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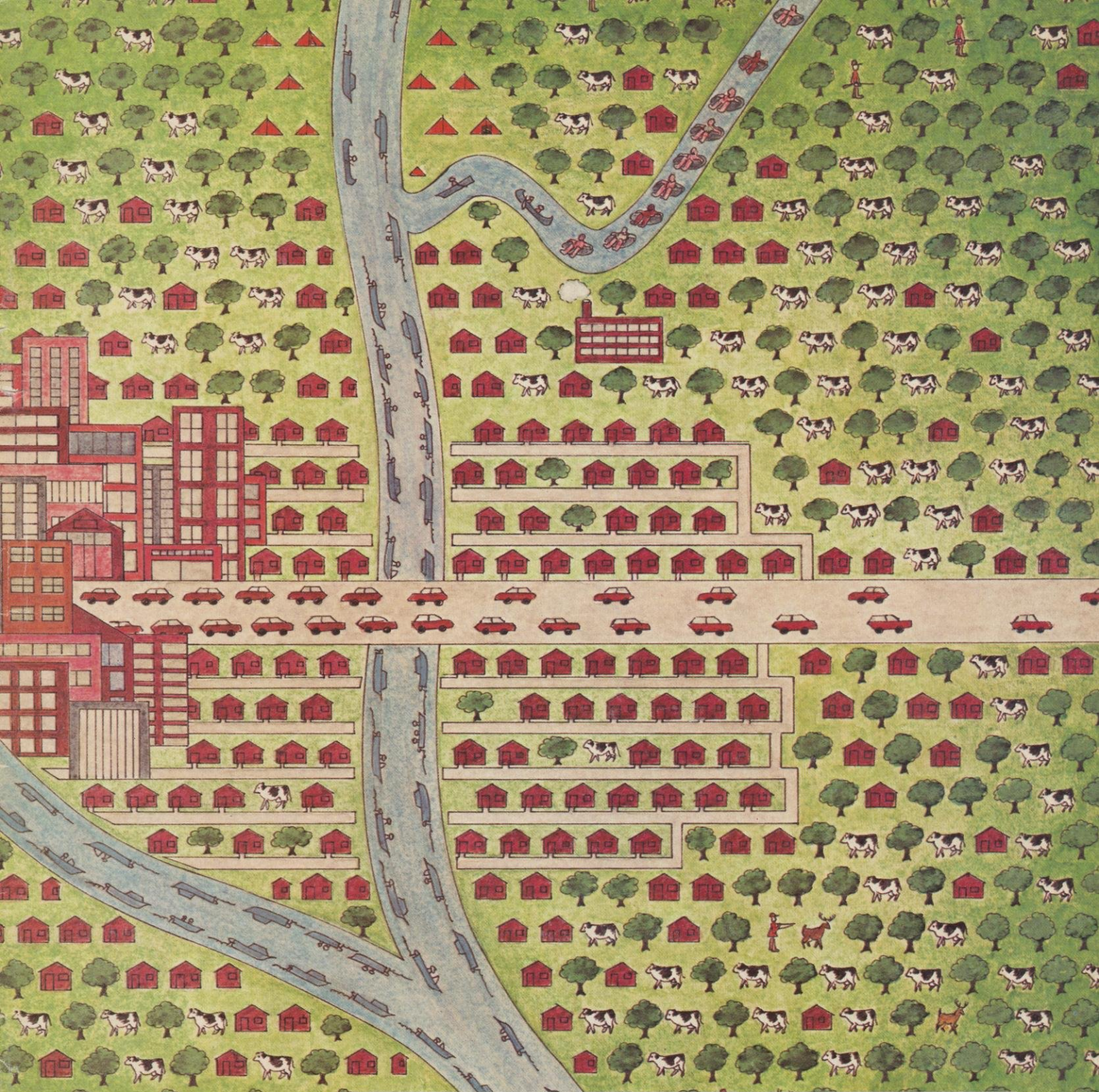
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Wisconsin

NATURAL RESOURCES

JANUARY - FEBRUARY 1978 • VOLUME 2, NUMBER 1 \$1.00



Evening lookout - snowy owl

GEORGE J. KNUDSEN, *Chief Naturalist, DNR,
Madison*

Leaving the tundra in northern Canada, and flying south on powerful, yet silent white wings the two foot tall snowy owls often overwinter in Wisconsin. Nesting on Canada's wide open tundra, snowy owls choose Wisconsin's open marshes, extensive farmlands, large frozen lakes and their shorelines. They perch on posts, stumps, clods of dirt, boulders, chunks of ice, snowdrifts, haystacks and even muskrat houses!

Arriving by November and staying in Wisconsin until February and early March, their numbers vary from winter to winter, depending upon prey abundance, or scarcity in the far north. Small rodents and rabbits are their main prey, but they occasionally take game birds and ducks.

These beautiful owls will fly during the day, but more frequently during dusk. It's hard to see a white owl against white snow, but *you* may be lucky enough to spot one!

Painting by Terrill A. Knaack, courtesy of the Leigh Yawkey Woodson Art Museum, Wausau.

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Wisconsin Natural Resources

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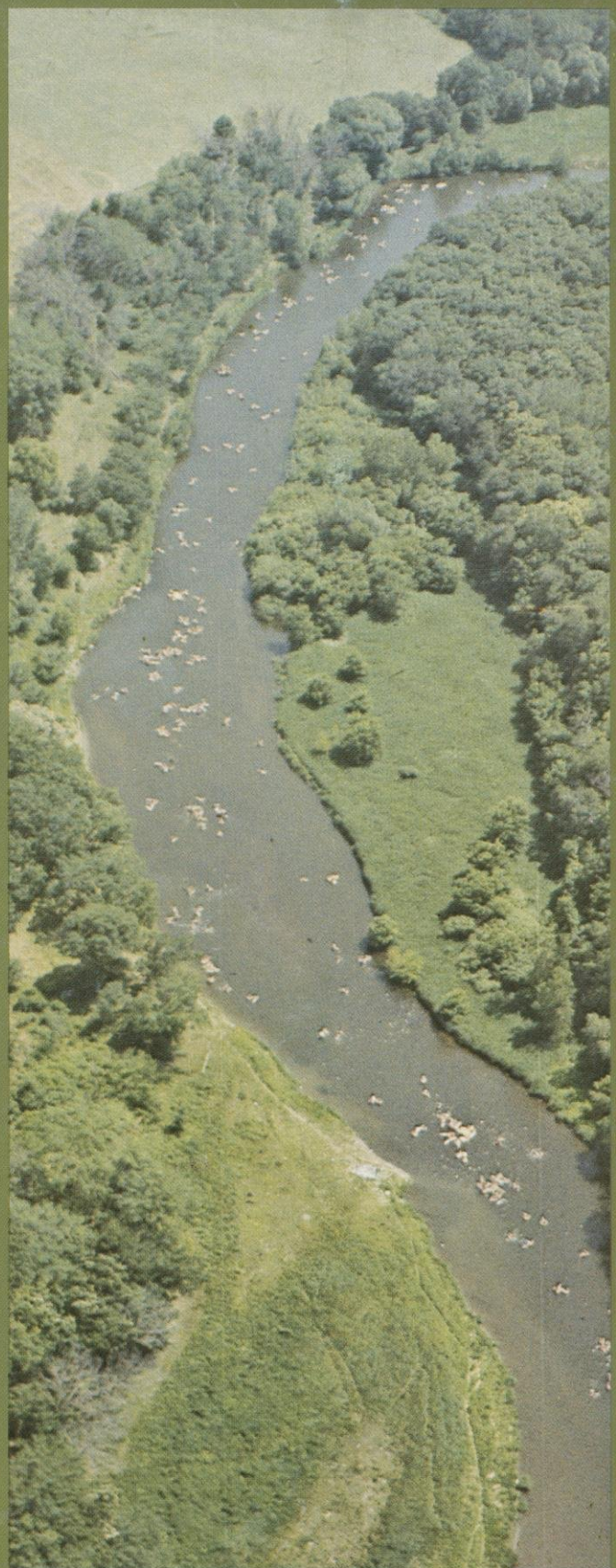
Front cover

The Wisconsin-Twin Cities border in calico by Georgine Price.

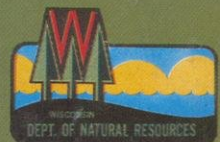
Back cover

Photo by Thure Blomquist

These red and white pine trees were planted in Waushara county near Silver Lake 39 years ago. Foresters say one-third of a million acres in Wisconsin still need reforestation. DNR sells seedlings for this purpose at cost. Tree order blanks are available now from department foresters and field stations.



Artists!
Trout stamp contest
See page 29 for details.



A borderline case

At times the borderline between Wisconsin and Minnesota seems hardly to exist at all. At others, it can be a dense jurisdictional barrier. Wisconsin counties near the Twin Cities have it both ways. And unfortunately because they often appear to face westward for sustenance, Wisconsin sometimes almost forgets they're there.

Most of us know that rural-urban problems, especially in populous southeastern Wisconsin, in the Fox Valley and around Madison come by the gross: ground and surface water quality, septic systems, transportation, taxes, zoning, open space, non-point source pollution and what not.

In Wisconsin, the media, the universities, county, city and town government and the State Capitol go after these problems. It's a case of handling them under some recognized jurisdiction. The method works for Milwaukee, the Fox Cities and Madison.

But up near Hudson on the Minnesota boundary, next door to two million people, these problems loom bigger and rub harder because of that borderline barrier. It has prevented both Wisconsin and Minnesota from reacting fully to needs of local residents and requirements of the resource. There is a Boundary Area Commission which sounds a hopeful note, but the states remain sovereign. A borderline case exists!

The stories here are by people who live in the neighborhood and have to deal with the problems. Call them a kind of string around the finger.*

* Gathering material for these stories was coordinated by Tim Eisele, DNR Public Information Officer at Eau Claire.

Best of both worlds

Why do Twin Cities people like to live in western Wisconsin? A River Falls resident said he found the Wisconsin property tax significantly lower than Minnesota's. Wisconsin he said gave him "the best of both worlds," a rural area with gently rolling hills and unique rivers, but within 45 minutes of the Twin Cities where he could also enjoy many cultural and sports activities. He liked the easy access to big employers in St. Paul, such as Univac and 3-M Company.

For statistical purposes the U.S. Census Bureau considers St. Croix County to be part of the Twin Cities Metropolitan Area. A certain colonial flavor is evident.

U.S. Census figures from 1970 reveal that 32% of St. Croix County workers commute to Minnesota. Ten percent of Polk County workers do. One study found that 50% of

Hudson's and 25% of River Falls' work force are employed in the Twin Cities area!

