon appear and finally the chickadees

protest my presence. Then, golden shafts of light penetrate and I melt between them gleaning the first warmth in this cold sanctuary, now filled with pine incense and the chorus of awakening birds.

Exiting along a lengthy aisle, I move into open fields long abandoned by disillusioned settlers, land now encroached by poplar, ash, sumac and cedar. A massive, lone oak stands silent sentry at a trail intersection. To my right, above a hidden ravine, lies the remnant of an oak opening. It survives along a ridge through which fires once raced, clearing out underbrush to leave majestic red oaks and a carpet of mellow prairie.

I pause under this huge oak to nibble my cheddar cheese and spiced sausage. A sudden warmth surges in my stomach, the savor of hot cocoa.

Continuing, I descend to an abandoned logging road that leads past frozen ponds. These vast potholes were formed by the melting of mammoth blocks of ice buried beneath the debris of a dying glacier. Mature oaks and maples line the trail like mute spectators watching a parade. Decorated with rotted stumps cut nearly a century ago, the trail winds through other pine plantations, dipping and tucking its way around more oak openings that crowd the ridgetops. Red oak blight has afflicted this area and trees, completely devoid of bark, grimly cast sharp, skeletal shadows across the almost golden snow. Here and there evidence of high winds — downed trees and cracked limbs — strew the landscape.

After another downward plunge I make a steep ascent to be rewarded by a remarkable vista, reserved for those who have had the endurance to come this far. A hundred feet below, walled with wooded thickets lies the jewel of the Nordic Trail, an exquisite pond latticed with myriad animal tracks. I hear a snap of branch! A buck exits through the underbrush. Birds are active now, feeding on seed stalks of prairie plants that project only inches above the snow. A bench invites me to sit awhile and

The trail plunges to the very edge of the frozen pond. I marvel at open water at the pond's edge, where a spring flows richly under the ice. Photo by author

SOUTHERN KETTLE MORAINE STATE FOREST SKI TRAILS*

Address: 591 W. 39091 HWY. 59 Phone: (414) 594-2135

TRAIL	DISTANCE	FACILITIES
John Muir		
3 mi S of Palmyra on CTH H	22.7 km/14.2 mi, 3 loops	P T
McMiller system		
4 mi SW of Eagle on CTH NN	25 km/16 mi, 5 loops	W S T P
Nordic		
3 mi S of Palmyra on CTH H	25.6 km/16 mi, 7 loops	W P T
Scuppernong		
5 mi N of Eagle on CTH ZZ	12.3 Km/7.7 mi, 4 loops	T P

*State parks sticker required.
KEY: W = Water S = Shelter T = Toilets P = Plowed Parking

Top right:
The jewel of the Nordic Trail is an exquisite pond. Pretty patterns dot the ice. Photo by Suzanne C.F. Herman

Bottom right:
Land long-abandoned by disillusioned settlers is now encroached upon by poplar, ash, sumac and cedar. There is a vast expanse of prairie, dimpled with kettles. "Kettle Hills" by Mel Kishner

enjoy. Fog in the kettle slowly lifts and wood duck nest boxes appear along the pond's edge amongst brown, snow-capped cattails. On the horizon, dark clouds signal more snow soon.

Then the trail plunges to the very edge of the frozen pond. I shudder at the brisk cold pocketed there and marvel at the open water at the pond's edge where a spring flows richly under the ice.

An expert section of trail, designed for the hearty and skilled, lies ahead. It challenges me. Probably the most difficult terrain here, this loop has claimed more than its share of snapped skis, bent poles and heavy oaths. At the end I emerge slowly, fleeced in snow and tending a few bruises, but I wear a smug smile.

A "swoosh" suddenly erupts behind me! Breathing heavily, a skier clad in bright racer colors pounds down the tracks. Beads of perspiration drain from his forehead and his yellow and black outfit glows in the midmorning haze. He stops and we exchange courtesies. How he's from Waukesha hoping to ski 30 kilometers by noon, how I'm from Oconomowoc out for a leisurely tour. He complains about the sitzmarks on the expert run; I return a knowing smile. Then he's off.

Ahead, on a novice section of trail that wanders over a high rolling meadow, sparse with pines, a family of six enjoys the fun. Squeals of delight burst out whenever a small one teeters to the snow. By the time I overtake them, three small snowmen grin at me through snowcaked clothing. I pass them and from behind, another giggle and a squeal. I grin to myself.

The sky glows warmer, and the mist rises to reveal a rabbit. Photo by Greg Scott

Then, a long, gentle downhill glide opens before me and I take it easily on ski tracks that others had made this morning. Ahead, the sky vanishes behind a curtain of light snow.

I wander into a vast expanse of prairie, dimpled with kettles. The trail follows treed fencelines constructed by Norwegians long before DNR ever acquired these abandoned lands. All along, boulders are mounded in silent testimony to the futile hopes of this area's first settlers.

A series of kettles approach. I can choose to boldly dip down into them or be secure and skirt around. The first sting of fresh snow bites my cheeks as I hurl into the kettle.

After several more kilometers of rolling terrain I return to the trailhead. The snow coats me and trees in the distance slowly vanish in a shimmering veil of white.

At the parking lot I am not surprised by the scores of cars tucked in for the day. Skiers are everywhere, but surprisingly, the Nordic Trail system absorbs them all.

Before heading off, I munch on the last of my cheese and take that last swig of cocoa. My body melts into the bliss of a soft car seat as heat slowly filters in from the wagon's engine. In a glut of satisfaction, I head for home in heavy snow. The winter has new meaning now and this new storm is full of promise. I will be back soon with my cross country skis. We will keep our promises, the snow and I.

Continuing, I descend an abandoned logging road that leads past frozen ponds. Photo by Paul Peterman ▶

Ahead, on a novice section of trail, a family enjoys the fun. Photo by Bruce Thompson, Division of Tourism

About 70% of Wisconsin's commercial forest is privately owned. "Winter Day" by artist Lester Stevens, courtesy of Childs Gallery, 169 Newbury St., Boston, MA 02116

The Woodland Tax Law equals trees for the future. Photo by Dale Lang

I felt I was destroying it

Small woodlot owners who love trees and wildlife often are reluctant to harvest because they believe a cut could hurt the thing they treasure. Usually it's just the opposite.

JERRY LAPIDAKIS, DNR Forest Tax Supervisor
JAMES C. SCHROEDER, UW-Extension, Madison

"I have always been a great lover of trees and felt that if you cut down a tree it was gone and pretty soon your woodlot would be destroyed. So I hesitated to cut anything. But a lumber sawyer came around one year and he told me that I should cut some of those big trees that I had in the woods. I called the area forester and he marked seven acres of oak for timber stand improvement, as they call it.

"I cut down enough trees, I believe, to get about 10,000 feet of lumber and all the time I was doing it I felt bad that I was cutting all these nice trees. The woods had not had any appreciable growth of new timber and I felt that I was destroying it. But as time went on in the next 10 or 12 or 15 years I was amazed to see that where the undesirable mature trees had been cut that new growth came up very rapidly. Today I have what I think is a young, healthy, and vigorous woodlot."

That's one of the best descriptions we've ever heard of what forest conservation is all about. The words were spoken by Lyman Anderson, a farmer in southern Dane County. Anderson is harvesting trees, but in a way that will keep his woodland always healthy. He's also working to improve the woods' growth and quality. And he's planting the right trees where needed.

"At first, I felt bad that I was cutting all those nice trees," says Anderson. "But today I have a young, healthy and vigorous woodlot." Photo by Rich Fulweiler, Depth of Field

Anderson's small oak woodland of 33 acres has been important to him as a source of lumber for barns, a machine shed, a poultry house and other buildings. It's been recreation for him to keep it healthy and productive.

One fact many people may not know is that Anderson's woodland and all the other small woodlands like it make up the largest part (nearly 60%) of our forest lands in Wisconsin — and in the United States — almost six of every 10 acres. These small woodlands are the most important source of wood, wildlife and watershed protection we have.

What has Lyman Anderson done to make the best use of his woodland while conserving it for future generations? He has hand-planted 12,500 wildlife shrubs and over 8,000 trees in an area dedicated to wildlife and forestry. The local game manager and forester provided the planning while his family and local youth groups supplied the work force.

In the oak woodlands his improvement and harvest cutting over the years has removed poor quality and mature trees. The cut trees were used as lumber, firewood and posts.

Each year he continues to improve the wildlife area by cutting poor trees that compete with planted shrubs and trees. This wood is also utilized on the farm.

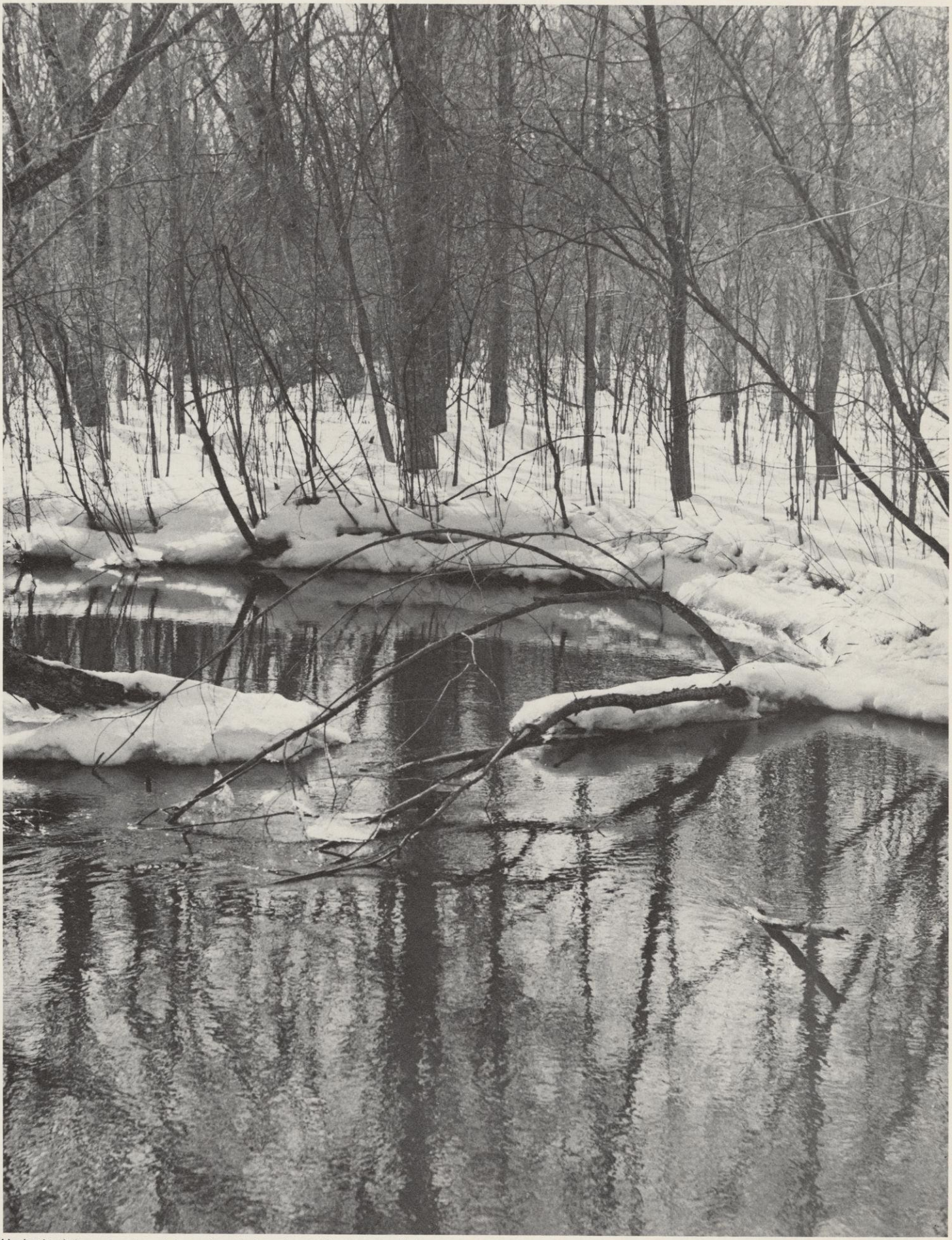
Anderson's woodlands remained on the regular tax rolls for many years until recently, when the pressure of increasing rural values in this area near an urban center forced him to take advantage of the Woodland Tax Law. This law gives him a tax incentive to keep the area as woodland.

More than 342,000 acres have been entered under the Woodland Tax Law since its inception in 1954. Currently, owners pay 40¢ per acre a year in taxes. In return they agree to protect the woodland from destructive practices and carry out good forest management. To qualify, an owner must have 10 or more acres of timberland on which he agrees to follow an approved management plan. This law is intended for smaller woodlots (less than a full "40") and is suited mainly to the agricultural portions of the state. The majority of entries are in the southern half of the state.

The work Anderson has done brought him recognition in 1976 from the American Tree Farm Program which selected him as Tree Farmer of the Year in his southern Wisconsin district. The program recognizes woodland owners who conserve their forests by using them wisely today and keeping them healthy for the future. If you see a diamond-shaped green and white sign along the road, that says "Tree Farm" you'll know you're passing a privately-owned woodland that's under management.

Like Anderson, all woodland owners in Wisconsin can obtain DNR assistance in choosing trees to harvest, in improving growth and quality of their woodlands and in selecting the best trees to plant. Wildlife managers can also assist with selection and planting of game food shrubs and improvement of wildlife habitat.

For help in managing your woodlot, contact the local DNR forester or write the Bureau of Forestry, Box 7921, Madison, WI 53707-7921.



Under both laws, land must be well-suited and used for growing timber. Photo by Dale Lang

Wisconsin's woodland tax and forest crop laws

It takes 25 years to grow pulpwood logs, 50 years or more to grow sawtimber for lumber. The Woodland Tax and Forest Crop laws reduce landowner's property taxes while trees grow as a crop.
DNR photo

JERRY LAPIDAKIS, DNR Forest Tax Supervisor, Madison
ARLAN WOODEN, former UW-Extension Forestry Agent, Marinette County
GORDON CUNNINGHAM, Professor of Forestry, UW-Madison

Wisconsin woodlands and forests are growing more wood than is being harvested. But the growth rate is beginning to level off, and the rate of harvest is increasing. If these trends continue, harvest may exceed growth in two or three decades.

Privately owned forests and woods are valuable for soil and water protection, recreation, wildlife habitat and environmental enhancement. They are also important to Wisconsin's future wood supplies; roughly 70% of the commercial forest in the state is privately owned.

In Wisconsin, trees require at least 25 years to grow to pulpwood size (for paper) and 50 years or more to become sawtimber (for lumber). To tax an acre of woods as much as land on which crops mature in one year is inequitable.

Two special Wisconsin tax laws were passed to eliminate such inequity. The *Woodland Tax Law* and the *Forest Crop Law* both provide reduced annual taxes while trees grow as a crop.

Some people worry that the tax relief these laws provide to woodland owners will have to be made up by increased property taxes for other citizens. However, studies have shown there is little effect.

Woodland tax law

To be eligible under the Woodland Tax Law, a property must consist of a continuous tract of at least 10 acres. It cannot be a full "40" section or a full government lot. The land must be best suited for growing timber and must be used for that purpose. Non-productive areas cannot exceed 20% of the total area proposed for entry. Tracts with improvements, such as cabins, houses or other structures or alterations with assessed value, do not qualify.

Applications for entry of land under the Woodland Tax Law are available from the Department of Natural Resources Forest Tax Unit Office, Box 7921, Madison, WI 53707-7921.

After application, a DNR forester inspects the tract. If it qualifies, a 15-year contract is set up. Under it the landowner agrees to follow an approved management plan and to prohibit grazing and burning in the woodland. In return, DNR, representing the State of Wisconsin, agrees to exempt the woodland from the general property tax.

In place of the property tax, the owner pays 40 cents per acre per year to the township in which the tract is located. The annual payment is recomputed at 10-year intervals. Woodlands entered before 1977 pay only 20 cents per acre.

The contract remains in force if the land is sold. But if the land is partitioned, the contract is cancelled. Land withdrawn from the program before the expiration date or declassified by DNR for failure to comply with the law, is assessed a penalty payable to the town treasurer.

Forest crop law

Before 1927, forest land in Wisconsin was taxed on the value of the land itself plus the value of the trees standing on the land. Taxing the value of the standing trees discouraged long-term investment in forests and their care.

However, the Forest Crop Law allows forest land to be taxed according to its value when harvested. Only entire "40's," government lots or fractional lots qualify for entry under the Forest Crop Law. The land must be well-suited for growing timber and must be used for forestry. Except under unusual circumstances, non-productive land cannot exceed 20% of the total area. Improvements must be minimal and forestry-related.

Applications for entry of land under the Forest Crop Law are available from the DNR Forest Tax Unit Office. Any resident or taxpayer in the municipality may request a public hearing on the application. Notice of the application and of the right to request a hearing is published in a local newspaper.

After inspection and approval of the application, DNR and the landowner enter into a 25 or 50-year contract, at the landowner's option. The landowner agrees to open his land to the public for hunting and fishing and to use sound forest management practices. The contract also requires that a notice of intent to harvest timber be filed with DNR at least 30 days before cutting begins and that a report of products harvested be filed within 30 days after cutting is finished. DNR foresters may inspect lands to ensure that proper

cutting methods are used and to check on volume.

Under the contract, the land is exempt from the general property tax. In lieu of a property tax the owner must pay 20 cents per acre. DNR also pays 20 cents per acre annually. These payments are divided between the county and the township or village. Amounts will be recomputed in 1982 and at 10-year intervals thereafter. For woodland entered before 1972, the annual payment is 10 cents per acre.

At harvest, the owner pays the state a severance tax of 10% of the value of wood products taken from the land.

The contract with DNR remains in force even if ownership changes. In the event of early withdrawal or failure to comply with the law, the owner must make up what he would have paid as general property tax, plus simple interest at 12% (5% for land entered before 1978).

The contract may be renewed by mutual consent. If it is not, the landowner must pay a 10% severance tax on the value of standing harvestable timber — just as if the timber had been cut.

THE LAWS:	Woodland tax	Forest crop
Size	10 acres or more, but *not* a full "40" (quarter-quarter section) or government lot.	At least a full "40" (quarter-quarter section,) government lot or fractional lot.
Contract	15 years.	25 or 50 years.
Annual Tax	20¢/acre if entered before 1977. If entered in 1977 or after, 40¢/acre (adjusted in 1982).	10¢/acre if entered before 1972 20¢ if entered afterwards.
Severance Tax	None.	10% of stumpage value. Landowner must file notice of intent to cut and report after cut.
Public Use	None required.	Open for public hunting and fishing.
Conservation	Follow management plan and prohibit grazing or burning.	Use sound management practices.
Withdrawal Penalty	None if entered prior to 1977. If entered after 1977, 1% of value of average acre of woods in county x number of acres in tract x number of years under the law.	Difference between actual annual "acreage share" and severance payment and what *would* have been paid under general property tax plus 12% simple interest (5% if entered before 1978).
Application Deadline	April 30	April 30

Privately owned forests are valuable for soil and water protection, recreation, wildlife habitat and environmental enhancement — as well as for growing a large share of tomorrow's timber.
Photo by Greg Gent

Catch-all

Hearings hit Mississippi master plan

Robin J. Irwin,
Public Information
Madison

La Crosse—Forty people testified at a recent public hearing in La Crosse on the Upper Mississippi River Basin Comission's Master Plan. **Most of those attending were critical of the plan and its recommendation to build a second 600-foot lock at Alton, Illinois to expand commercial river navigation. Hearings in Minnesota, Iowa, Illinois and Missouri followed a similar pattern.**

In Wisconsin, all but two people present felt that a second lock at Alton, Illinois is unjustified, at least until environmental impacts are better understood. All but one felt that more environmental enhancement and research should be conducted on the river, with or without the second lock.

Only a single individual, a utility spokesman concerned about coal supply shipments, spoke in favor of the second lock.

Other selected written and oral comments:

"We feel that the commission failed to determine environmental effects on the river from commercial traffic, as required by law."...Thomas Claflin, director, River Studies Center, University of Wisconsin-La Crosse.

"No increase in navigational capacity should be allowed until the damage that barges already have done to the ecosystem is repaired. [The master plan is] a scheme for giving away a public resource to private greed."...Ralph Schaumer, Ellsworth.

"A clear promotion of the barge industry."...Thomas Peterson, Prairie du Chien.

(The plan is) "a mercy killing of an already dying patient."...William Howe, Minnesota-Wisconsin Boundary Area Commission, Prairie du Chien.

"A program to protect the historical and archeological properties within the Upper Mississippi River system is urgently needed, for unlike many wildlife habitats, the destruction of these properties is permanent and irreversible."...State Historical Society of Wisconsin.

"Increased competition (from barge lines) could adversely affect railroads, which might alter their freight rates or reliability of service — including the bulk transport of coal from western and Illinois coal fields. Greater fuel costs or a decreased reliability of fuel supplies for Wisconsin utilities (could result)"...Wisconsin Public Service Commission.

"Based on projections of future traffic demand on the Upper Mississippi River, the Wisconsin Department of Transportation (DOT) can find no economic justification for the addition of a second 1,200-foot lock at Lock and Dam 26. Because of shortcomings in the traffic projections and economic analyses in the draft plan, the department is also unable to either support or oppose the recommended addition of a 600-foot lock"...DOT.

"To promote increased commercial navigation on the river at the expense of tourism, the state's second largest industry, could be a negative ramification for the people of Wisconsin. We ought to avoid such adverse impacts."...Wisconsin Department of Development.

"No mention is made of recommended action to be taken if resource monitoring shows degradation of the river's natural environment due to expansion of navigation. Will expansion work be stopped? Will tow numbers or sizes be reduced below potential capacity if environmental monitoring detects degradation?"...Mississippi River Regional Planning Commission, La Crosse.