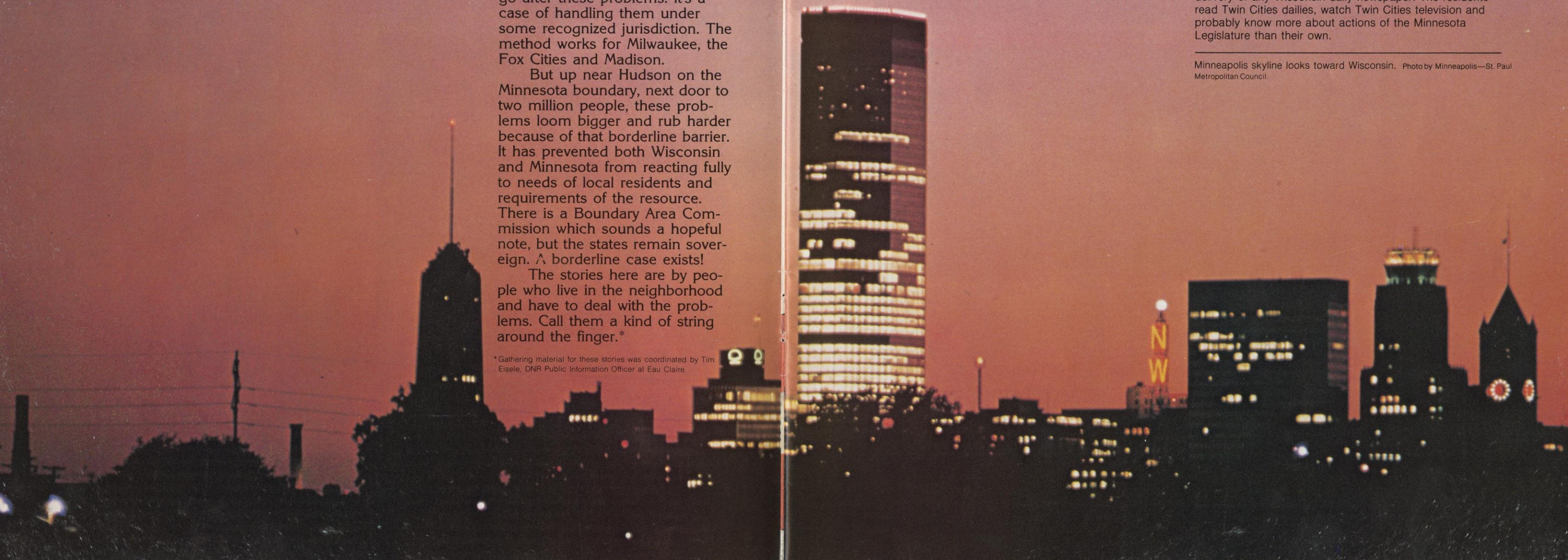
Economic interplay with the Twin Cities also helps western Wisconsin experience strong economic growth. According to the West Central Wisconsin Regional Planning Commission, the construction industry in St. Croix County showed a 91% growth in total employment from 1950 to 1970. Manufacturing employment was up 145% and there was a 152% increase in finance, insurance and real estate employment.

Working in the Twin Cities also has an effect on income. In 1973, Hudson, New Richmond, Amery and Baldwin had the highest income per capita of the major employment centers in West Central Wisconsin. All four were above the average for the State of Wisconsin and Hudson had a per capita income level higher than the entire United States average.

A 1975 report showed that 55% of the population growth in Hudson between 1960 and 1970 was due to immigration and a random sample revealed that 55% worked in the Twin Cities. Income levels are high. Relatively few families in the Hudson area have an income of less than \$10,000.

There is also a kind of colonial flavor to the fact that many Minnesota border counties don't receive same day delivery of any Wisconsin daily newspaper. The residents read Twin Cities dailies, watch Twin Cities television and probably know more about actions of the Minnesota Legislature than their own.

Minneapolis skyline looks toward Wisconsin. Photo by Minneapolis—St. Paul Metropolitan Council.



Letter from Baldwin

The pressure from the Twin Cities is very strong here. Both urban and rural nonfarm growth has been heavy.

We expect this pressure to continue. The 3-M Company plans to build a new research complex at Lake Elmo, less than 10 miles from Hudson. This laboratory will occupy 14 million square feet and employ 18,000 new white collar workers. Many of these families will be searching for housing in St. Croix County.

Other challenges will come from the Woodale Shopping Center project to be built about 13 miles from Hudson. This center as proposed would be the largest shopping center in the Twin Cities and would include a major office facility as well.

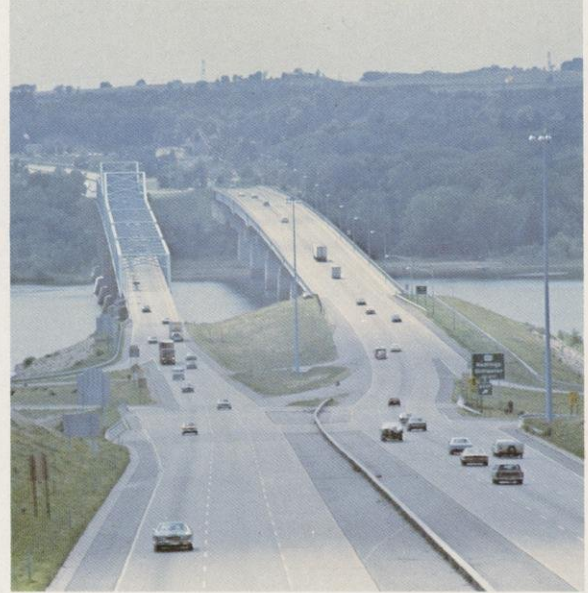
Many local people are concerned about present and future trends. Some of the concerns are local taxes, ground water quality in areas of private septic systems, aesthetic pollution, protection of the environment that attracts people here in the first place, and maintaining the viability of the local economy. They hope that we can manage the growth of St. Croix County so as to take advantage of the opportunities while minimizing the problems.

— JAMES JANKE, *Extension Resource Agent*

Car traffic over I-94 bridge

The Wisconsin Department of Transportation reports that more than 13,000 cars (not counting trucks, buses, etc.) pass both ways over the I-94 bridge near Hudson every day. Of these, 8,000 owners live in Wisconsin, while 5,000 are from out-of-state, mostly Minnesota.

Photo by Jim Harrison



The confluence of the Mississippi and St. Croix rivers at Prescott, Wis. Photo by Todd Bryan



City moving in

*EUGENE P. RUETZ, DNR Forester, Baldwin
MILO T. TAPPON, DNR Forester, Menomonie*

The rural character of Pierce, St. Croix and Polk Counties is changing. Farms and woods are becoming homesteads, taking on a decidedly suburban look complete with characteristic ailments.

The change creeps up on you and before you know it, the urbanization process has transformed familiar surroundings into the city you thought was miles away.

As a metropolitan area expands, the first areas to be built up are usually isolated, small farm woodlots. These choice five to 40 acre lots disappear fast as immigration picks up momentum.

In the early stages "locals" see this as a way to sell off unproductive land. Town officials welcome settlers to help shoulder the tax burden.

Later good fields and pastures become building sites. Land values soar, and taxes climb higher. Farmers are tempted to sell out and retire to the farmstead or farm in another rural area far removed from development pressures.

Uncontrolled urban sprawl doesn't just mean tax headaches. Fire departments expect the worst when expensive homes appear in 10 to 20 year old plantations. Wild fires can "crown" through the treetops in minutes. Insurance companies know the risks and raise rates.

More houses mean more septic tanks and drain fields, even polluted private wells. Then municipal water and

sewer systems are needed. Basement and septic tank excavating damages tree roots. Injured roots are an invitation to a variety of harmful insects and diseases.

Some home owners often find life in the deep woods is not all roses. Air movement is limited, so that when it rains, humidity reaches tropical rain forest levels. What can people do to stop mildew and mold? And the grass lawn won't grow without sunlight.

Historically, what do human beings do in an uncomfortable environment? They try to change it.

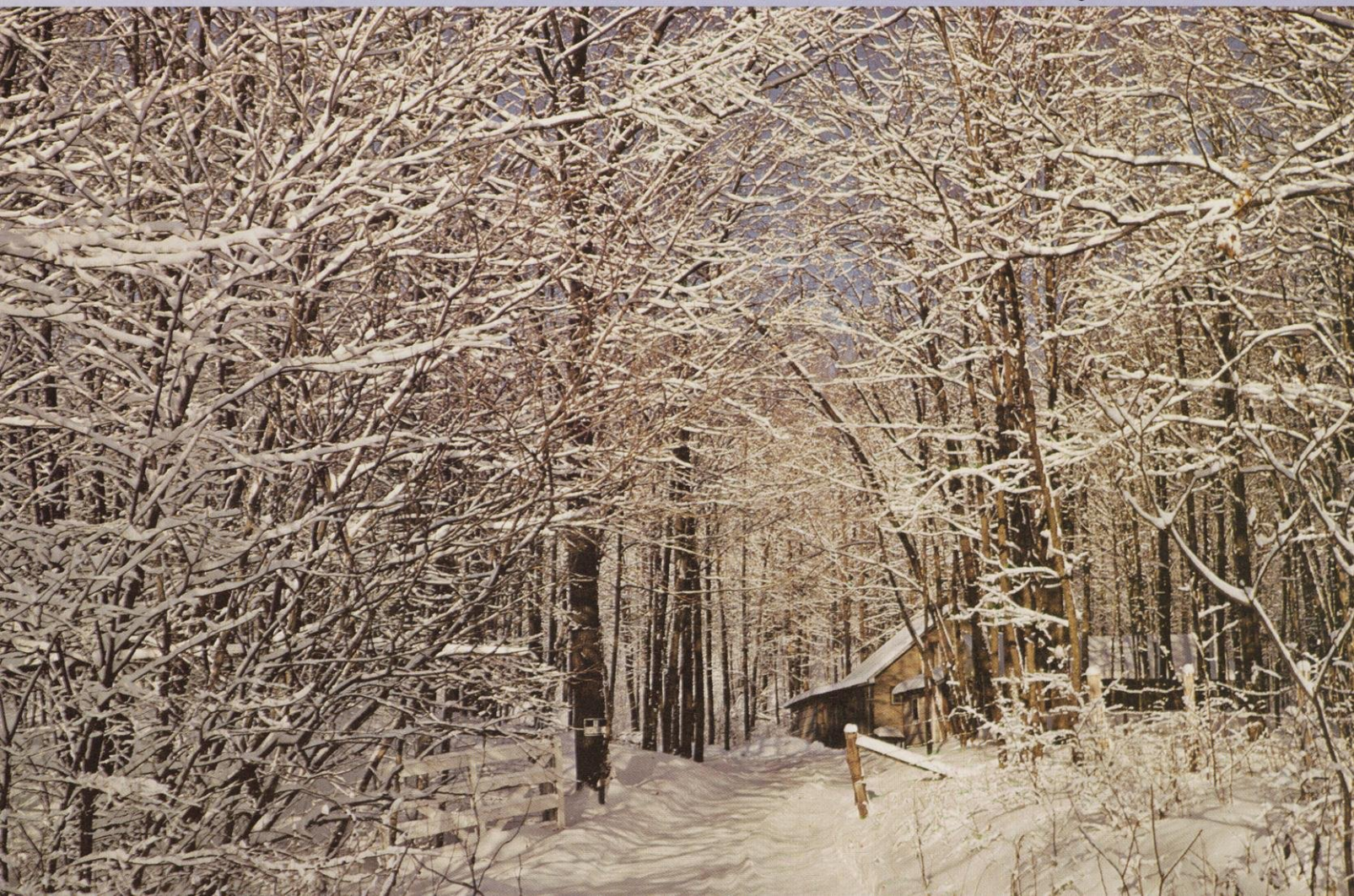
Gradually trees are sacrificed in favor of green grass. As houses go up, woodlots and farm lands disappear, and an urban environment develops.

The rural agricultural habitat is gone for good. The forest, once a source of many wood products is now a relic, producing only shade. Tree seeds have no suitable place to grow.

Wild animals lose homes and forage and eventually disappear. Deer, raccoon, beaver and badger succumb to housing pressures and automobile traffic. Chipmunks, moles and red squirrels become nuisances and soon fall prey to B-B guns or marauding pets. Birds lose nesting trees. Soon, only the most adaptable animals such as opossum, grey squirrels and a few hardy birds survive.

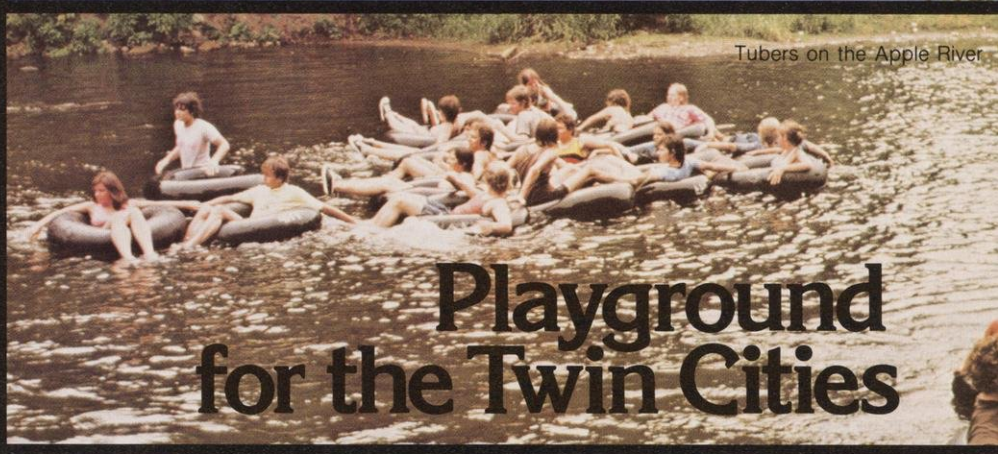
This urbanization process is on right now in Pierce, St. Croix and Polk Counties. We have lived and worked in this region, and have seen the full progression. What is so clear to us must not be to those moving in and around us.

Woodlots succumb to housing. Photo by Eleanor Jones





St. Croix river yacht basin.



Tubers on the Apple River.

Playground for the Twin Cities



Kinnickinnic River State Park

**TIM EISELE, DNR Public Information Officer,
Eau Claire.**

Mary Richards, Lou Grant, Ted Baxter and their TV news crew never covered a Wisconsin story for their Minneapolis station. But that isn't because there wasn't any. The Twin Cities and a lot of its 2-million people are sprawling all over West Central Wisconsin. And that's a story!

They come to boat on the St. Croix River, camp in a Wisconsin state park, picnic or hunt deer. Many Twin City residents have even moved to Wisconsin and now commute.

This bulge into our state can be either good or bad. It is not necessarily harmful to all natural resources. Wisconsin's deer herd, for instance, can stand the increased hunting. However, crowds of nonresident bow hunters in Polk County or tubers on the Apple River can cause problems.

In summer, everybody heads for water. Here's what DNR Fish Manager Rick Cornelius says about it: "On weekends, user conflicts sometimes arise on popular Polk County lakes because of high boater, water skier, and fishermen densities. A large percentage, more than 50%, is from the Twin Cities. Heavy use may require more intense management and restrictive regulation in the future."

He adds that proximity of the Twin Cities also results in heavy shoreline development. This puts even more pressure on the water resource, especially when marginal building sites are used.

The DNR warden in Pierce County, Dean Volenec, says it's not uncommon to count 100 to 200 boat loads of anglers at Lock and Dam Three, near Red Wing, Minnesota, right after the spring break-up. Most are fishing walleyes, and the vast majority are from Minneapolis-St. Paul.

"The greatest effect I can see from Twin Cities pressure," says Volenec, "is on land use. Homes, roads, and general change are having a devastating effect. Wildlife habitat has been invaded by people wanting to live in the country and small farms that used to have cover are being cleared from fence to fence."

Polk County wardens Glenn Chaffee and Jerry Wagner both say hunting pressure and fishing and boating use of the St. Croix River has been heavy. Polk County had to close 11 miles of shore from St. Croix Falls to the Nevers Dam in early 1977 because of people problems. Weekends and holidays, wardens receive numerous complaints from fishermen, boaters and property owners, all of whom compete for the use of the same water. A 25-

Minnesota tourists spend about \$400-million per year in Wisconsin, according to Jack Gray, marketing specialist for the Recreation Resources Center at U-W Extension in Madison

mile DNR boating survey from Prescott to Stillwater on July 4, 1976 revealed a total of 818 boats!

A study sponsored by the Minnesota-Wisconsin Boundary Area Commission last year is expected to confirm heavy use of the St. Croix by Twin Cities residents.

Another river, the Apple, flows for 31 miles starting in Polk County and empties into the St. Croix. One three mile stretch just above Somerset is used extensively by tubers and during peak summer weekends upwards of 15,000 are afloat there. Within the past few years, a survey entitled "Who's Tubing Down the Apple?" was conducted by the University of Wisconsin. It found that about 85% live in Minnesota, and almost two-thirds are from the Twin Cities.

According to the study, the composite tuber is a day visitor from Minneapolis-St. Paul. The Apple is a way to get out of the city on a sunny Sunday and be close to nature. The composite tuber has little need or reason to spend much money in Somerset because home is only an hour away or less.

Other examples of heavy Minnesota pressure:

POLK COUNTY DEER HUNTERS — During the 1976 bow hunt, 231 deer were registered. Minnesota residents accounted for 110 or 48%. While this won't hurt the herd, concentrations of nonresidents worry Polk County people. Almost every year, DNR gets a petition asking that restrictions be placed on nonresident bow hunters in Polk and Burnett Counties.

STATE PARK USE — Camper registrations at Interstate State Park in Polk County show 54% from Minnesota. Park sticker sales at Interstate in 1976 totalled 2,638 Wisconsin residents and 19,010 nonresidents. At Willow River State Park in St. Croix County, 1976 sticker sales showed 5,017 residents and 4,466 nonresidents. Camper registrations at Willow River for the first six months of 1977 were 61% nonresident and 39% resident.

WILLOW RIVER FISHING — A creel census was conducted in 1976 on both the Race Branch and the Willow Branch of the Willow River in St. Croix County near Hudson. Researcher Bob Hunt reported, "Most surprising is the very high proportion of nonresidents. They tallied 75% of all angling trips on the Race and 60% of all trips on the Willow."

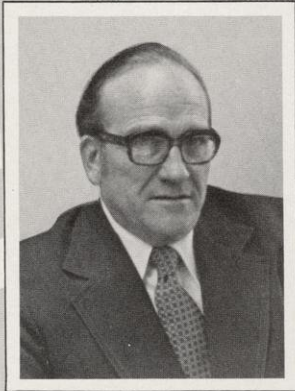
Photos by Dennis Domack, Jim Harrison, Glenn Helgeland, Todd Bryan.

Power boats sighted! Swimmers an' canoeists out of the water!



Cartoon by Kenneth Fearing, courtesy of the St. Paul Pioneer Press.

The expanding shadow



NORMAN E. ANDERSON,
*County Board of
Chairman, St. Croix
Supervisors.*

The expanding shadow of the Twin Cities metropolitan area has brought much change to St. Croix County in the past two decades. Felt earliest in the western part of the county, the impact is now spreading rapidly eastward.

From the turn of the century until the mid-1950's, the population of St. Croix County remained fairly constant at about 26,000. This was typical of many nonmetropolitan counties where economic opportunities were limited and young people migrated to urban areas for employment.

Since then, however, there has been a turnaround and population is growing at an ever increasing rate. In the 1960's it was up 18% while the rest of Wisconsin rose less than 12%, and this trend has now accelerated! St. Croix County has grown 17% between 1970 and 1976 as compared to the state rate of less than 5%. If the trend continues, population here will be more than 44,000 by 1980. It was 35,000 in 1970. Projections for the year 2,000 estimate 71,000, more than twice the 1970 census.

Most of this increase is due to migration of families into the county. Construction of Interstate 94 through the heart of St. Croix County and into the Twin Cities made commuting convenient. Increased family income meant

Twin Cities workers could afford to commute longer distances.

In addition many urban Americans want to live in a rural environment but near enough to a city to take advantage of its employment opportunities and cultural amenities. St. Croix County has become a very popular place for Twin Cities workers to live. Downtown St. Paul is only 16 miles from the St. Croix River bridge on I-94 and the 3-M complex on the east side of St. Paul is less than 10 miles away. The census in 1970 revealed that more than one-third of the county work force commuted to Minnesota. Estimates are that more than two-thirds in the western edge of the county around Hudson commute.

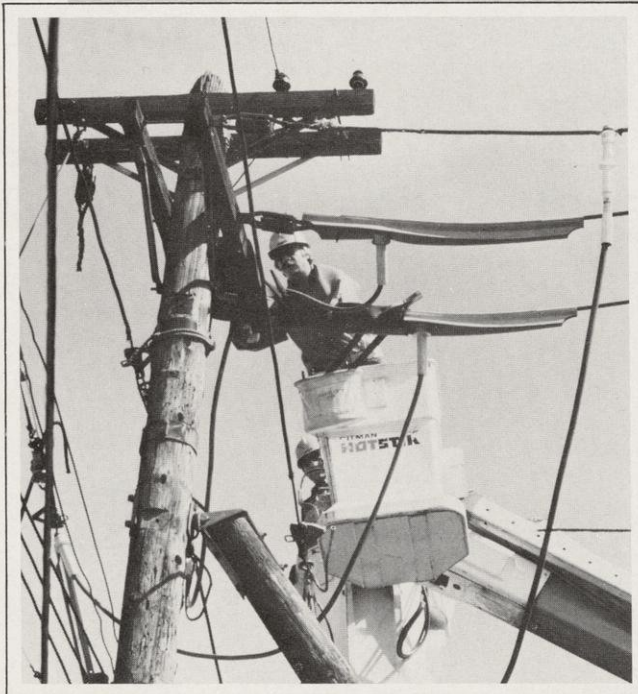
This rapid growth has had an impact on both local resources and the economy.

Traditionally, agriculture has been the primary land use here. Agricultural product sales have been the leading industry. About 75% of the total land area of St. Croix County is potentially productive cropland, Class I, II or III by Soil Conservation Service definition, and many additional acres are suitable for pasture. Urban uses, however, have reduced the amount of farmland every year. Since 1970 almost 22,000 acres have gone for other purposes.

A cycle of higher land prices, higher taxes, more land sales and demand for urban services accelerates the loss.

County and local government have been trying to manage some of the problems through better land use ordinances. A new county zoning ordinance was adopted in 1974 and has been improved since. Several incorporated areas have amended their zoning rules and adopted land use plans or are in the process. The county has hired a county planner in cooperation with the West Central Wisconsin Regional Planning Commission. Some towns have adopted their own subdivision ordinances and maps have been prepared that delineate areas suitable for septic systems, light industry, agriculture or residential development.

We hope Wisconsin's new farmland taxation law will help take some of the pressure off local farmers to develop



When the city moves to the farm, costly urban services follow.

land that might be more productive in agriculture. At the same time we realize we must plan a balanced mix that will provide for residential, commercial, industrial, recreational and conservancy as well as agricultural use.

We have been particularly concerned about the protection of the scenic qualities of the St. Croix River. Our county was the first government to adopt a shoreland zoning ordinance and create a St. Croix River Valley District. St. Croix County and the DNR have not yet been able to agree on certain specifics of the law, especially local power to grant special exceptions and variances without state veto power. It is our belief that the track record of our county zoning adjustment board demonstrates compliance with the spirit of the law and that the board has allowed deviations only under exceptional circumstances which can be best determined by local people familiar with local conditions.

As our communities grow, capacities of many of their facilities are overburdened. County and local governments have to expand them or build new ones. For example, the influx of new families has meant construction of expensive new classrooms in the school districts.

Water and sewer systems of several villages and cities are inadequate. At least five communities are planning new sewer plants. Two of our cities reached the point where they could not extend sewer lines unless they agreed to construct a new plant even if federal assistance were not available. Before agreement was reached, there was a building moratorium. It forced people who wanted to build to go into the county beyond the rural-urban fringe and use unsewered lots with private septic systems. This made the urban sprawl problem here worse.

Several communities need new wells and water storage tanks to meet the needs of growth. New roads to serve the many nonfarm residential areas require maintenance and additional equipment. Park and recreation lands are needed. Reserving future park land is a particularly complex problem requiring long range planning and intergovernmental cooperation. Much has been done already to protect the popular Apple River recreation corridor and more is planned or underway that will preserve the river bank and water quality.

Average family incomes in St. Croix County are now among the highest in the state. Commerce and manufacturing have increased markedly. Many firms have established branch plants or expanded existing ones and communities are enlarging industrial parks or establishing new ones. The first tax incremental finance district in the state was organized in Hudson, and the Village of Woodville has been nationally recognized for the way it developed its industrial park and shopping mall. All St. Croix County communities are working hard to boost local employment opportunities so that people who want to both live and work in the county will be able to.