Legendary bowerbird found

Washington—The National Geographic Society reports that a legendary bowerbird, believed to be extinct has been found in New Guinea.

Previously, the existence of the yellow-fronted bowerbird had been known only because of three skins of male birds from the 1890s.

A series of expeditions had failed to find the bird but last Jan. 31, California ornithologist Jared M. Diamond sighted one in an unexplored mountain range in New Guinea.

Scientists had thought the bowerbird was extinct, and Diamond was not looking for it at the time.

"When I and anyone else who goes to New Guinea have dreams, we dream about finding the mystery bowerbird, but my goal on this trip was simply to do a general bird survey of this mountain range and help the Indonesian government plan a new national park there," Diamond said.

Nevertheless, he found both the bird and its bower on the first day of his two-week trip, and saw several others during his stay. Diamond now estimates that as many as 1,000 bowerbirds may live in this remote area.

Male bowerbirds build a special tall nest of twigs around a sapling. Known as a bower, this nest is decorated with fruits and flowers and used to entice the female bowerbird into romance. Later the female builds her own nest in the trees to raise the young.

Diamond reported that in one instance he encountered a bird courting a female, making odd noises and parading in front of her with a blue fruit in his bill. The bower was decorated with three piles of fruit, one yellow, one blue and one green.

This is an artist's sketch of the newly discovered yellow-fronted gardener bowerbird. The bird, which was thought to be extinct, resembles a robin with a golden-orange crest. The drawing shows a male of the species. To mate, a male bowerbird decorates his bower with different-colored piles of fruit to attract a female.

56 big trophies at Sandhill

John Kubisiak, DNR wildlife biologist for the Bureau of Research checks the weight of this 10 point Sandhill trophy which weighed 187 pounds. Photo by Dave Kunelius

Dave Kunelius,
Public Information
Rhinelander

Babcock—A special deer hunt at the experimental Sandhill Wildlife Area, designed to test the success of a trophy-buck management plan, netted hunters 56 deer the first day including one 200-pound buck. **At the close of legal shooting hours Saturday, November 14th, the one-day either sex hunt had yielded 40 forked-rack or better bucks and almost 80% were eight pointers. Of the 129 hunting permits issued, there were nine no-shows.**

The remainder of the kill included four spike bucks, five adult does, two buck fawns and five doe fawns.

The largest buck set a new Sandhill record. It tipped the scales at an even 200 pounds, field dressed. Some other bucks weighed 187, 185 and 182 pounds. **The 200 pounder was also the oldest, aged six, and sported the largest rack, 11-points.**

"We felt we saw some very good antler development," said Joe Haug, Sandhill superintendent. "Overall average weight, however, was down because of a total acorn failure. All in all, we feel we had a high quality hunt both from an ethics standpoint and game in the bag."

Management leading up to this year's hunt included two seasons of antlerless deer harvest during 1979 and 1980. The only hunting done prior to the trophy-buck management plan were two muzzleloader seasons during 1977 and 1978. The deer season was closed at Sandhill from 1972 through 1976 to allow the deer herd to reestablish following a total population harvest in 1971.

"The season on bucks was closed to allow the bucks to grow older, develop bigger racks and increase in numbers," Haug said. **The deer herd inside Sandhill's fenced 14 square miles prior to the hunt was just over 400 animals.**

Managers counted 120 antlered bucks available to hunters at the start of the hunt.

Success rate on bucks was 35%. This is more than double the statewide success average of 14% during the general gun season. Hunters also selectively harvested bigger racked animals than the general statewide kill which includes a high number of spike bucks. Overall, hunters enjoyed a 47% success rate during the first day of the Sandhill hunt.

The remaining two days the Sandhill hunt reverted to an antlerless season. On the second day, 96 of 225 permit-holders shot 21 deer. The third day saw 55 hunters bagging 13 deer to bring the total harvest to 90 deer.

Park, but don't breathe

Wendy Weisensel,
Public Information
Madison

Madison—The hordes of cars that pack shopping center parking lots during the Christmas rush are responsible not only for frayed nerves and fenderbenders, but also a lot of carbon monoxide (CO).

CO is invisible and odorless but also toxic. Usually it totals less than one part per million (ppm) in the air. On an average business day the cars winding through a parking lot may produce levels measuring three to four ppm.

But Brad Stachoviak, a planning analyst with DNR's Bureau of Air Management says this can change in a crowded winter lot. **Cold temperatures, extra-heavy traffic and calm weather, he says, may cause carbon monoxide levels to approach or even exceed the national health standard which is nine parts per million for eight hours.**

Carbon monoxide replaces oxygen in the blood. As your body gradually becomes short of oxygen you can feel dizzy, grow headachy and suffer coordination and vision impairment. These symptoms may persist for a few hours after exposure, depending in part on how long you were exposed and how much CO you inhaled. Some people are more sensitive than others, including smokers, people with heart or lung ailments and the elderly.

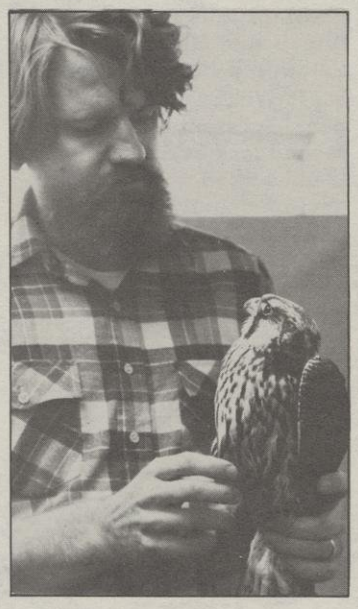
Carbon monoxide is produced when gasoline is partially, rather than completely, burned inside an automobile engine. If the carburetor has been adjusted so that the fuel-air mixture is too "rich" (the gas-to-air ratio is high) as opposed to "lean" (a low gas-to-air ratio), then the engine won't receive enough oxygen to completely burn gasoline, forming carbon monoxide.

Poor combustion can also be caused by a dirty air filter, a choke that sticks when a cold engine is started, or tampering with emission control devices. Idling engines and jackrabbit starts and stops also cause improper fuel combustion and air pollution.

Stachoviak says that ideally, a well-designed parking lot won't usually cause carbon monoxide problems. "Any design elements used to improve traffic flow in a parking lot, such as traffic signals and enough exit lanes, often prevent air pollution at the same time," he explains.

"Regular, proper auto maintenance and good driving habits are also important.

Public can help injured wildlife

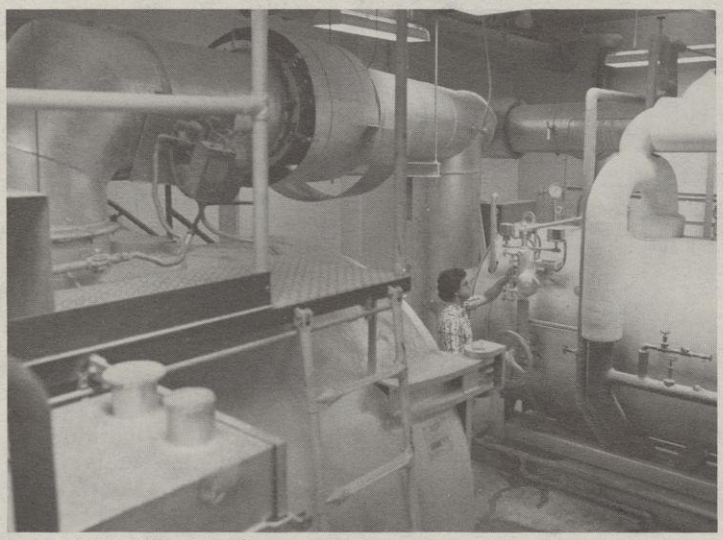


Milton—Last fall the Herbert Hookstad family turned over to DNR a peregrine falcon which had been hit by a car. The nationally endangered peregrine had a fractured wing. DNR shipped it to the Raptor Rehabilitation Center, St. Paul, where it is recovering rapidly.

The public has an opportunity to help protect wildlife by reporting injured hawks, eagles, owls and falcons to DNR.

A special note to trappers: All raptors caught in traps should be captured and turned in to the department. Untreated trap injuries, even minor cuts, usually result in death to raptors.

Catch-all



A new $3.5 million web offset press at Cuneo Press, Milwaukee, is equipped with a $100,000 system of air pollution controls to recycle solvents in printing inks. A condenser/heat exchanger outside the building helps recapture oily solvents from the hot exhaust off the press dryer, and a filter system captures any remaining pollutants in the exhaust.

Printer helps air

Milwaukee—Last year Cuneo Press, a $30 million a year printing business on the northwest side, began operating the first antipollution system of its kind in Wisconsin.

The system condenses and recovers solvents used in printing ink. It can reuse these solvents as fuel or sell them for as much as $1.15 a gallon. The system can recycle cooling air as a source of heat. At the same time, it avoids venting solvent vapors loaded with hydrocarbons into the outside air.

Cuneo's new $100,000 system of pollution control reduces by about 85% the hydrocarbons that would otherwise be going up its stack to pollute the outdoor air.

Bill expands warden arrest powers

Madison—A bill to expand DNR warden police powers has been signed by Governor Dreyfus.

Until now, wardens could arrest violators of conservation but not criminal laws. Exceptions were when violations occurred on DNR lands or when local authorities actually deputized a warden to help out.

The change gives wardens full police powers when local law enforcement agencies (city police or county sheriffs') request assistance; when a warden observes a crime being committed; and when an arrest warrant has been issued for a suspect.

The law applies only to full-time wardens, not part-time or "special" ones. In all cases, suspected violators will be turned over to local authorities for prosecution.

Groundwater report available

Madison—A 39 page report detailing public opinion on groundwater is now available from DNR.

The opinions were expressed at a series of informational meetings last winter. Analysis indicates that economic, technical, political and social complexities of protecting groundwater must be accounted for in developing any fair and effective state groundwater policy.

For a copy, attach 69¢ postage to a large, self-addressed envelope, and mail to: Groundwater, P.O. Box 7921, Madison, WI 53707-7921. If you'd like the appendices as well, attach $1.05 postage.

$20.00 collar

Horicon—DNR will pay $20.00 to anyone who finds and returns a radio neck collar attached to a Canada goose.

Last fall, 47 geese were fitted with radio-transmitters at Horicon and Grand River marshes. Another 93 birds still carry radios installed in 1979 and 1980. The signals allow researchers to follow, locate and identify birds.

Anyone finding a radio collar should return it to Jerry Bartelt, Wisconsin DNR, Box D, Horicon, WI 53032. No money will be paid for standard neck bands, which are also used to mark Canada geese.

Wardens nab poaching burglars

Florence—Marinette area wardens David Arendt and Mike Hedmark stopped two suspected poachers recently and wound up with an arrest that netted $30,000 in stolen goods.

The incident began with the wardens on routine night patrol. **They heard a rifle shot about a mile away and called in a spotter plane to pinpoint the source. The pilot zeroed in on the occupants of a van shining deer and radioed the location.**

When DNR officers Arendt and Hedmark pulled in behind the van and turned on their red lights and siren, the poacher's vehicle took off. In the high speed chase that ensued, the wardens were forced to ram the vehicle in order to stop it. Inside were Paul Meacham, 24, and Peter Meacham, 18, two Milwaukee-area brothers.