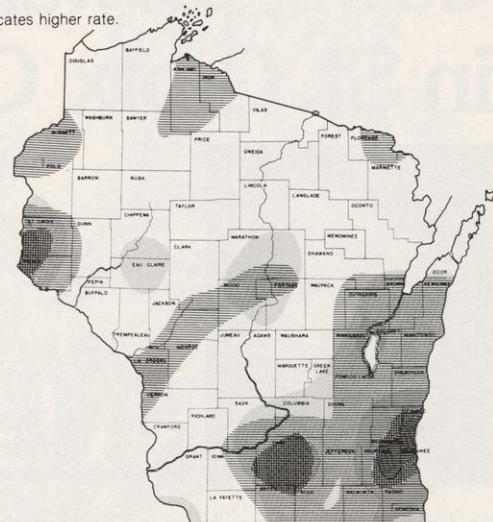
The growing shadow of the Twin Cities has brought challenges and opportunities and county government has tried to respond. We have dealt with some problems effectively. We're still working on the others.

Border payroll

The Wisconsin Department of Revenue reports that 18,824 Wisconsin residents earned \$160 million in Minnesota during 1976. Most of these people live near the Twin Cities metropolitan area.

Profiles of urban sprawl

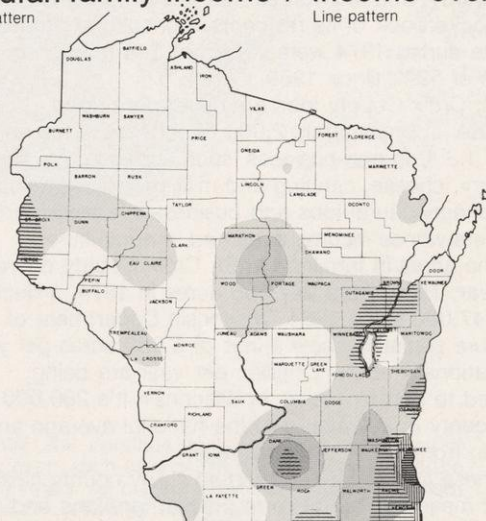
Darker color indicates higher rate.



Median family income / Income over 25,000

Dot pattern

Line pattern

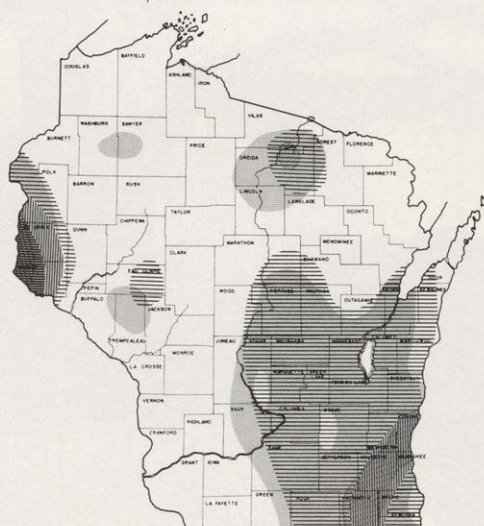


Population density per square mile /

Line pattern

Rural non-farm population

Dot pattern



Percent net migration / Population change

Dot pattern

Line pattern

Maps by Jim Nehls, courtesy of Palmer McCoy, UW Extension, Eau Claire and Dr. Brady Faust, Geography Dept., UW Eau Claire

Cows, plows, and houses in St. Croix County



**JAMES JANKE, St. Croix
County Extension
Resource Agent**

Agriculture plays a major role in the economy of St. Croix County, and any forces that affect agriculture are felt in the pocketbook of its residents. Agricultural products sold here during 1974 were valued at \$44 million, an increase of 58% since 1969.

St. Croix County jobs are dependent upon agriculture: approximately 2,000 directly on farms and another 1,300 in agri-business, such as feeds, packaging machinery, cheese, canning and milk processing. Numerous other nonagricultural jobs and businesses are supported by consumers whose income is earned in agriculture.

The acres in farmland in St. Croix County decrease every year. There were 347,605 acres in 1974, a decrease of over 47,000 since 1964. Wisconsin Department of Agriculture statistics show a loss of 3,800 acres per year.

Nationally about 2 million per year are being converted to nonfarm uses. In Wisconsin it's 200,000. St. Croix County is well ahead of the national average and slightly in front of the state average.

These figures have prompted many county citizens to ask that measures be taken to protect farmland and preserve it for future food production.

Agricultural land values rose by 147% in St. Croix County between 1965 and 1975. Several factors caused the rise: increased demand for land brought about by population growth; the preference of many new residents for homesites in a rural environment; and nonfarm activities, such as industrial and commercial sites, residential subdivision, utility and transportation corridors and other uses.

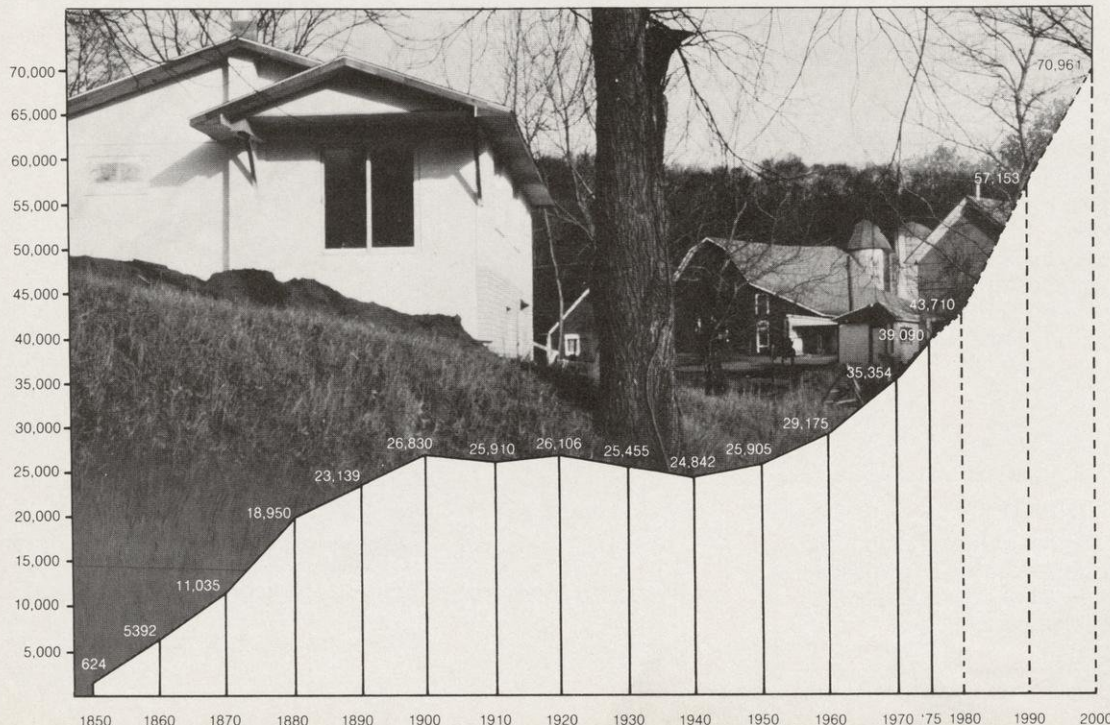
What do increasing land values and competition for productive farmlands mean to the St. Croix County farmer? Competition bids up the price making it more costly to expand farm operations or even to start farming. Higher land prices mean higher equalized valuations which in turn mean higher farm taxes.

As farmers struggle with increasing costs they are often compelled to sacrifice small portions of their farms for development. Development brings new, nonfarm families into what used to be primarily farm neighborhoods. Frequently, the new exurbanites demand services not previously provided in the farm community: front door school bus service, additional fire and police protection, improved roads, garbage and trash pickup and even street lights and parks. Taxes go up to pay for these services.

Recent studies indicate that sprawled residential development generates more service cost than it returns to local government in taxes. All landowners are taxed more to make up the difference.

Costs are not the only problem brought by rural nonfarm residents. Farmers soon get complaints about the normal aspects of their operation: noise, dust, odors, and hours of operation — either too early in the morning or too late at night. Livestock can damage yards and domestic gardens. On the other hand, untended pets from nonfarm families harass and even kill livestock.

All of these factors contribute to the difficulties faced by farmers in an urbanizing area like St. Croix County.



ST. CROIX COUNTY POPULATION GROWTH — 1850 TO 1975 PROJECTED 1980 TO 2000

Prepared by JAMES JANKE
St. Croix County Resource Agent

Source: US Census
West Central Wisconsin Regional
Planning Commission

Housing and commercial construction consume more than 3,000 acres of St. Croix County farmland a year. The rural farm economy is still important but changing.

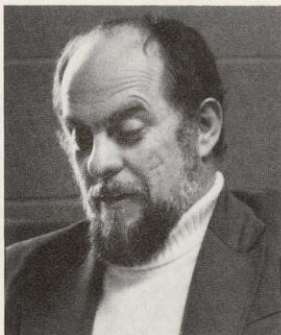


Aesthetics of development

A 1974 study by Bruce Ball, former Director of Metropolitan Region Studies at UW-River Falls revealed an inordinate rate of population growth in an "urban triangle" at the western extremes of both St. Croix and Pierce Counties.

Ball said urbanization has resulted in "dramatic examples of scenic pollution caused by single-family developments in wooded, hillside and other scenic spots adjacent to water and gorge ways. The deterioration of the scenery has been partially checked by state flood plain and shoreline legislation. However, no existing laws are directed at abuses of wooded and other nonwater related landscapes. Although such abuses seldom cause economic loss, or environmental damage of major consequence, the aesthetic detraction can be seen prominently in Troy, Kinnickinnic, Clifton and St. Joseph townships on hillsides and areas abutting the several rivers and lakes found here."

Man on a barbed wire fence



JAMES M. HARRISON,
Executive Director,
Minnesota-Wisconsin
Boundary Area
Commission.

*"Before I built a wall I'd ask to know
What I was walling in or walling out,
And to whom I was like to give offense."*

Robert Frost, *MENDING WALL**

When the States of our Union drew boundaries separating the sovereign realms, there was a strong tendency to use "the main channel of the _____ river" as a boundary line. Only five, Colorado, Montana, North Carolina, Utah and Wyoming do *not* have at least a portion of their interstate boundary on a natural watercourse.

No less than six rivers serve as portions of the Wisconsin boundary with Michigan, Minnesota and Iowa, not to mention two of the Great Lakes. Can you name the six rivers without a map? Two are among the best known in the nation, so you probably named them right away — the Mississippi and the St. Croix. Together they form a 266-mile-long boundary shared by Wisconsin and Minnesota.

To the pioneers the boundary rivers were convenient for transport and for marking progress westward. In modern times, however, many of the large border rivers have

become political battlegrounds over water appropriation rights, water quality degradation, commercial navigation, recreational boating, fishing and hunting regulations and shoreline preservation and development. The Mississippi-St. Croix boundary area, shared by Wisconsin and Minnesota in relative harmony for more than 100 years, became a "wall between the States" in the early 1960's when controversy flared over placement of a Northern States Power Company electric plant on the Minnesota shore of the St. Croix.

There were months of lawsuits. There were attempts to bring state and federal technical people together in a cooperative "environmental task force." Congressional hearings were even held in the valley. Finally, approval was given for the huge plant to be built. Citizens who organized to fight the project lost the battle but won the war, in a sense. Their fervent appeals led to the establishment of a permanent interstate coordinating mechanism known as the Minnesota-Wisconsin Boundary Area Commission. An interstate compact was drawn up by leaders of both states and ratified in 1965. Since then, this small, advisory citizen commission of five members from each state appointed by the governors has tried to keep the wires up and erase the imaginary barrier of jurisdictional independence running down the main channel of both the St. Croix and Mississippi Rivers.

As executive director of the Boundary Area Commission, I have often felt like I was sitting on a barbed wire fence. At times, one state or the other would take an action which conflicted directly with the policy of the neighboring state (most often unintentionally), or an issue would arise from the citizens who view the rivers as rivers, not as boundaries or barriers, and each state would come at it from an entirely different angle. Then, there is the tremendous federal presence on both rivers...the Corps of Engineers maintaining the nine-foot commercial navigation channel, the Department of Interior administering thousands

*From: "The Poetry of Robert Frost", copyright 1969 by Holt, Rinehart and Winston, Inc.



of acres of federal fish and wildlife refuges and the St. Croix National Scenic Riverway, just to name two main national actors in the drama.

After nine years in this unique position, I can't help but come to some conclusions about our two sponsor states and their respective approaches to the big border rivers. Both states are heavily "lake oriented". This makes it hard to extol the rivers. However, over one-half of the people of Minnesota live within a 45-mile drive of the Mississippi-St. Croix system and the Capitol at St. Paul is also very close. This proximity makes for quite a difference in visibility of the boundary area in the political life of the two states. Madison is more than 100 driving miles from the nearest point on the Mississippi and more than 225 miles from the St. Croix. Most Wisconsinites live about as far from the big rivers as you can get and still be on Badger soil, in what the folks out on the Western Front call "The Far East." Minnesota is far more dependent upon river commerce than is Wisconsin, yet both states filed suits against dredging practices of the Corps of Engineers on the Mississippi, though at different times and for somewhat different reasons.

The climate of cooperation between the states and local governments across the border, and between the states and federal leaders, has improved greatly in the nine years I've been here. I remember well, however, those awful times when the policy makers of one state or federal hierarchy chose to systematically avoid talking or conferring with their counterparts in order to do their own thing in blissful isolation. Like the time when the Minnesota Pollution Control Agency (MPCA) Board finally voted four to three in favor of allowing a high ranking Wisconsin official to speak for five minutes at an MPCA meeting on a huge rail-to-barge coal transfer facility proposed for St. Paul's waterfront. A Minnesota hearing officer had concluded, without asking Wisconsin's advice, that a railroad owned site at Diamond Bluff, Wisconsin, downstream from St. Paul in Pierce County, was "a feasible and prudent alternative" and so Minnesota had every right to summarily deny the St. Paul permit. When he got his audience, the Wisconsin leader told Minnesota that such a finding "would have no more effect on the judgement of the State of Wisconsin then if we told you to dump the coal on the Nicollet Mall." The Boundary Area Commission arranged for this discussion, and although the St. Paul site was rejected, no move was made at Diamond Bluff, either.

In a highly-publicized saga of the St. Croix, Minnesota filed suit for an injunction to prohibit Hudson, Wisconsin, from issuing permits to build a massive apartment complex on a riverfront bluff. This occurred at the time the master plan for preserving the beauty of the Lower St. Croix under the National Wild and Scenic Rivers Act was being drawn up. For some reason Wisconsin did

Top:
Minneapolis

Center:
North Street power hydro electric dam at St. Croix Falls.

Bottom:
Interstate State Park south of St. Croix Falls.

not join the suit. This left Minnesota with soft footing in Wisconsin courts. However, through a series of internal maneuvers, the Minnesota Attorney General, with full support from Governor Wendell Anderson, forced the developer (also from Minnesota) to capitulate. As a result, Minnesota ended up getting a free scenic easement binding the developer to provisions of the emerging Riverway Master Plan for the development of his land in the State of Wisconsin. After three years of name calling and brow beating before the Hudson City Council, the developer finally accepted the alternative suggested in the beginning by the Boundary Area Commission. By then, his financing had evaporated, the land option ran out, and the project was never built.

I can look back on the days when it was legal to flush your on-board boat toilet into the rivers in Minnesota, through "approved devices", but not in Wisconsin. You could fish the Mississippi in Wisconsin all year for walleyes and other game fish, but not in Minnesota during March and April. In 1969 the Boundary Area Commission suggested a new state park at the confluence of the Kinnickinnic and St. Croix Rivers in Pierce County. Even the landowners wanted the state to buy so as to avoid selling to eager developers. The first reaction in Madison was, "but we can't show any demand in that area." Two million people live within an hour's drive but they're nearly all from Minnesota. The park was established by the Wisconsin Natural Resources Board in 1972.

Most of this "Border Patrol" attitude is past history. There are still disagreements, but more often than not,

they're openly aired and honest efforts are made to resolve them cooperatively. The states are still sovereign, but there is a much better understanding and recognition of each other's needs and goals. The great rivers, eternal and resilient, are still flowing...still providing multiple benefits to the citizenry of the two states and, indeed, of the nation. Today, Wisconsin and Minnesota leaders are cooperating actively and directly with one another on projects like the Upper and Lower St. Croix National Scenic Riverways, and the innovative Great River Study to produce the first comprehensive master plan for management of the Upper Mississippi River. As a catalyst for these joint ventures, the Minnesota-Wisconsin Boundary Area Commission members and I are grateful witnesses to the wisdom of the states' leaders who pledged in good faith to work together through the interstate compact a dozen years ago, and who are keeping the faith by simply being good neighbors.

I no longer find many adherents to the philosophy of the wall-mender who said, "Good fences make good neighbors," in Robert Frost's well known poem. Thank God! The St. Croix and Mississippi Rivers are too important to be symbols of such narrow reasoning.

Allen S. King power plant at Stillwater, Minn.

Photos by Minneapolis-St. Paul Metropolitan Council and Todd Bryan



From the board



Chairman Thomas P. Fox *

This first issue of the new year is an appropriate time to review highlights of Board actions taken in 1977 which may have a significant impact on the future.

Last year a new forest management policy was adopted that sets forth guidelines for clearcutting and replanting. A major step for both forestry and wildlife management, it should increase the level of multiple use on state and county forests.

Hunter ethics received a good deal of attention. The most significant accomplishment was adoption of new rules regulating road hunting. In response to complaints from private landowners and sportsmen, the Board prohibited hunting for both big and small game on hard surfaced roads. Previous restrictions had applied only to the deer season.

Highlight of the ongoing struggle for pollution abatement was Board insistence that the Department aggressively enforce a sewer extension prohibition. This prohibition applied to communities which, even though presently lacking the capacity to treat all sewerage they generate, still want to add more pollution sources to their noncomplying systems. This strict enforcement strategy has had two results: the number of sewerage extensions granted to communities has decreased; and many communities have reexamined their financial and waste treatment capabilities and made firm commitments to proper treatment.

As a corollary to the sewer extension ban, the Department brought a lawsuit against the Sewerage

Commission of the City of Milwaukee and the Metropolitan Sewerage Commission of Milwaukee County. It was settled in a manner which should assure a cleaner Lake Michigan and compliance with pollution laws quicker than otherwise expected.

Following extensive public hearings the first comprehensive fish and wildlife management policies in Wisconsin history were adopted. They are to be used as a guide in making management decisions and should help continue the vigorous outdoor sports philosophy in the Department of Natural Resources.

Legislative passage of the Board's and Department's recommended trout stamp should be very beneficial. Money from the stamp will be used to rehabilitate trout streams and habitat which have been neglected far too long for lack of a sufficiently funded program.

The land acquisition program received close attention. Although total acreage acquired did not exceed 1976, many key parcels were purchased and groundwork laid for a vigorous acquisition program in 1978. If all goes well, this will include some new projects.

The Board is also in the process of further implementing a program for the Lower Wisconsin Recreation Area. Another program under consideration would provide protection for scenic bluffs along the Mississippi River.

An effort was made to further open the natural resource management process to the public. The Board is now periodically throwing open the door to allow unscheduled public appearances on any item of concern. This is in addition to public participation through Department hearings on proposed rules and policies and through scheduled appearances at regular meetings.

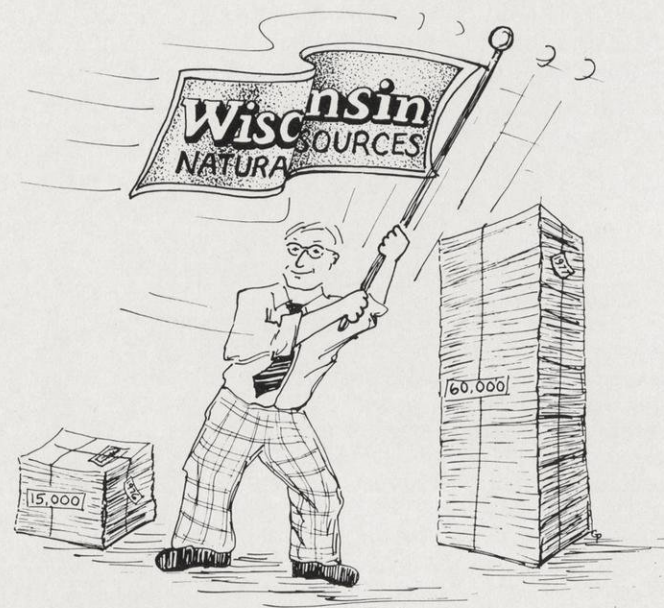
And a final achievement has been the publication of this magazine. I hope you have found it informative and useful.

*As this issue went to press, Chairman Fox resigned from the Natural Resources Board to become legal counsel to Governor Schreiber.

Editorial: colors flying

The first cycle of subscription renewals is underway. If all goes as hoped, an even prettier cover and a few more pages may be added this year. The magazine designers, Christine Usinger and Paul Tofte say there'll be some surprises, willy-nilly. They do a good job.

The circulation increase has made certain economies of volume possible. Most important is a switch in presses, from sheet fed to web. (Web is the kind most big newspapers are printed on—a role of paper threaded through a series of cylindrical printing plates.) Regrettably, this has meant changing printers. The careful workmanship of Artcraft Press of Waterloo helped these colors fly in



1977. E. F. Schmidt Company of Menomonee Falls is the new web contractor and colors should fly again in '78.

Help with letting the public know this magazine exists came from the Departments of Transportation, Revenue and Administration. Their cooperation made the circulation rise.

Many talents shared the magazine success-wish. Everybody who was asked to do anything did it unselfishly, unhesitatingly and free of charge. Among the many asked were photographer and ex-UW President John C. Weaver, author Robert Gard and artists Martin Murk and Tom Rost.

Meantime, the watchful eye of the editorial board monitored content. Their charge had been to communicate with a lot of people, explain DNR programs, give DNR and Natural Resources Board views on major environmental issues, help develop public attitudes on environmental ethics, identify problems, propose solutions and be entertaining. In response, the magazine dealt with hunter ethics, environmental poisons, waste loads on the Fox and Wisconsin Rivers, groundwater, mining, fire, Horicon geese, deer, steel shot, endangered plants and nonpoint source pollution plus lots of nature lore and stories about parks and forests.

While all this good stuff went on, authors, now and then would sometimes protest because a story was edited, photographers because a picture was not returned promptly or readers (hopefully not you) because the computer sent their magazine to Afghanistan. Generally, however, notices were rave. Mistakes have been corrected and interred with the used printing plates.

Now comes 1978 and Wisconsin Natural Resources is out to please you again, colors flying. Happy New Year! And thanks!

J. Wolfred Taylor

The readers write

I am fascinated by wildlife and try to protect it. Sometime ago I wrote the Department about having a no-gun shooting season. It could be called a "shoot with a camera season". Prizes could be awarded to the hunter with the best picture of a wild animal in living surroundings. . . . All one has to do is sit still someplace, eat your lunch and the visitors will come. **SELMA KREFT; Bay View**

"Steel is a better bullet" (July-August) by William Peterburs is the best article I have seen on lead shot/steel shot from the hunter's viewpoint. The story was well written, informative and accurate. **GLEN C. SANDERSON; Illinois Natural History Survey, Urbana, Ill.**

In Mr. Taylor's September-October editorial we are asked to "save that bundle" (\$1 million) by running risks on certain public water supplies, that are not run on larger supplies.

If Wisconsin's plumbing, well and health codes do indeed protect us "as adequately as anything can", then why test any drinking water?

We could either 1) abandon all drinking water testing; or 2) test as many water supplies as possible, as the Safe Drinking Water Act would have us do.

With the public health in mind, number two is the only logical choice. **ARLAN HENKE; Commercial Testing Laboratory, Inc., Colfax.**

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 issued in some instances. "Letters to editor" should be addressed to Wisconsin Natural Resources magazine, Box 7921, Madison, Wisconsin 53707.