The van also contained a loaded and uncased deer rifle, a large-caliber pistol, a heavy safe, a Franklin-type woodstove, an antique slot machine and other items. During the chase, each time the van rounded a corner the heavy loot slid back and forth inside the van threatening to crush the escaping poachers.

Closer investigation by wardens Arendt and Hedmark revealed that ashes in the bottom of the woodstove were still warm. After arresting the Meachams' for shining deer and carrying uncased firearms in a vehicle, they called in Florence County Sheriff Jake Neuens who took the men into custody.

Further investigation by Neuens at one brother's cabin in the area unearthed more than $30,000 worth of goods stolen from several places around the state. **Included were six garden tractors, four hydraulic wood splitters and a 16-foot boat with trailer and outboard motor.** The two face possession of stolen property charges in Florence County, as well as possible theft charges in Polk, Oneida and Dodge counties.

4 million-chinook eggs

Dave Crehore,
Public Information
Green Bay

Sturgeon Bay—More than 4.1-million chinook salmon eggs have been collected by DNR near Sturgeon Bay. For the first time since the early 70's, salmon that furnished the eggs have been sold for human consumption.

The eggs were taken from four-year-old salmon at a DNR weir on Strawberry Creek, a tributary of Sturgeon Bay. In their fourth year, chinook spawn and die after swimming up creeks and rivers. Although they could reproduce naturally on a few Wisconsin streams, to achieve the greatest production DNR hatcheries at Westfield and Wild Rose incubate the eggs and rear the young.

The eggs came from 3,366 chinook that weighed 58,193 pounds. The take filled Wisconsin hatcheries with 3.2 million eggs. Another 900,000 were given to the Fish and Wildlife Service, which will eventually stock them in California's Russian River. State and federal agencies share surplus fish and eggs whenever possible. Use of these eggs is interesting because now some "Lake Michigan" chinook will be returning to the Pacific Ocean, from which they originally came.

Fish managers report the encouraging news that this year, for the first time since the early 1970's, the salmon harvested at Strawberry Creek have been sold for human consumption.

In past years, PCB concentrations in Lake Michigan salmon tested above the five parts per million (ppm) federal limit. This prevented their sale for food. At times during the 70's, PCB concentrations in large salmon ranged over 30 ppm. This year the level dropped to less than five and the salmon were sold to a local fish dealer.

Only barn owls known to hatch

These six owls are the only known barn owls hatched in Wisconsin in 1981. A Green County cement silo housed the nest. DNR will attach a barn owl nest box to the silo and to other unused silos of willing landowners in the surrounding area. For a brochure on building and siting barn owl nest boxes, or to report barn owl observations please write: Office of Endangered and Nongame Species, DNR, Box 7921, Madison, WI 53707-7921.

Bids hot for firewood

Eagle—The bidding was brisk at DNR's first public firewood auction in the Kettle Moraine State Forests.

On the Southern Unit here, some 350 people gathered at forestry headquarters to bid on 75 permits, each of which contained between one and four cords of wood. **The lowest priced block went for $32 a cord while the highest went for $60. Average was about $40 per cord. The sale netted $5,727.50.**

On the Northern Unit, approximately 125 people bid for 57 permits. **Highest price there was $70 while the lowest was $12 per cord with the average at $25.** It took 1½ hours to auction off the available permits.

Fraudulent Hunter's Choice

Madison—As many as 1,000 hunters who received Hunter's Choice permits for deer season probably did so illegally.

The distribution system gives priority to hunters who applied for the either-sex deer permit the year before, but didn't receive one. In the fall season, more than 170,000 claimed the preferential treatment. Of those, about 105,000 actually received one.

But a computer run of successful applicants with preferential status revealed more than 2,000 names which cross-checked as having received permits the year before. Of those, half are likely innocent — two different individuals with the same name, for instance. Of the rest, roughly 1,000 are likely to be fraudlent and face prosecution. Violators are subject to a $50 fine and loss of hunting privileges for three years.

No crowds at Bong opener-DNR's first managed pheasant hunt

Kansasville—Hunters in the first managed hunt at Bong Recreation Area found some pleasant surprises on opening weekend of the pheasant season.

Unlike past openers, there was no overcrowding. This year only 675 hunters were on hand. They bagged 185 pheasants, a 27% success rate. Opening weekend last year there were 1,500 hunters at Bong. Sunday, this year, 328 hunters bagged 80 pheasants for a 24% success rate.

The managed hunt at Bong allows 675 people on the property at one time. Pre-registration is required plus purchase of two pheasant tags for $1.00. Reservations can be made and a vehicle admission sticker is necessary.

Coming attractions

***Wisconsin's nesting birds.
***Winter burn on trees.
***A recreation area on the lower Wisconsin river.
***The H.H. Bennett photo studio.
***Toxic chemicals in the air.
***Zoning the state for trout fishing.
***Wisconsin's Stonehenge.
***Aquatic insects.

$3.25 Trout and Salmon Stamp

Madison—A newly authorized Great Lakes Trout and Salmon Stamp will now be required for all anglers fishing the two species in outlying Great Lakes waters. The stamp will cost $3.00 plus a 25¢ issuing fee.

As of June, 1982, all federal cost-sharing for Great Lakes hatchery programs will cease and most funds generated by the stamp will be used to replace these cuts.

DNR cautions anglers not to expect a dramatic increase in fish populations as a result of stamp money. Any surplus generated will be used to bring fish stocks back up to pre-cutback levels and to upgrade aging hatchery facilities. Modernized methods and facilities may lead to a modest increase in fish stocks, but most revenue from the new stamp will be used to maintain Great Lakes trout and salmon at status quo levels.

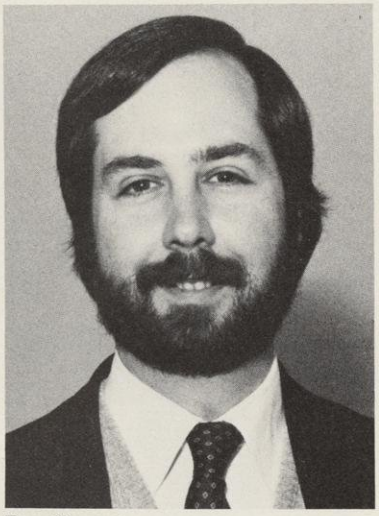
On your case- the public intervenor

Built into Wisconsin law is a kind of environmental Mr. Clean, the Public Intervenor. Unique in the US, some regard the office as busybody incarnate. Others think it's pure gold.

DAVID PELZER, Editorial Assistant

In Wisconsin, clean air, water and land are a public right, a legacy that belongs to the people of the state, an inheritance to be protected and passed on to future residents. In fact, it's the explicit duty of several state agencies — including DNR — to protect this inalienable right.

But sometimes for good reason, agencies can't or don't do the job as well as some think they should. An agency may be unclear about the legal mandate. It has to wade into gray areas where its statutory authority can be questioned. Or it may be reluctant to get into a mud-slinging political battle over an issue that might end up hurting



Tom Dawson

other important programs. And sometimes, an environmentally threatening situation or the need for government action may just not be perceived.

At such times, a "watchdog" unique to Wisconsin government comes into play. That office is called the Public Intervenor, and only Wisconsin has one.

Actually, there are two Public Intervenors, both assistant attorneys general, housed in the Department of Justice. Their job is to coax, cajole and take legal action, if necessary, to assure the protection of "public rights in the environment." Some lawyers defend people, but these attorneys defend water, rocks and trees. Theirs is the often uncomfortable role of legal bulldog, growling at the ankles of friend and foe alike, looking out for the public's environmental rights.

This discharge pipe once carried slurried wastes from Eagle-Picher's Schullsberg zinc and lead mine. The mine is closed now, but pollutants from the flooded shaft contaminate area wells.
Photo by Julia Welch

How did Wisconsin get its Public Intervenor? It happened in 1967, when the old Wisconsin Conservation Department merged with the Department of Resource Development to form DNR. Back then old-line conservationists feared no one would be left to act as an adversary in protecting trout streams and other resources if everything were placed in an agency. In a compromise, the State Legislature created the Public Intervenor to allow one division of DNR to sue another. The law orders the intervenor to enter dam permit and water pollution cases when requested to do so by an authorized DNR administrator.

In 14 years time though, DNR has had to ask for such help in only a handful of cases.

But the Legislature gave the intervenor other duties. It allowed him to enter "on his own initiative" any legal proceedings where involvement would help protect "public rights in water and other natural resources."

Those words are tailormade to attract flack. In what cases should the intervenor get involved? What should his role be? How much power should he have? And who decides all this?

"In theory, the power of the Public Intervenor is quite weak," says David Hanson, former deputy intervenor, now in private practice. The intervenor has no regulatory power of his own. He can't call public hearings or make agency rules. Often he has no official standing to appear in court.

"But in reality, the intervenor's authority is substantial," according to Hanson.

Though the office was set up to be DNR's watchdog for certain water resources statutes, the two current intervenors, Peter Peshek and Thomas Dawson, see a wider role, involving a larger chunk of state government. For example, they believe groundwater as well as surface water is part of their responsibility.

And to defend resources, they go after other agencies besides DNR. The

Public Service Commission and recently the Department of Agriculture, Trade and Consumer Protection have become targets. The Department of Health and Human Services could be next in line.

"The Public Intervenor shouldn't be limited to the shell of the statute, but to its intent," argues Peter Peshek, intervenor for mining and other issues. Peshek feels his office is free to follow environmental policy decisions to their regulatory source.

In Peshek's view, the list of his and colleague Tom Dawson's accomplishments is impressive. According to him they:

- Made sure adequate environmental protection guidelines were firmly in place before a permit was granted to Kennecott Mining for copper mining near Ladysmith.
- Helped make groundwater a top policy priority in DNR.
- Forced Agriculture to revise pesticide rules, and forced a tri-agency Pesticide Review Board to challenge weak rules.
- Influenced stronger wetlands protection, scenic beauty and solid waste disposal regulations.
- Protected rural citizens, including many dairy farmers, from unchecked air and groundwater pollution.

The intervenor has also been involved with chicken "factories," suburban shopping malls, sewer treatment plant extensions and many other environmental issues.

Some agencies, however, see the intervenors as no more than pesty gadflies, buzzing about looking for issues to stir up. Meanwhile, these detractors say the two succeed only in interfering with the orderly operation of state government. Others accuse them of being publicity-hounds, of trying to build an environmentalist empire for their own political gain.

Private interests are even more critical. Crop-duster Dennis Dixon, President of the Agricultural Aviation Association, has compared the intervenor's office to an insect whose "droppings" include slanted newspaper articles and unwieldy petitions to state agencies that tie the hands of private business.

Supporters, however, argue the office is badly needed. Many citizen groups look upon the Public Intervenor as a last resort when state agencies seem to turn a deaf ear to problems. Some observers contend an independent watchdog keeps agencies on the straight and narrow, protecting the environment. Otherwise, they say, the agencies would stick their heads in the sand on politically sensitive issues.

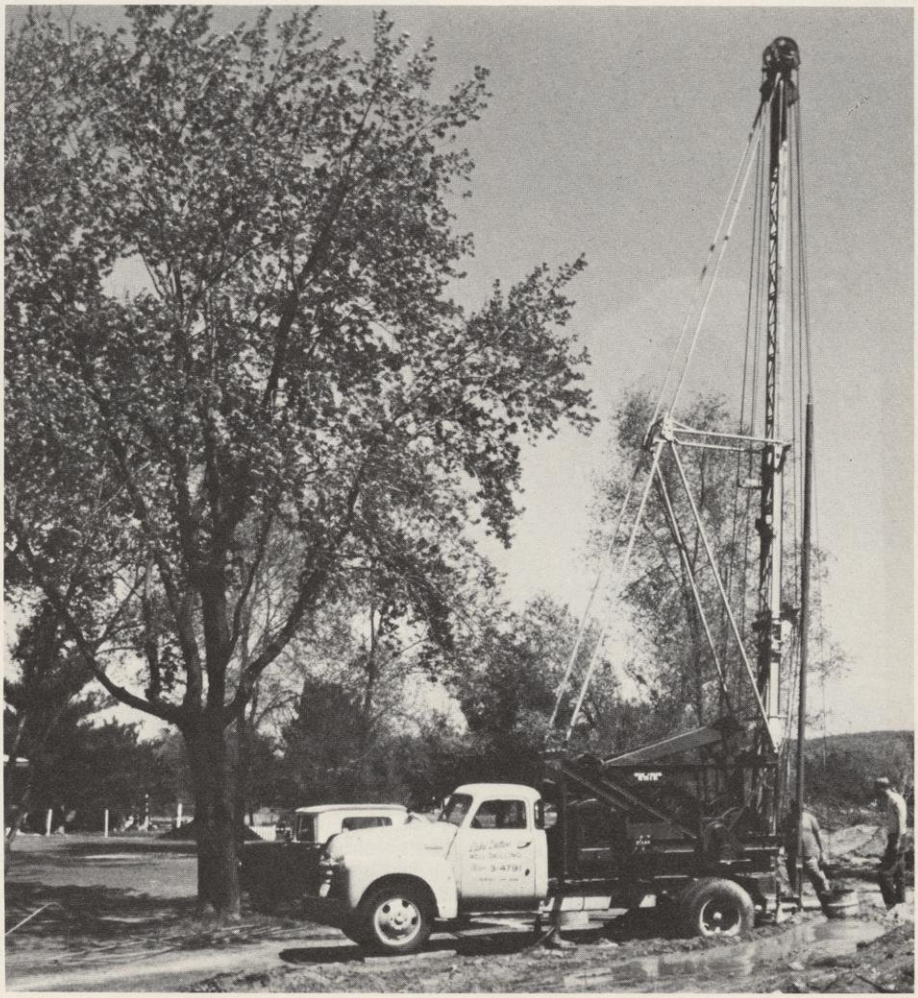
Among supporters over the last several years have been such unlikely allies as mining companies, including the Exxon Corporation, and even some of the state officials challenged by the intervenor on given issues.

"The Public Intervenor has become, in effect, the public's environmental lawyer," says Linda Bochert, DNR executive assistant and former head of Justice's Environmental Protection Unit. Though she often finds herself on opposite sides of a courtroom from the intervenor, she sees the existence of the office as healthy for the state. "Environmental law is still in its infancy," says Bochert. She points out that to develop new concepts in this body of law, two sides of a given issue need to battle it out in test cases so that legal precedent can be formed.

But does the intervenor really represent "the public interest" in environmental issues? After all, the name is "Public" Intervenor. Some state officials, including former Agriculture head Gary Rohde, have a problem with the name. Rohde claims the intervenors' strictly environmental focus is too narrow. "If he's supposed to represent the public interest, he must consider the economic implication of his proposals," Rohde contends.

Peter Peshek

"Look, I'm not the judge and jury of the overall 'public interest'," Intervenor



A well-drilling rig probes for an aquifer. Two-thirds of all Wisconsinites get their water from underground wells. The Public Intervenor helped make protection of groundwater a top DNR priority for the '80s. Photo courtesy Bucyrus-Erie Company

Dawson counters. Rather, he believes, the intervenor is charged with advocating public rights to clean air, water and land. His "client," according to Dawson, is not so much the public as the environment itself. His job, as he sees it, is to get traditional governmental bodies to show environmental responsibility.

Critics often contend the intervenor chooses cases based on personal political or philosophical leanings. To respond to this the Attorney General appointed a citizen's advisory committee to decide which cases merit intervenor attention. Formed in 1976, the committee consists of eight members, including representatives from the Sierra Club, Trout Unlimited, the League of Women Voters and other citizen, environmental or activist groups. Its main function is to offer political and legal advice to the intervenors.

The committee developed guidelines for judging whether action should be taken by the intervenor. Called the "criteria for intervention" they require that:

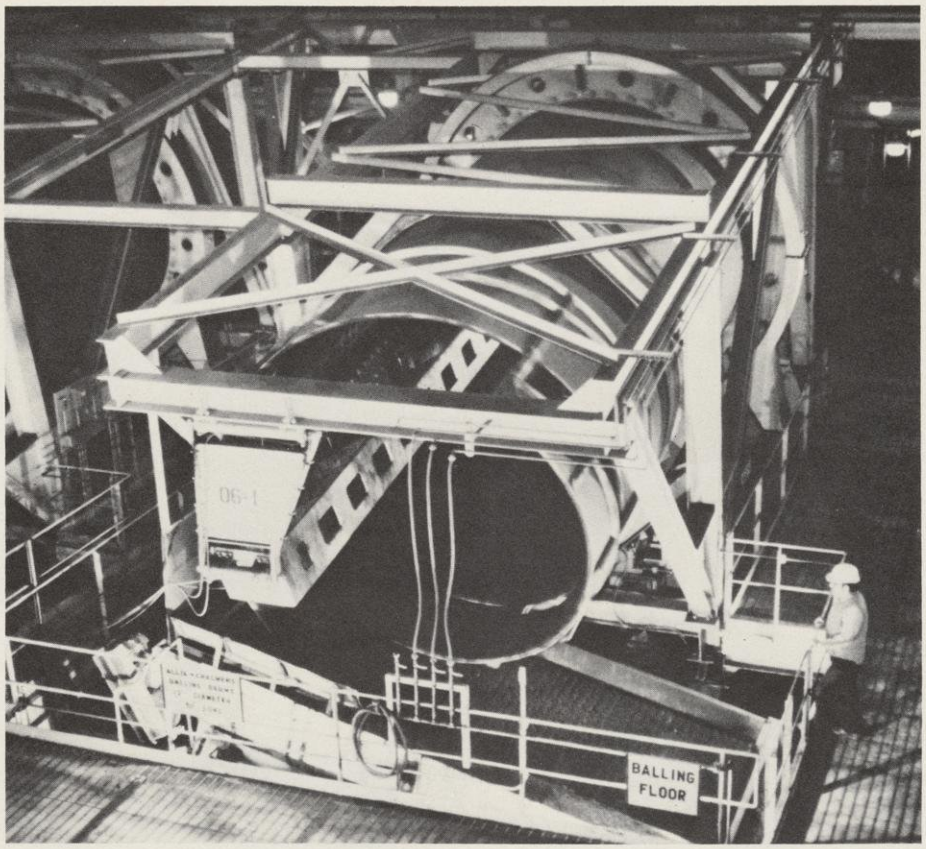
- Issues must be of statewide, not just local importance.
- Cases must be able to establish a legal precedent that would be favorable to protecting public rights in the environment.
- Environmental groups must be unable to handle the case without help from the intervenor.
- And results must help prevent a significant environmental harm.

Recently, the Committee asked for answers to additional questions before giving the thumbs-up sign. No matter how worthy the case, does the intervenor have the time and resources to intervene? And given political realities, what are his chances of winning?

Under these criteria, intervention in issues such as nuclear power or Project ELF would be voted down as too time-consuming. But some state officials foresee the possibility of future Public Intervenor involvement in zoning matters or even state population growth.

Statewide environmental issues are now given priority ranking. Currently, mining, pesticides and wetlands, all involving groundwater protection, top the list.

To win cases, intervenors use a bagful of legal strategies. They get around their own statutory limitations on starting legal action by gathering signatures for a so-called "six-citizen" complaint which can be used to force a public hearing. Or intervenors may file a petition that will make a reluctant state agency set down a policy on a politically sensitive issue. Occasionally, they even "coach" citizen groups on how to give testimony or file their own lawsuits.



A "balling drum" rolls powdered iron ore into pellets for shipping. Some environmentalists charge that modern mining technology isn't safe enough, even though stringent environmental regulations have been hammered out through the Public Intervenor. Photo courtesy Allis-Chalmers Corporation

Another strategy is to sit down across a conference table and negotiate with adversaries in what is called the "consensus" approach. Put briefly, consensus is political compromise by disputing parties, accomplished more or less outside the established mechanics of government. This approach has brought such unlikely bedfellows as environmentalists and industrialists to the negotiating table to settle their differences.

Sometimes it works well. "Getting into bed with environmentalists may rub raw with some of our more hide-bound colleagues, but in this day and age there's no better course of action," one Kennecott Mining Company staffer concluded.

Turning that around, Peshek holds that the same course is wise for environmentalists.

In mining, consensus assured local communities of funds for environmental impact studies and post-operational clean-up costs. Exxon attorneys even agreed to nearly all of 130 Public Intervenor "demands" for protecting wetlands and groundwater while mining.

Yet, as might be expected, "consensus" does not have full consensus. In one case, a group of state and local officials, mining company attorneys, environmentalists and Peter Peshek, all agreed on new groundwater standards for mining. The compromise allowed less-pristine "drinking water standards" rather than absolute nondegradation of water within a specific containment area near mines. To some northern Wisconsin environmentalists, and even some DNR water quality staff, this is unacceptable.

"We in the north have lost far more with this consensus thing than we've gained by it," says Rusk County's Roscoe Churchill, who is adamantly opposed to copper mining by today's methods in his locale.

The success or failure of the consensus game depends in large part

PUBLIC INTERVENOR CASES, 1981

TYPE	NUMBER
Hazardous and solid waste, sewage treatment, water pollution	34
Forests	6
Pesticides	9
Wetlands	11
General (includes groundwater)	19
Wisconsin Environmental Policy Act	1
Habitat	5
Agency rules	2
Mining	11
Corps of Engineers	34

Mining produces tremendous piles of crushed waste rock. Unless it is carefully stored, pollutants in the waste harm surface and groundwater. The Public Intervenor's office helped secure concessions from mining companies to prevent such pollution. Photo courtesy Allis-Chalmers Corporation

Grouting a new well. Recent testing shows contaminants from agriculture, mining and septic systems turning up in both public and private water supplies. The Public Intervenor helps protect Wisconsin well-owners who fall victim to this groundwater pollution.

on the parties involved.