Although Mr. Linde presented a concise and informative article on "Phragmites — a natural breakwater" in the July-August issue, he neglected the undesirable aspects of this giant reed grass. Phragmites communis tends to crowd out other aquatics with its dense systems of root stalks, and makes poor wildfowl food since it produces few seeds. **TERRY TEPPEN; Minneapolis**

Congratulations to Richard Vogt on his article in the May-June issue. It was both well written and illustrated. It taught me a lot about frogs, enjoyably, and in a short time. Yet it was easily understood. I'd like to see more articles of similar quality on other natural resource topics. **ALICE WYWIALOWSKI; Logan, Utah.**

I feel that you and your magazine staff do an excellent job, and as a result of reading your magazine, I feel better informed on the subject of mining. **PETE KIRSCH**

A letter by John Petzkow in your July-August issue states " (Wisconsin) remains one of the most liberal in our non-resident license fees."

In fact, Wisconsin's small game fee is higher than all but three other states. As for big game, we are again higher than all but four states.

I believe this "sock it to the out-of-staters" attitude has negative value to the DNR. **LEONARD FOWLER; Kenosha**

Snowmobiles

Snowmobiles are popular.

There are 250,000 registered in Wisconsin.

Estimates are that probably three-quarters of a million people ride on them and that they contribute about \$130 million to the Wisconsin economy each year. Despite all this, a lot of people think snowmobiles are awful. There are firm opinions on both sides. Here are a couple from members of DNR's Snowmobile Advisory Council.

I like 'em

STEVE HENRY, Chippewa Falls, Past Chairman, Snowmobile Recreational Council.

Wisconsin is a land of four seasons. Winter, to many persons is the one least enjoyed. But not for me.

I've always liked being in the outdoors and have actively participated in ice fishing, tobogganing and skating. But for a long time, something was missing. What I really wanted more than anything was to get way back into the forested areas where for a day or longer, I could roam at leisure.

When I took my first snowmobile ride over a football field of green grass some ten years ago — little did I know that this motorized sled would be the answer — that it would add so many hours of sheer enjoyment to my winter.

And the snowmobile has. It has gotten me places where I must admit my legs probably would not have carried me. The friendships established have been better and deeper than anticipated.

But what's so great about riding a snowmobile over the countryside or through a tract of forestland?

Well, it's refreshing to say the least. There's a special beauty to the winter landscape that comes by for inspection. And when day is done, sleep comes easier because a day on the trail can render piece of mind.

Someone once said that mountains are to be climbed; not to be lived on — the beauty of a panoramic mountain view is to be enjoyed by as many persons as possible.

That's how I feel about the winter wonderland of northern Wisconsin. There's an abundance of beauty whether in December or middle February. And the snowmobile is the vehicle that provides access to this beauty.

The winter sky at night is truly spectacular. Combine this with the stillness of Mother Nature — and you have a time when both body and soul can come together in peaceful accord.

But you question how all of this can take place above the sound of a snowmobile engine? Well, every snowmobile has an "on" and "off" switch. That's the key to outdoor enjoyment. You can ride into one of the many scenic areas open to snowmobiling; and then, shut down and enjoy the surroundings.

There's never been a better tasting barbecued chicken or roasted weiner than those I savored on snowmobile outings.

When it comes to trails, Wisconsin has been a leader almost since the very beginning. The Snowmobile Recreational Council together with various clubs spearheaded this development. The trails go through some of the state's scenic areas. Development of these trails has pulled snowmobilers off roadways and private property so as to create very little conflict with persons not totally sold on the sport. This is not to say that snowmobiling hasn't had problems. It has. But problems of trespass and injury have decreased as the total miles of snowmobile trail increased. Trails are being located and maintained more sensibly and today the discovery of scenery and the chance for outdoor fun predominate.

Snowmobiling has added a new dimension to my winter activities and this is true for others, too. Helmeted persons I meet on trail are willing to stop and converse and exchange information about what to see and where to go. Should a breakdown occur, you can bet the next snowmobiler on the scene will lend a helping hand.

Winter can be enjoyed out in the white stuff. And believe me, I haven't cut out those other activities such as skating and sliding downhill on a sheet of plastic just because I ride a snowmobile. Actually it has opened up even more activities.

The sport is still in the hands of the individual. He or she can choose to literally see the winter landscape — or to go whizzing by with everything a blur.

The same is true in summer when full throttle can be applied to the outboard and a 600-acre lake get the onceover in less than an hour.

But to that person who likes the natural phenomena that unfold every second of the day, winter or summer, the seat of a snowmobile can be just as enjoyable as a boat or canoe. I find pleasure in both.

I don't

CAROL DIGGELMAN, Milwaukee, member, Snowmobile Recreational Council.

If I could say "All snowmobilers are bad guys", this would be an easier article to write. There certainly are enough bad snowmobilers and I could quote many sources to prove my point — snowmobilers riding roughshod over the natural landscape, careening drunkenly and causing accidents on roadways, trespassing and generally being an annoyance. And it hardly seems "good" to indulge in such a fuel consumptive form of recreation in an era of fuel scarcity.

But snowmobilers are not all "bad guys". During the past five years, while representing nonsnowmobilers on the Snowmobile Recreational Council, I have met many fine, responsible, caring persons who snowmobile. Furthermore, I discovered that we have much in common. We like winter, we like outdoor recreation, and we especially like natural areas — forests, meadows, scenic places.

It isn't surprising then that we find ourselves arriving together in the same park or forest, each expecting to have a wonderful outing. Alas, when we get out of our autos and proceed to a trail, we lock horns. We have come for very different kinds of recreation.

What has the snowmobiler come for? After being a member of the Snowmobile Recreational Council for five years, I conclude that snowmobilers primarily want trails on which to operate their machines — miles and miles of them. They have also sought standards for trail grooming and signing, grading and brushing, desirable trail lengths, bridges, toilet facilities and the rest. But their main thrust has been and continues to be for an expanding system of trails. In 1976 a Wisconsin Snowmobile Trail Plan was prepared for our Council by a seven member citizen's task force. It discusses a "need" for a grand total of 13,000 miles of public trails in Wisconsin with an inter-county network that would make it possible to traverse the whole state. Presently 7,000 miles are built.

What do I want? I want a "place" to walk, cross-country ski, snowshoe or just be where I can find a retreat from the noise and fumes of civilization. I look for a quiet place where I can find the tranquility to connect two consecutive thoughts; where I can breathe cleaner air, where I can watch a chickadee hang upside down or follow a deer trail; where I can feel part of the natural world; and where I can go away renewed.

My conflict with the snowmobilers appears on the surface to be a user battle which could be relatively easily solved with good management — a snowmobile trail for him, a quiet trail for me. Perhaps, but there are many stumbling blocks.

First — snowmobiles are so much more land consumptive than hikers, cross-country skiers or snowshoers. If a 12 foot wide cleared trail doesn't seem excessively wide, add the distance that the snowmobile's noise travels. It's not uncommon to hear a snowmobile half a mile away or more depending on conditions. Also, a

snowmobile traveling at 20 to 30 mph needs many miles of trail for a good day's ride.

Second — while snowmobiles are using public lands, granted their use isn't all year, their use is pre-emptive. Have you ever met a snowmobile on what you thought was a hiking trail? I have and it was I who got off the trail and was left standing in the snowbank. The snowmobiler went blithely on. I left. Many hikers or cross-country skiers can be in a given area and they neither physically endanger each other nor do they generally make so much noise that they destroy the tranquility of the setting.

Third — time and again while locking horns with snowmobilers, I have been faced with a dilemma! I **CANNOT get them to understand just what it is that their noisy machine destroys for me.** And yet, how can anyone who dons goggles and helmets and climbs aboard a machine noisy enough to damage his ears — all for recreation — ever understand my need for silence.

About half of the present 7,000 miles of snowmobile trails are on public lands, county or state. It can be argued that snowmobilers contribute to public funds — they do, but so do I and other nonmotorized people. And we are being forced off. Snowmobile trails render public land either unsafe for other recreation or too noisy to be desirable.

Snowmobilers contend they are paying their way. They realized early that to get the trails they wanted, they would have to pay. They fought for legislation which established a registration fund which pays for trails, mostly as grants to counties to build and maintain them. Their three dollar annual fee is exclusively for their own use. None of it goes into public land acquisition or into any other DNR program.

Don Smith, past president of the Association of Wisconsin Snowmobilers Clubs (AWSC) recently told members that the three dollar fee is a very good bargain. "In Wisconsin every dollar we pay in registration comes back to the Snowmobile Program. This 100% return compares to 35% in Minnesota and 6% in Michigan."

Currently the AWSC is supporting legislation to double the registration fees. Where is the balance? With over 240,000 of them bent on trail building my chance of preserving a quiet place seems about as remote as establishing sandhill cranes in County Stadium.

Furthermore, in asking for that quiet place on public lands, I feel I have as much clout as a beggar with a tin cup when pitted against the snowmobilers annual budget of more than \$700,000. **Yet those public lands are mine as well as theirs.** I feel justified in believing we should have large areas of land off limits to snowmobiles permanently.

Have we reached that point in history where we must pay to experience the natural world without snowmobile noise? If so, I'm here with money in hand. At \$3 a year it would be a bargain!

Wisconsin's "other nations"

KENNETH I. LANGE, *Park Naturalist, Devils Lake State Park*

Mammals. What are they, actually? How do we distinguish them? Technically, they're the warm blooded, back-boned creatures that suckle their young—they have mammae, mammary glands. Most, but not all, have body covering of hair. Informally, "mammal" and "animal" are interchangeable terms, although mammals are only one group of the animal world.

How many species of mammals are known for Wisconsin in historic times? The total is 72, with a half dozen no longer found here.

Some mammals, such as deer, are known to all of us, whereas others, such as shrews or certain mice, are known to very few. A major reason for our relative unawareness of these smaller mammals is their inconspicuousness. They are easily overlooked, rather drab in color and active mainly at night. And small mammal watching is not your principal local activity.

Yet it's a pity! All the creatures with which we share this planet lead fascinating lives, full of interest and drama. Mammalogists have been studying mammals, large and small, for many years, and you can learn much from their reports. As a beginning, consult *Mammals of Wisconsin* by Hartley H.T. Jackson or *The Mammal Guide* by Ralph S. Palmer.

Often, on my rambles, I'm reminded of some very wise words by Henry Beston. Years ago, he wrote that we need a different, a wiser concept of animals. He said we patronize them for their incompleteness, "for their tragic fate of having taken form so far below ourselves." But the animal "shall not be measured by man. In a world older and more complete than ours, they move, finished and complete, gifted with extensions of the senses we have lost or never attained, living by voices we shall never hear. They are not brethren, they are not underlings, they are other nations caught with ours in the net of life and time, fellow prisoners of the splendour and travail of the earth."



The coyote, like the fox, is often a folk tale hero, usually a sly and clever character. For some reason, coyotes in Wisconsin yap and howl much less than do their western cousins.



The *mink* is a large weasel that preys on a variety of animals, but mainly muskrats, mice and crayfish. It lives near streams and rivers, along lakes and in marshy places.



The state animal, the *badger*, is a predator of ground squirrels and woodchucks. This powerfully built animal will also turn over large pieces of sod, looking for grubs and adult insects.



We will continue to have *cottontail rabbit* if cover, such as a brush pile, is available to the animals. All creatures (people, too!) need food, water, and a suitable shelter.



The *eastern chipmunk*, a ground squirrel, is one of two species of chipmunks in Wisconsin. They add color and interest to many a hike, which is true of squirrels in general, since they all (with the exception of flying squirrels) are active by day, unlike most mammals.

Our name, *raccoon*, comes from an Indian name for the mammal with the black mask. It is common throughout the state in forested areas.



The *grey fox* is the fox of the woodlot. Mice and rabbits are its main prey. An alert and engaging animal, the fox is featured in a number of folk tales and local stories.



The *beaver* cuts trees, and builds houses and dams, in recent years, this large rodent has reoccupied much of its former range.