Some agricultural interests look upon Dawson as a fancy-dancy government lawyer with no knowledge of modern farming. These growers resent being told by a lawyer how to use pesticides, or avoid fouling groundwater. So consensus didn't work at all with the agricultural community during a recent furor over pesticide uses and abuses. The Department of Agriculture organized a special committee to talk compromise between environmental and agribusiness groups. But talks quickly ground to a halt.

Some critics say Dawson was heavy-handed in the negotiations. "We already had a consensus going on some issues until Dawson came in," charges Alvin Randall, executive secretary for the Wisconsin Canners and Freezers Association, an agribusiness lobby group. "He would come in and threaten to sue if he didn't get his way," Randall charges.

Dawson, in turn, says agriculture representatives didn't bargain in good faith. "Some in the agricultural community felt I always had an ulterior motive behind anything I said," he says. "They operated from a basis of complete mistrust."

Indeed, farm interests felt the Public Intervenor's ultimate goal was to ban all pesticide use in Wisconsin. Time and again Dawson refuted the charge. He only wants *reduced* use, he says, through approved integrated pest management techniques. He also wants the burden of proof shifted from citizens now forced to show pesticide damages, to users having to show safety.

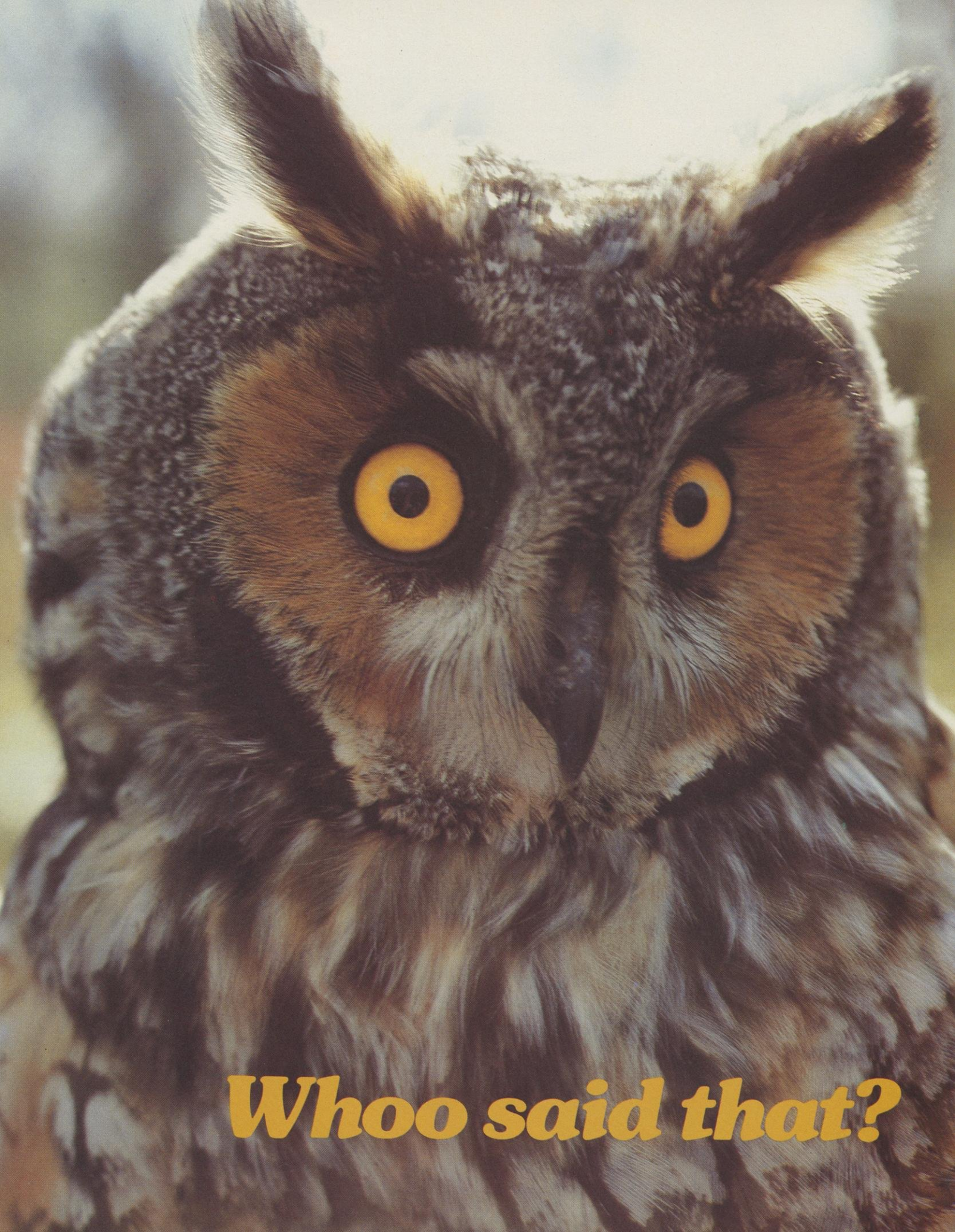
When consensus failed, Dawson hit Agriculture with a formal petition to revise its pesticide rules. He threatened to take his case before the Legislature if agriculture didn't act.

His success in getting the revisions he wanted is open to debate. "He obviously pushed us to do a number of things we wouldn't have considered without a lot of pulling and tugging," former Agriculture Secretary Rohde concedes. But other Agriculture officials feel the department would have come up with similar rules, albeit over a longer period of time, without Dawson's "help."

Still others feel that despite the intervenor's efforts, proposed revisions have been watered down by political compromise. "The key issues — distinguishing between overspray and drift, and assuring groundwater protection — may well have been sandbagged in the final go-through," says Lloyd Lueschow of DNR's Division of Environmental Standards.

The jury is still out on how the Public Intervenors have fared in protecting the state's resources for the state's people. Yet one thing seems clear. Their absence would have allowed business, industry and state agencies to relax a bit in attending to environmental matters.

The intervenor's continued existence, even in the face of general budget cuts, means that the "gadfly" function in resource matters has become an established part of Wisconsin government. Busybody, or pure gold? Depends on which side you're on! Maybe nobody loves an intervenor, but it looks like we want them around. Just in case!


Whoo said that?

You can tell an owl by its hoot! Listen!

JERRY L. MOSSER, UW-Extension, Madison

Owls are usually silent, secretive creatures. But during the mating season from January through May, they let their guard down and "talk." Owl talk is not intended for people of course, but it's fun to listen in. With a little practice, you can identify elusive nocturnal neighbors by their calls, and perhaps even talk back to them.

Great horned owls are always the first to "go public," according to University of Wisconsin-Extension wildlife ecologist Scott Craven. In January, they find mates and establish the boundaries of their hunting territories, conversing in deep, resonant hoots, usually five in a slow-fast-slow hoo-hoo-hoo-hoo-hoo rhythm.

The best time to listen for great horned owls is from dusk to midnight or just before dawn on a clear, calm night. Their calls travel for miles, and except for the center of large cities, there are few places in Wisconsin where great horned owl calls cannot be heard.

Next to break the silence of winter nights are screech owls. They start their courtship calls in February. The standard call is a tremulous, mournful wail — almost a whinny — that runs down the musical scale. Screech owls are common inhabitants of wooded residential areas, campuses and orchards.

In March, it's the barred owl's turn to disturb the nighttime quiet. Normally extremely secretive and strongly nocturnal, this resident of the deep woods now takes to more open country.

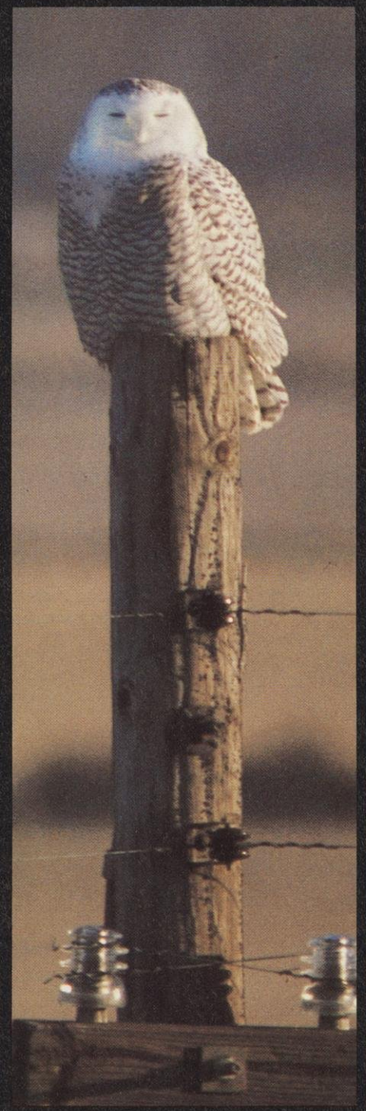
"It would seem by the end of March that each and every barred owl is intent on advertising its presence to the people of Wisconsin," writes Frances Hamerstrom in "Birds of Prey of Wisconsin," first published by the Wisconsin Department of Natural Resources in 1972.

Typically, barred owls speak in sentences of eight hoots, delivered rhythmically (hoohoo-hoohoo-hoohoo-hoohoo) and ended with a fading "aw." Noted ornithologist and UW Professor Emeritus Joseph Hickey describes the call as "Who cooks for you? Who cooks for you-all?"

Great horned, screech and barred owls are year-round, statewide residents and outnumber all other species in Wisconsin. Less common and less likely to be heard are long-eared, short-eared and saw-whet owls.

The calls of the long-eared, whose mating season begins with the screech owl's in February, include a low, moaning dove-like "hoo, hoo, hoo." The long-eared owl breeds throughout Wisconsin, but winters mainly in the southern part of the state.

Short-eared and saw-whet owls are vocal in April and May. The short-eared owl's calls include an emphatic sneezy bark, "kee-yow." The saw-whet is named after its call — a clear, rapidly repeated bell-like note that sounds from a distance like a saw being sharpened. The short-eared owl nests throughout the state, but may migrate from some regions when deep snow keeps it from its main food source — the meadow vole, known to most people as the meadow "mouse." The saw-whet breeds and winters throughout Wisconsin.

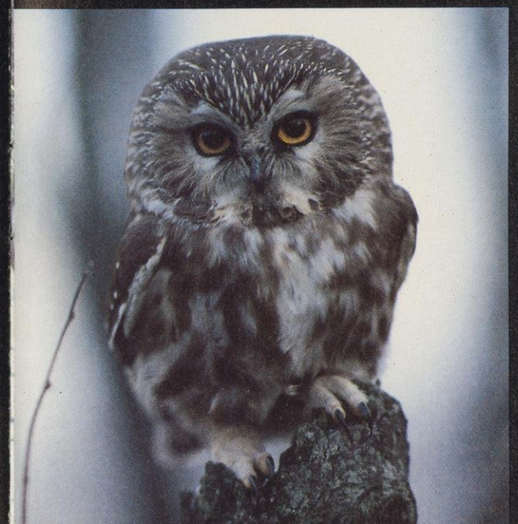


Snowy owls often visit Wisconsin in winter.
Photo by Victor Apanius

There is also a small breeding population of barn owls in Wisconsin, Craven says, but this owl — the only one on the Wisconsin endangered species list — is rarely seen or heard. Wisconsin lies at the northern edge of the barn owl's range. When it does talk, it makes a variety of sounds that include hisses, groans, raspy screeches and some unearthly tones. The barn owl's mating call is a continuous "whee-tuh...whee-tuh...whee-tuh."

Other owls are sometimes seen in Wisconsin but they are almost always visitors, not residents.

The snowy owl, which breeds on the



Above:
Pigeon-sized screech owls sometimes nest in open apple orchards and on wooded college campuses. Painting by artist Dietmar Krumrey

Above left:
Great horned owls have young in the nest before snow leaves the ground.
"Cottonwood Eyrie" by artist Diane Pierce

Below left:
The miniature saw-whet owl is preposterously unafraid and will sit tight while humans pass directly below. Photo by Victor Apanius

Page 25:
When frightened, long-eared owls press their feathers tight, raise their ears and look like an old dead branch. Photo by Victor Apanius

Paintings courtesy Leigh Yawkey Woodson Art Museum, Wausau. Photographed by Richard J. Wunch

The little hawk owl is Canadian, but sometimes invades Wisconsin. A few may stay to nest. Like hawks, they hunt during the day. Painting by artist Randy Fehr

When cornered and threatened, many young owls will first hiss, puff up their feathers and pretend to strike — then roll over to expose stiletto-like talons. "Barn Owl on the Defensive" by artist Raymond L. Ching

tundra of the far north, is one well-known visitor. A few of these large, white birds probably visit Wisconsin every year, but periodically many of them "invade." They seem fearless, and are as likely to be seen on a rooftop in Milwaukee as in a country woodlot. The periodic southward migrations are in response to collapses in tundra lemming populations, the owls' staple food supply.

Hawk owls sometimes come to Wisconsin from the north, and a few have been known to nest in northern Wisconsin. Boreal and great gray owls are also rare visitors from the north, but recent sightings suggest great grays may occasionally breed and nest in far-northern counties.

Burrowing owls live in the open country of the western United States. But a few individuals have been seen in the Midwest and New England so this species may occasionally turn up in Wisconsin.

Visiting owls almost never breed and nest in Wisconsin, so they are unlikely to sound off while here.

You may be tempted to test your woodland skills by trying to locate the roosting and nesting sites of talkative owls. You can get some idea of where to look from the direction of the sound, but owl calls travel large distances on calm nights. Also, trees and buildings may alter the direction of the sound. Then too, owls will most likely stop talking or fly away if you come too close.

If you really want to pinpoint the location of a nest or roost, look for owl pellets in the daytime. Owls swallow their prey whole or in large pieces. After stomach fluids digest what can be broken down, the remainder — bones, claws, hair and feathers — is regurgitated as a tightly packed pellet. Pellets vary in size from one-half or three-quarters of an inch for the tiny saw-whet to one by four inches or larger for the great horned owl.

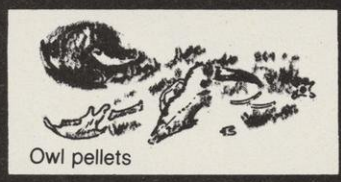
Pellets not only mark the spot where an owl digested a meal, they also reveal what the owl ate. From analyses of pellet contents, we know that the so called economic "damage" owls are said to cause by dining on songbirds, game birds and occasional domestic fowl, are enormously offset by the "good" they do in consuming huge numbers of injurious rodents and insects.

Over the course of a year, about 75% of a screech owl's diet is rodents and insects. Around half of these are pests like starlings, blackbirds and English sparrows. More than 90% of the diet of barred, long-eared, short-eared and saw-whet owls is rodents.

Even the great horned owl, which sometimes preys heavily on birds and animals we like, including an occasional house pet, more than makes up for its transgressions by helping keep rodent populations in check.

In addition to pellets, there are other clues for locating owls. A noisy mob of birds sometimes betrays an owl's location during the day. Crows, for example, frequently mob great

Drawing by artist Myra Nye, Rt. 3, Box 340, Antigo, WI 54409



Owl pellets

horned owls. A collection of droppings, or "whitewash," also helps identify an owl roost or nest.

Most owls nest in difficult-to-reach places, so your chances of getting a good look at a nest are slim. Screech owls, for example, nest in holes in trees. Great horned owls nest in large stick nests high in trees — usually in those built by red-tailed hawks. (Owls don't build nests — they use existing cavities or nests constructed by other birds.)

If you find an owl nest site, make your observations from the ground. Don't climb the tree for a closer look. Such an invasion of privacy would not be in the owl's best interest and besides, it is illegal to molest a nesting owl. In the past, people took young owls from nests to raise as pets. Owls and other birds of prey are now protected by law. It is illegal to possess a living or dead bird of prey.

It's also a matter of safety. Owls can become aggressive when they think their eggs or young are threatened. A great horned owl can easily knock a man out of a tree.

Besides listening for owls and looking for roosting and nest sites, you may want to encourage them to take up residence in your neighborhood. Cavity-nesting species sometimes set up housekeeping in properly sized and located nest boxes. ("Wisconsin Birds of Prey" contains recommended dimensions for several owl species.) At the very least, you'll want to leave trees containing large stick nests standing, even if they would make good firewood.

Burrowing owls live on the Great Plains, but sometimes this rare "owl on stilts" visits Wisconsin. Stone lithograph by artist Nick Wilson

Because owls are so secretive and nocturnal, it is impossible to determine their population levels by identifying and counting them on sight, as with other birds. Researchers and wildlife managers resort to counting owls' territorial and courtship calls.

But some owls may not be talking when the census-takers are listening. Owl counters get higher counts by imitating owls or playing recordings of owl calls, and counting the owls that respond. Owls will even fly in close to investigate a good imitation, Craven says.

So instead of just listening to the owls in your neighborhood, you may want to join the conversation.

Just ask "Who cooks for you-all?"

The readers write!

I would like to respond to a statement made by Justin Isherwood in his article "Another Good Oak" (July-August, '81). In introducing Henry David Thoreau to readers, Isherwood states that Thoreau was not a "Wisconer" and that he (Isherwood) has "some doubt that H.D. ever knew Wisconsin existed."

Thoreau, in fact, traveled through Wisconsin in 1861. He boarded a river boat near Galena, Illinois, and traveled up the Mississippi River to Minneapolis, seeing the entire southwest border of Wisconsin as far north as Prescott. Coming back downstream, he left the river at Prairie du Chien and crossed the entire state overland to Milwaukee. His death the following year prevented Thoreau from publicly writing about this trip, but his notes record his impressions.

(MR.) LAVERNE BeBEAU, Hastings, MI

Your article on the Mississippi and Illinois rivers tells it as it is. We find only one thing that we think is not totally correct: the seriousness of the wake or waves made by barge tows.

We spent a Labor Day weekend camping on the Mississippi north of Prairie du Chien. On Saturday, eight tows of barges came by within eight hours. The waves they made did not rock my boat nearly as much as speed boats and launches. The waves at the shoreline were not nearly as heavy, either.

But we do agree that there is a limit to the amount of traffic the rivers can carry, and we believe this point is very close. We also agree dredged material should have a use somewhere, as you have said, regardless of complaints about cost or inconvenience. Because federal funds may well be cut, a user's fee should be set and people using the river for profit informed of the reason.

The dam at Alton may well be necessary. To keep transportation costs low, it probably should be large enough to carry a full tow of 15 barges. But the projected amount of freight for 1990 should be the uppermost limit carried on the river.

Keep up the good work.

ELVERSON F. and ESTHER A. THORPE, Madison

Of the many state publications we receive here, *Wisconsin Natural Resources* is one of the few I try to read cover to cover. In the same context, I rarely can take time to compliment an editor/author on an exceptional article.

But I can't resist a "tip of the hat" to Justin Isherwood and "Another good oak." Well done, original, good fun *and* a moral! What more can your readers ask? (Although I'd have opted to chop the pine and save the oak.) Please keep up the good work.

GEORGE V. BURGER, Max McGraw Wildlife Foundation, Dundee, IL

Your September-October Catch-all told about a DNR researcher recognized for his work by "Trout Unlimited". But, the headline said "Ducks Unlimited." Which was it?

MEL FAMY, Waukesha

Actually, it was Trout, not Ducks Unlimited that honored researcher Bob Hunt. Ten lashes with a flying fish for the proofreader.

Do not be too concerned about the remarks of the lady from Eau Claire regarding your covers. There are many of us who enjoy your magazine and its covers.

As for the "Yech" — those little kids in yellow slickers truly portrayed the feeling of that lovely area. As for the "non-cover" — what better place for a questionnaire concerning fish and wildlife than on a magazine put out by DNR? Didn't she see the beautiful loon on the proper cover beneath?

We are only summer residents but we love your state and enjoy every issue of your magazine. As a history buff, I was especially interested in the article about LaSalle in the July-August issue. And your article about humming birds was excellent.

Please keep up the good work and don't change. We like you just the way you are.

MAXINE DROLET, Kankakee, IL

I enjoy receiving *Wisconsin Natural Resources* but I was disappointed in the cover of the July-August issue. The "Devil's Lake today" photo on page 28 would have been my choice for the front spot.

The hazardous-waste cover you chose fosters a serious problem. We all produce some wastes, but today it's getting difficult to find a place to dispose of them. That cover photo is just what people, who do not want a disposal site within a mile of their place, can use to arouse neighbors against it.

I hope in some future issue you can have pictures of good landfill sites. Your March-April issue had pictures of wild flowers on highways — maybe there is one landfill that has wild flowers on a completed section.

WILLIAM H. DOYLE, Environmental Consultant, Milwaukee

Thank you for a fine magazine. The quality of the writing and photography are greatly appreciated.

JEAN KRAUS, Shullsburg

Wisconsin Natural Resources is performing an important service by keeping its readers informed on many issues of concern, such as the handling of hazardous waste (July-August 1981). These issues weigh heavy on our minds.

How refreshing, then to turn the pages to the delicate paintings and interesting article by William Bloom on hummingbirds ("Wisconsin's winged jewels"). Keep up the balance. We need both to keep our perspective.

PAM BREUER, Rubicon

I have taken this magazine for as long as I can remember. I have saved all the issues I have ever received, and use them often to look up something or other. I take a dim view of those who write in saying something against it. I don't think any of our states have a better magazine.

I also have a question. In your article on central Wisconsin beavers ("Dam those Beavers," July-August 1981) you say "anglers are cautioned against drinking water from streams during trout season because flies and midges can spread the disease (tularemia)." Can fishermen catch this disease by eating trout taken from or near beaver ponds?

KENNETH P. VAN DE BOGERT, Delavan

Author Thomas Thuemler says fish themselves cannot transmit tularemia and are therefore safe to eat. Best to thoroughly cook the fish before eating, though. He says that an angler can catch tularemia if a cut or scraped arm or leg comes in contact with water contaminated by the disease.

While reading your Tourism booklet, I was surprised to note in the description of Hurley that "General restaurants feature pasties, a *Finnish* meat pie." This is decidedly an error.