Cleaning up: Wisconsin's 1977 water quality inventory

MARK STOKSTAD, Planning Analyst, Madison

Wisconsin's major water polluting industries are cleaning up. A big push from the Federal Clean Water Act backed up by strict DNR enforcement are the reasons why. That's the big news in the "Wisconsin 1977 Water Quality Inventory" which documents the state's progress in pollution abatement.

The report points out that of 69 major industrial dischargers, 55 met the 1977 deadline on waste treatment called "best practicable control technology currently available" (BPT). Nine paper mills and one power plant have been referred to the State Attorney General for prosecution because requirements were not met. The remaining four major dischargers are paper mills which have treatment systems on line but because of start-up problems or other operational difficulties were not able to meet effluent limits. These plants are expected to shape up soon if they haven't already done so.

A tally of recent construction projects shows work at 132 locations in Wisconsin. Forty municipal treatment systems were built or upgraded during 1976 and there were 29 under construction. Industrial systems completed numbered 36, and 27 were under construction.

The projected cost for work remaining on municipal systems through 1983 is \$1,736 million. This will bring the total bill for Wisconsin's municipal improvements under the federal act to \$2,444 million. Industry costs are more difficult to determine, but they are estimated to be in the neighborhood of \$90 million annually.

The report cites evidence of water quality improvement seen during 1976 monitoring and survey work. The most graphic example was the Wisconsin River below Stevens Point. Five mills, belonging to the Consolidated Paper Company and Nekoosa

Papers, Inc., achieved considerable waste discharge reductions during 1976 as they brought new treatment systems into operation. The river responded with significantly improved summertime dissolved oxygen levels all the way from Stevens Point to the Petenwell Flowage. However, in other locations critical summertime dissolved oxygen levels were unchanged and there were severe winter problems as well. This means there is still an urgent need for additional treatment of wastes discharged to the Wisconsin River.

Featured in the report is a chapter describing nonpoint sources of pollution, and programs to measure the magnitude of this problem and bring it under control. While agriculture and urban runoff are cited as the major contributors, problems resulting from construction, solid waste disposal, silviculture, mining and dredging are also described.

The real message woven throughout the report is that demands made upon Wisconsin water must be tempered so as to protect and enhance the resource. This requires awareness of the limits of the resource, concern that future generations have the same environmental rights we enjoy, and initiative to make sacrifices necessary to assure a healthy environment.

*The report is available for reading at DNR district offices and in document sections of 75 libraries throughout the state.

A small ghost story



BEATRICE S. SMITH, *Westfield*

It is midnight. The trees cast shadows on the floor of the forest. A creek gurgles. High in the snag of a fir tree a creature sits.

Made of flesh and blood, it has hands and feet that look fairly human. But the creature has a tail like a squirrel. Between his wrists and ankles are folds of skin which make it easy for him to glide like a vampire if he should so wish.

From the snag where he sits, he looks about. Not far from the tree he spots a bonfire, smokey and bright. Squatting around it are five boys of various shapes and heights.

Beyond the boys, to the left, is a picnic table painted green. On the table are two marshmallows and three nuts with husks.

Normally, the creature does not mess with people. There is no need. All he wants he can find near his home in the tree.

But a marshmallow? He has never seen one and is curious. What's worse, he has a craving for nuts.

He looks at those on the table.

Then he looks at the boys. One boy is small. One is tall. One is heavy. One is lean. And one is somewhere in-between.

They look fearsome. And they smell a bit funny. But they cannot fly or glide, so they cannot catch him. Still he waits.

Then he stares again at the nuts. Two are hazelnuts, the other hickory. The sight is too much.

Swaying from side to side, the creature rises high

Wisconsin has two kinds of flying squirrels: *Glaucomys volans*, the southern; and *Glaucomys sabrinus*, the northern.

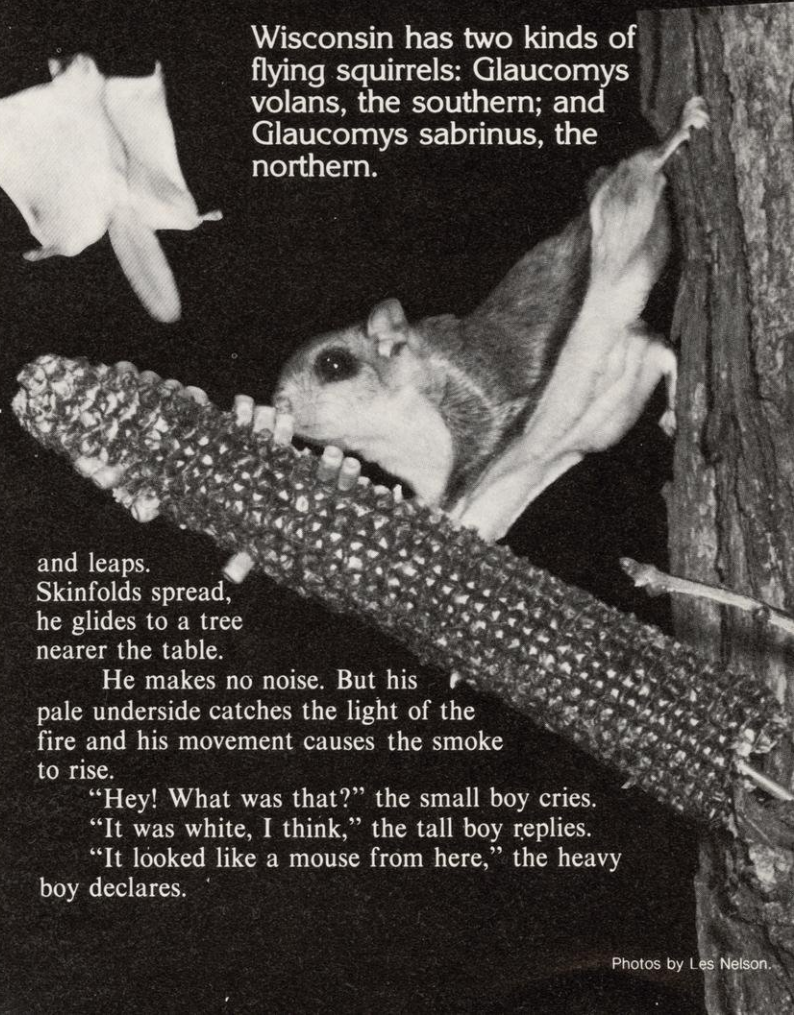
and leaps. Skinfolks spread, he glides to a tree nearer the table.

He makes no noise. But his pale underside catches the light of the fire and his movement causes the smoke to rise.

"Hey! What was that?" the small boy cries.

"It was white, I think," the tall boy replies.

"It looked like a mouse from here," the heavy boy declares.



"Since when does a mouse fly?" the lean boy wants to know.

The fifth boy grins. "Did you ever see a house fly?" he asks.

The other boys laugh — two quite shrilly.

Suddenly, the fire goes out as fires do, willy-nilly. And darkness drops like a velvet drape.

The only light is that from the moon, a crescent shaped moon, half hidden by clouds. In the shadows, rocks look like monsters and trees like beings from outer space. At least to the boys they do.

But not to the creature. He feels no fear now that the fire is out. He likes the dark, if the truth be told. From a branch, he rises high. Then without a sound he glides over the heads of the boys below, toward the table beyond. It's a long way for him, 20 some meters or more.

"Eee — ii! It's a ghost! Let's get out of here!" the in-between boy shrieks to his friends. And they do.

As a matter of fact, the boys go so fast that one forgot his cap. Another his map. Another his package of mints. Another his book of hints for campers. And another the belt to his pants.

Alone at last, the creature crawls slowly across the table. There, he picks up one of the nuts with his hand. To get the meat from the nut, he cuts a small round hole in the shell near the stem with his teeth. Then he cuts the meat into bits and removes it from the shell with his tongue.

He also samples the marshmallow. It's sweet. He likes it. But he does not eat his fill. He hasn't time. It's getting light and he must return to his home in the tree.

For this creature is only a little flying squirrel whose scientific name is *Glaucomys*. He is harmless enough to be sure, but a night creature nonetheless, who can scare the wits out of many a folk without ever trying to do so.



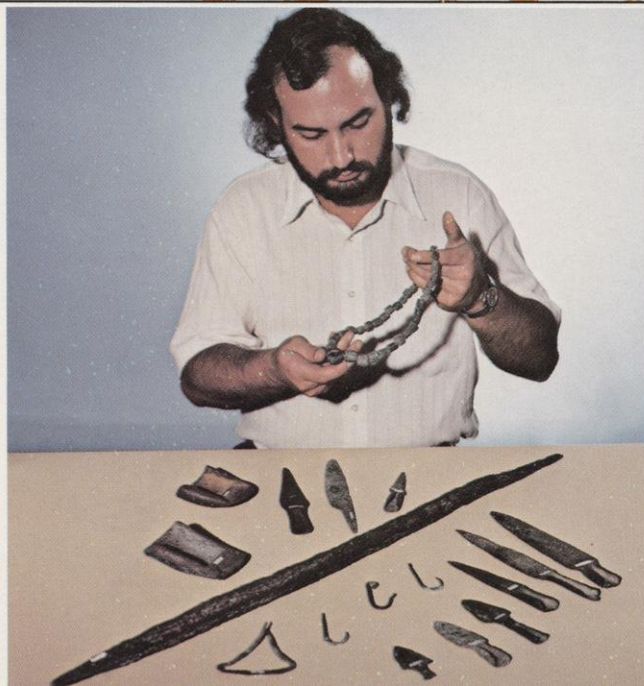
Painting reprinted courtesy of the artist, Diane Pierce.

Wisconsin's Old Copper Culture

The copper mining sagas of Wisconsin began long before Exxon, Kennecott and Noranda. They go back to prehistory and modern miners need to take special care lest they destroy the archaeological record.

Copper mining in Wisconsin, 500 B.C.

Drawing by J. A. Patenaude

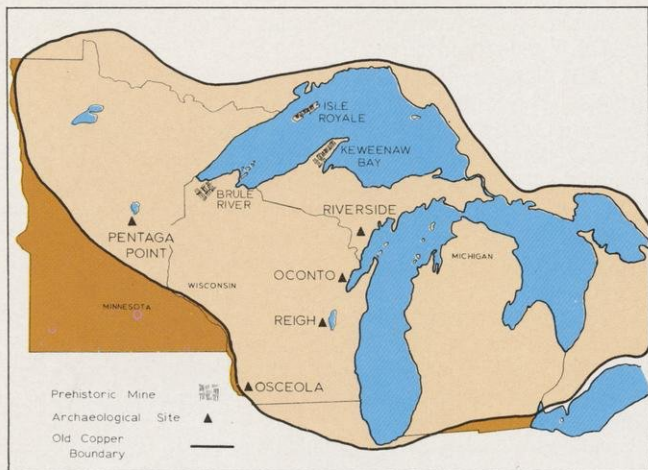


JOHN T. PENMAN, Wisconsin State Historical Society

It may have been as early as 3000 B.C. that Indians of the western Great Lakes perfected a method of mining copper and manufacturing it into tools. Easily accessible veins of copper are relatively close to the earth's surface on the Brule River in Wisconsin, at Isle Royale in Lake Superior and in the Upper Peninsula of Michigan at Keweenaw Bay.

After exposing a copper bearing layer, Indians broke portions of it off with a stone axe. The metal, surrounded by stone, was heated in a fire and then cooled quickly by dousing with water. This sudden temperature change caused the rock to separate from the copper nugget.

Through a process called annealing, the nugget could then be shaped. Annealing is not a method of casting; rather it is a tedious process of heating and hammering. The copper did not become brittle because it was allowed to cool slowly after being pounded into shape. The great number of spear points, knives, fishhooks and awls attest



to the fact that the Indians were excellent metallurgists long before Columbus "discovered" America.

While the major quarries are in northern Michigan, most of the copper artifacts have been found in Wisconsin. Thousands of implements were unearthed in the process of clearing farm land during the latter part of the nineteenth century. Through purchase and donation, the State Historical Society of Wisconsin has acquired the largest copper collection in the United States — over 2,000 specimens.