Pasties were introduced by *Cornish* (English) migrants, especially early miners, who carried them to work in their lunch pails. It is truly English, a crust filled with onions, potatoes and meat, and made like a turnover — not a pie.

My Dad came to Michigan's Upper Peninsula (Gogebic County) with his Swedish parents in the 1880's. I was born and raised in Bessemer, the county seat. A lot of "Cousin-Jacks" (a nickname for Cornish or English) would be angry at your giving Finns credit for our pasties.

I do hope you will set the record straight.

MRS. W.L. LONG, Tracy, CA

I'd like to know how much the DNR is paying to have its subscription promotion included with tax mailings! Why can't this money be used to give me useful information, rather than throw my tax money away on solicitations for more of my money?

KEVIN McDONALD, Grafton

The Wisconsin Natural Resources *Magazine envelope you received with your tax refund costs Wisconsin taxpayers nothing. The promotion, produced for a fraction of a penny, is paid for entirely by magazine subscriptions. The Department of Revenue includes the envelope with its mailings as a courtesy. It saves us postage and costs them no more.*

Unlike the magazines of all but two other states, Wisconsin Natural Resources *is entirely self-funding. Subscription fees pay for staffing, promotion and production costs. No general tax monies and no DNR license fees are used to support the magazine.*

As a transplanted Wisconsinite living in the middle of Iowa, I miss Wisconsin's landscape, water and trees. But every issue of your magazine brings me close again. I don't miss one word.

Incidentally, I also pass it on to Iowans and have sold them on Wisconsin attractions several times.

DORIS WILLARD, Des Moines, IA

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 Readers Write" should be addressed to Wisconsin Natural Resources magazine, Box 7921, Madison, Wisconsin 53707.

Front cover:
On crisp, cold January nights, great horned owls speak out. Their talk is meant to find a mate and stake out hunting territory. You can eavesdrop. See the story on page 25. Painting by artist Robert Bateman, courtesy of Mill Pond Press, Inc., 204 Nassau St., Venice, FL 33595

Back cover:
Owls nest and rear young earlier than any other birds. These fledgling barred owls are already a month old when most birds have not yet built a nest. Photo by Victor Apanius

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Wisconsin Natural Resources
January-February 1982 • Volume 6, Number 1

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200 years of change

From the beginning of this nation's history people have wrought changes on the Wisconsin landscape that affected both wildlife and plants. The changes are still happening.

DON BRONK, Wausau

It is 1776. Near the junction of the Big Eau Pleine and Wisconsin rivers, where Lake Du Bay will be after the dams are built, a grey wolf howls. Further away, near the future Hatley, a bull elk bugles a challenge into the pine forest. In a wetland which will be named Marsh-field, a cow moose and her playful calf splash for succulent water plants and a sullen wolverine growls and tests the wind in the Big Rib River valley.

Whitetail deer are not overly plentiful in Wisconsin's mature forests. The occasional elk serve the resident Indians for food as well as for weapons and clothing. To the east are the Menominees; to the west where open grasslands become plains near the Mississippi are the Chippewa tribe. In what is now Clark County, buffalo graze while a mountain lion patrols the upper Black River valley.

Wolves left after the big woods were cut but it was not until halfway through this century that they ceased to howl in the state's far north. Twenty-five years later as the forest regrows they've begun to drift back in. Drawing by artist Myra Nye, Rt. 3, Box 340, Antigo, WI 54409

The white man is mostly hearsay here now, but trading in beaver fur is already taking place between Wisconsin tribes and intermediate Iroquois, who act as middlemen between the eastern colonies. Affairs which concern the shapers of nations are confined to the settled land between the broad Atlantic and the Appalachians, with the mountains forming a barrier to political rhetoric.

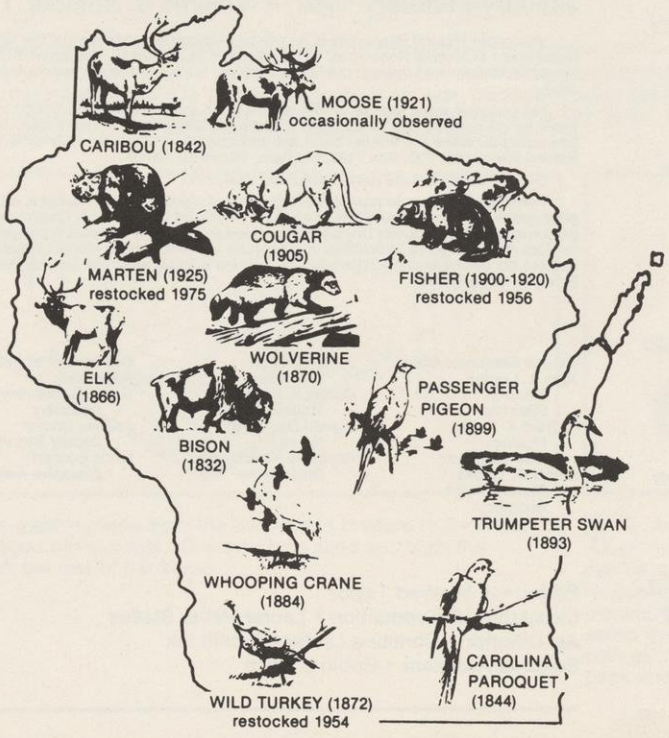
It is already a while ago that Charles Langlade established his settlement at Green Bay. Up ahead, 11 years after the signing of the Declaration of Independence Wisconsin will become part of the Northwest Territories. In 1816 John Jacob Astor will begin fur trading operations in Wisconsin and eager Indian trappers capture beaver, wolf, wolverine, otter and marten to trade for wool blankets and steel knives.

But the central and northern portions of the state are still quiescent wilderness. Just north of Marathon County, almost on the Lincoln County line, begins the rich Boreal or Canadian forest of white and black spruce, white cedar, mountain ash and maple and balsam fir. In Marathon County the vegetative "transition zone" begins, characterized by virgin white pine, red oak, sugar maple and birch. This biotic "transition zone" fills the gap between the Canadian forest and the Sonoran zone beginning near Rock and Milwaukee counties and extending south to the Gulf of Mexico. Its ecological richness results from the varied mixtures of northern and southern plant communities and the bird and animal species that inhabit them. Such is the fertility of the land that most of the animal and bird species present now in 18th Century Wisconsin, will flourish for another 150 years — some of them becoming more abundant. Others will vanish utterly, and still others retreat to the remaining Canadian wilderness.

No longer content with trading in furs, the white man will leave the confining southern settlements and drive his plow into the rich loam of the Winnebago meadows. Reaching rapidly northward, settlers and adventurers will provoke ruthless small wars with the Indians, culminating in the Blackhawk War of 1832. Despite some Indian successes, the white push will be irresistible. In 1836, the Menominee will cede a portion of Marathon County to the Federal Government. One year later, the Chippewas will surrender their county holdings with a series of treaties, relinquishing their ancestral homes as far north as Lake Superior.

The first animals to retreat from the settlers are bison. Sioux Indians will kill the last two in the state near the Trem-

SOME VANISHED WISCONSIN BIRDS AND MAMMALS
(and general location and date of last record in the state)



pealeau River in 1832. Five years later the Sioux follow the bison westward with their treaty of 1837. In 1848, Wisconsin will enter the Union.

By then the movement of farming to the north will falter. The growing season is short, the soil less fertile. But the north's century-old white pine is prime raw material for exploding construction as the nation expands west of the Appalachians. The plow surrenders to the axe and the spring-swollen Wisconsin River gluts with fresh-cut pine logs destined for sawmills and railroads. Ancient prairies roll under the plow while topsoil surrounding a million-million pine stumps feels sunlight for the first time. In time, many animals and birds will thrive on this altered land; deer and grouse will flood the openings and coyotes extend their range eastward to blanket the state. But for the large animals of the deep forest, the change is disaster. The loss of habitat, market hunting and conflicts with farm livestock eliminate the largest of them from the state in another short quarter-century.

The Clark County cougar is killed by "Mr. Benjamin Bones of Racine" in December of 1863. It is one of the last, although some hang on until the early 1900's. The elk go in 1866. By 1870, the wolverine is gone. Moose and grey wolf are more resourceful. Retreating north-

Mountain lions were among the first creatures to flee the state after white civilization. Photo by Jerry Manley

A short quarter-century after statehood, the last elk disappeared from Wisconsin, forced out by the hunter's rifle, farmer's plow and logger's axe. White-tailed deer flourish in the niche they left behind. "Evening Snowfall — American Elk" by artist Robert Bateman, courtesy of Mill Pond Press, Inc., 204 Nassau St., Venice, FL 33595

Lynx. Disappearance of mountain lions left lynx and bobcat as Wisconsin's only wild felines. Today, lynx are extremely rare, widely scattered and protected by endangered species laws. Painting by artist Manfred Schatz, courtesy of Russell A. Fink, 9843 Gunston Rd., P.O. Box 250, Lorton, VA 22079

ward, they occupy the northern tier of counties where caribou herds once roamed.

The state gradually stabilizes. Farmers exploit some of the cutover land left by lumbermen; other patches, left alone, regenerate, beginning with the typical aspen sequence. A favorite food of deer and ruffed grouse, aspen will become the mainstay for another forest products enterprise, the paper industry.

But man will have an unwanted assistant in clearing the land. In 1871, the Peshtigo fire will burn millions of board feet and reduce a town to cinders. Fire and axe compete desperately. It is not this generation of lumbermen, but their sons who will view the forest as a protectable — and renewable — resource. Fire protection and prevention will come later but for now, wildlife is quick to take advantage of the change. When flame destroys competing brush in fields of prairie grass, prairie chicken take over in such numbers that complete field kitchens are set up by hunting farmers and their friends for annual fall bird harvests. But gradually the aspen, with its understory of hardwoods, assertively regains some of the open land.

By 1900, major changes in the wildlife community are complete. The little lumbering town in the Wisconsin River valley at Big Bull Falls now has the Chippewa name Wausau, bestowed by a tribe two generations absent from their ancient hunting grounds. In the 20th century, even the moose and grey wolf surrender their Wisconsin footholds. The last original moose would be killed in 1921. Regular wolf visits from upper Michigan would cease in the early 1950's but 25 years later a new wolf pack will establish itself in northern Wisconsin and isolated moose surprisingly show up in Douglas County, immigrants from Minnesota.

But Wisconsin has seen the last of its giant game animals. Deer replace moose and elk, and coyote temper their bark where once the wolf howled. The bobcat reigns in lieu of the mountain lion. But for the wolverine, there is no replacement.

Sixty years after moose populations vanished from the state, an occasional visitor still crosses the border from Minnesota. Photo by Lynn L. Rogers, 119 W. Chapman St., Ely, MN 55731

And yet, it could have been no other way. Even after two centuries of change, Wisconsin has retained its vast ability to nourish and house a rich and varied mixture of species. And of all these, none is so imposing, and extravagantly interesting, as the upright human invader whose works imprint the landscape. Those works are neither all good nor all bad, but they herald change. Who knows what the state will look like 200 years hence?