Artifacts uncovered by farmers or loggers are not the characteristic dull red copper color. Rather, they are heavily patinated, turned green through long exposure to natural weathering. Archaeologists know that patination indicates extreme age, and therefore, dubbed the Indians who made the tools the "Old Copper Culture."

Wisconsin's 46-acre Copper Culture State Park in Oconto County includes a cemetery site used by these people. It was first discovered in the mid-1920's. The city of Oconto was excavating fill for city streets, but abandoned operations when the crew foreman determined they were digging into "some sort of an Indian burial ground". Its importance was not realized until 1952 when an Oconto boy "rediscovered" bones while playing in the abandoned pit.

The Oconto County Historical Society made a preliminary excavation and contacted the State Historical Society. Later that year, survey and excavations were conducted by the Wisconsin Archaeological Survey assisted by members of the local historical society.

A radiocarbon, or C-14 date of 2590 B.C. makes the Oconto Old Copper site one of the oldest.

Excavations at Oconto revealed cemetery burials with remains interred in a variety of positions. While most burials were single, sometimes several individuals were placed in the same grave. Some bodies were extended, some were flexed or in the fetal position. Many were interred soon after death. Some individuals evidently died during the winter and could not be buried because the ground was frozen. These were placed in a bundle on a scaffold or tree, until the spring thaw. Some bodies were cremated.

Bone, copper and stone artifacts were placed in graves as burial offerings. Unique among the grave goods

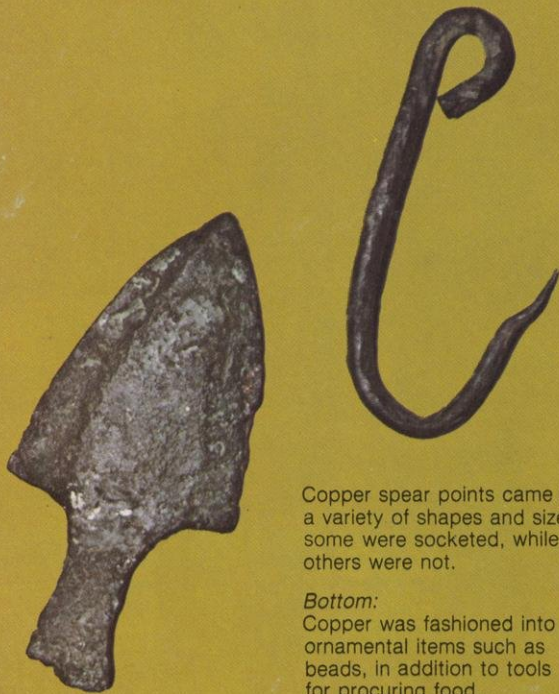


When hafted with wood or bone handles, Old Copper knives would look very similar to modern kitchen knives.



Bottom:
The socket at the base of Old Copper spear points insured that wooden shafts would fit snugly.





Copper spear points came in a variety of shapes and sizes; some were socketed, while others were not.

Bottom:
Copper was fashioned into ornamental items such as beads, in addition to tools for procuring food.



Crescents or ulus have a long curved blade, ideal for skinning animals.

is a whistle carved from the leg bone of a swan which was found in a child's grave.

Old Copper tools were made for a variety of purposes. The function of spear points, fishhooks, and knives is obvious, but the purpose of other tools is unclear. Artifacts such as "crescents" are similar to ulus used by modern Eskimos. Their long curved blades are most suited for butchering and skinning large animals such as deer or elk. Massive bullet-shaped "spuds" were probably attached to an antler handle and used for woodworking.

Pikes, which look like giant awls, may have been used to chisel ice fishing holes. While most copper tools were used in the day-to-day food quest, strings of copper beads and amulets have been found, indicating that the Old Copper people had some leisure in which to fashion items of personal adornment.

In recent years, archaeologists have excavated three Old Copper sites in Wisconsin, and one each in Minnesota and Michigan. From these excavations, we have learned that Old Copper people lived by hunting game and gathering plant foods. They enjoyed the company of pet dogs and made musical instruments.

Radiocarbon dates from the Wisconsin and Michigan sites indicate that the Old Copper Culture was well established by 2710 B.C. and met its demise about the time of Christ. The end of the Old Copper Culture, however, did not end copper mining. Even though such utilitarian items as spear points and knives were no longer made, copper ornaments became increasingly popular. Jewelry of Lake Superior copper has been found in prehistoric sites in Oklahoma and Florida illustrating the fact that there were vast trade networks in America well before the coming of Europeans. When the French entered Wisconsin, they found the Chippewa mining copper in the Brule River area.

While archaeologists have learned much about the Old Copper people, there are many questions still to be answered. How large were the settlements? If there were no large Old Copper villages, how long did these people remain in one place before moving to better hunting grounds? What was the reason for the discontinuance of copper in making hunting tools?

Many of these questions can be answered by intensive archaeological research in the heartland of the Old Copper region—Wisconsin. To date, there has been little. The lakes area of the state's northeast is an archaeological vacuum. Archaeologists simply have not been able to adequately survey it. Land clearing, development and increased modern mining there are a threat because much of this activity is conducted in areas which, long ago, Indians realized were rich in useful metals.

They were Wisconsin's first miners and they left a record. Finding and preserving it is essential.

At present, core samples taken by mining companies are not examined for archaeological evidence nor are prospecting sites surveyed before operations begin. So far all that's been done is to avoid archaeological areas already discovered. This is clearly inadequate. State and federal law comes into play once something is found, but right now there's no program to identify new sites if a prospector digs through one.

There needs to be coordination between mineral prospectors and archaeologists. Otherwise, the record will be lost to neglect.

While customarily archaeology does not receive the same attention as profits or taxes, in this case it needs to and the sooner the better.

Artists:

The first Wisconsin trout stamp, contributed by artist Tom Rost is now on sale. A contest to design the second one for 1979 is underway.

Wisconsin artists 18 and older are eligible to enter. Deadline for submitting designs is March 1, 1978. Judging will be by a panel of art and wildlife experts with results to be announced prior to April 1.

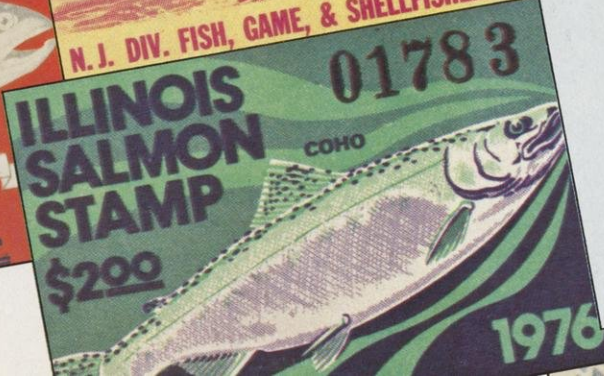
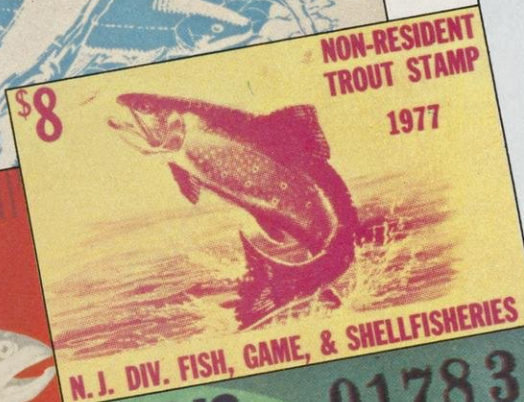
The winning entry and some runnerups will be published in this magazine and displayed in appropriate locations around the state.

The stamps sell for \$2.50 with proceeds earmarked for trout habitat improvement in inland waters.

Artists interested in entering can obtain a copy of the rules and related materials by writing:

Wisconsin Trout Stamp Contest
Wisconsin Natural Resources magazine
Box 7921
Madison, WI 53707.

enter Wisconsin's trout stamp contest





**Lookin'
wood**

CAL ERICKSON, Editor and Publisher, Florence Mining News*

My "lookin' " wood pile of a year ago has diminished to a small, undistinguished remnant in the hallway of the Independent building.

That long pile of yellow birch chunk wood, cut and split in the fall of 1975, then lovingly piled at the end of our lot where the woods begin and where I could look out the kitchen window each morning and be reassured that come what may I had my lookin' wood, is gone.

I wrote of that pile last winter. I told how I had chosen only yellow birch because it had charisma, which maple lacked. It glowed in the sun with amber heartwood and burnished, copper sapwood.

Chase, then five, and I spent many delightful hours in the timber compiling that pile in those golden days of October, 1975.

I wrote too of the dismay I suffered when I arose one morning and discovered a huge, ugly gap in my lookin' pile. It seems that son No. 1, then 16, and Billie Gribble, sometime maintenance man about the Independent building, had desecrated the pile by hauling part of it to the shop. I had issued orders that further up the road was a load of pole wood which they were to haul to the shop. Instead, using that peculiar sort of intelligence given only to teen-agers, they took what was easiest.

Later Kevin was to question my intelligence. He expressed an opinion that he thought I cut wood to burn. He further saw no difference in my pile of yellow birch and the load of pole wood comprised of white birch, basswood, popple and other lesser species. I had to gently explain to him that there were two kinds of wood, "lookin' " wood and "burnin' " wood.

I do not think he yet fully understands. But he does understand that he is not to touch lookin' wood.

But this fall I myself, with the help of Chase, now six, had to haul the lookin' wood to the shop.

I have in my office a beautiful, antique, potbellied stove. Unlike the modern air-tight stoves now on the market, which thrive on green wood, my antique is particular. She must have a daily ration of dry wood along with the green in order to function. Else she refuses to give of herself.

I regret to report that while I have a pile of lookin' wood cut this fall, it does not measure up to last year's. Friend Footer** kept me so busy duck hunting last fall that I had precious little time to enjoy myself cutting lookin' wood. The ducks were precious few too. Then winter came in the last week of

October and necessity dictated a hastily cut lookin' pile which includes maple and even some limb wood. It neither measures up in quality or quantity to last year's but still it is better than no ducks in the freezer and will suffice as my lookin' pile for this winter.

One load was cut in company with Footer. He almost had a fit when I said we were unloading it at my lookin' pile site.

He fumed and sputtered like a piece of green cedar thrust into a maple flame.

"Well," he said. "I'll help you unload here but damned if I'm going to help you pile it."

Before piling it, the rest of the previous lookin' pile was hauled to the shop with the help of Chase.

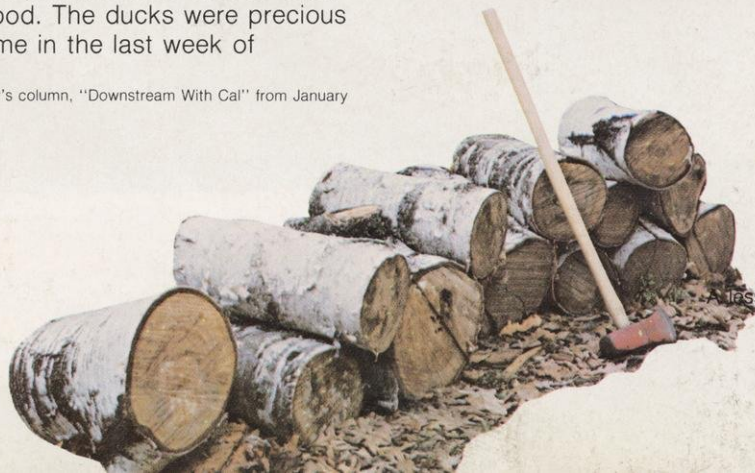
"I see, Dad," Chase says. "You look at it a year and then you burn it."

Alas, my son, that is exactly the way it is.

**Donald P. Footer, U.S. District Forest Ranger, Florence.



The author and his son, Chase.



lesser species.

*This article is reprinted from the author's column, "Downstream With Cal" from January 5, 1977.



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