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SPECIAL REPORT: Wisconsin's Champion Trees

WISCONSIN NATURAL RESOURCES

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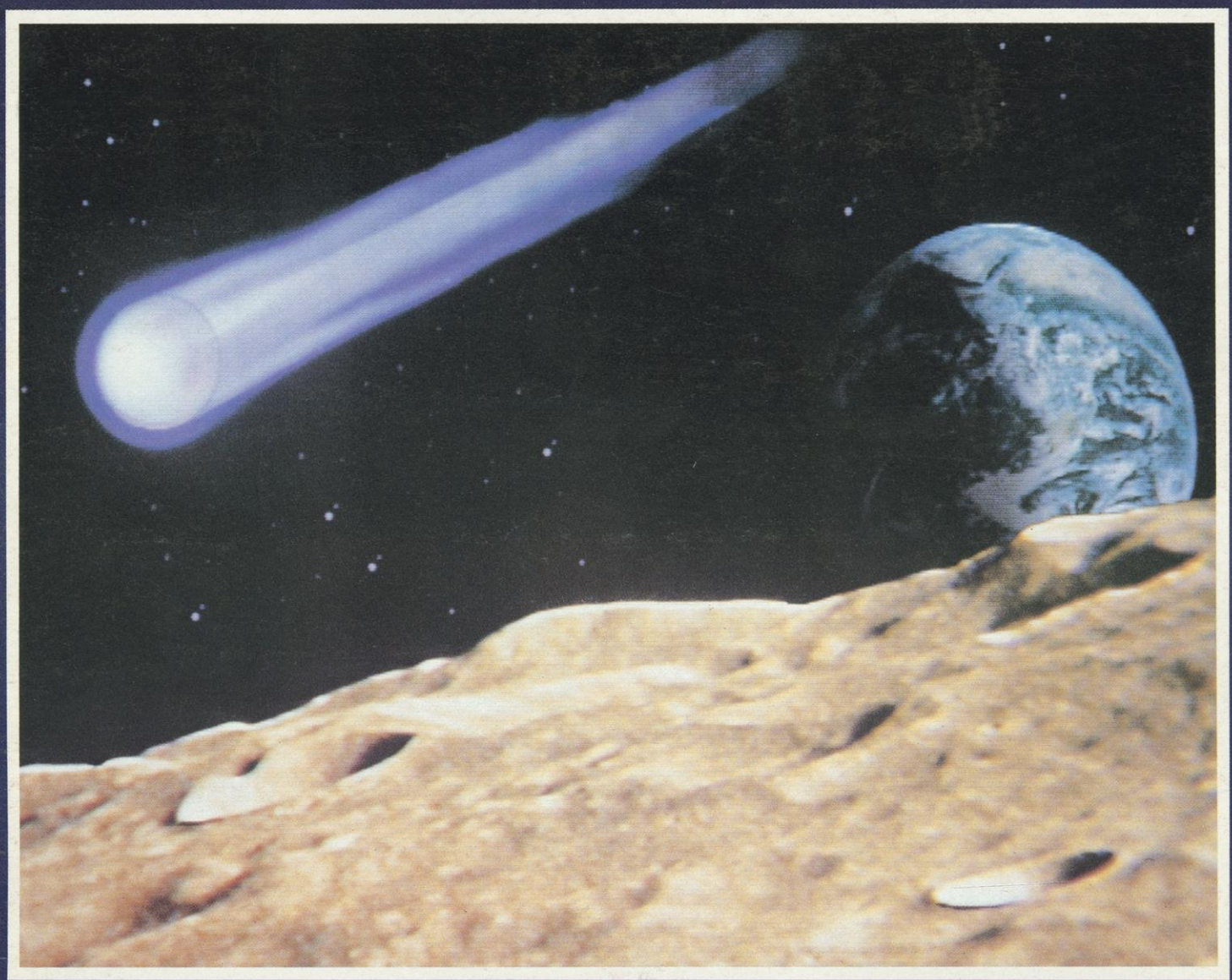

Halley's Comet, where are you?

Taxidermy

Big Blue Darter

Permits without pain

Hornet Housing

Gary Mueller, Editorial Intern

If you "stir up a hornet's nest" you're likely to get into real trouble and probably deserve it. Actually, the architect of those fantastic gray structures—the bald faced hornet (*Dolichovespula maculata*)—is a non-aggressive pussycat in springtime but gets mean by midsummer if you venture near its nursery. Aside from "mad as a hornet" mythology, the baldface's main claim to fame is that big nest where the larvae hatch. The nest looks like a miniature frozen tornado hanging from the treetops. Though readily visible this time of year, there's no worry about stirring it up. Even before autumn comes, the nest changes to a deserted ruin and will never be used again.

Bald-faced hornets (also called white-faced) are the most common wasp species in Wisconsin. They're the most unpopular and least understood too. Recognized by black and white markings, these insects stand at the apex of wasp development, living in colonies of several hundred within wallpaper cities of their own construction.

Design of the hornet's nest is so complex, it has attracted the likes of Aristotle, Kepler and Darwin to its study. And the perfectly symmetrical hexagonal cell of the bald-faced hornet's comb has even been a center of controversy between Charles Darwin and early critics of evolution. The argument was that only God, not natural selection, could have endowed hornets with the power to construct such perfect and efficient shapes.

The bald-faced hornet's life history begins in April or May when a fertile queen that has safely overwintered in a protected spot begins the search for a suitable nesting place. She is usually the sole survivor of her colony and holds the entire gene pool for the next generation. Once an acceptable site is located, she begins the long, laborious process of nest building and colonization.

Unlike bees and other wasps, the baldface is unable to make wax and builds its nest of true wood pulp paper. By scraping small wood shavings from fences, plant stems or littered paper and mixing them with her own saliva, the queen manufactures a gummy, quick-drying pulp. The snapping of fibers within the hornet's jaw makes a curious sound, often audible up to several feet away. The comb in which the eggs are laid starts as a short, blade-like paper stem and eventually the entire colony is suspended from it. After constructing a few hexagonal cells, others, like crescents are added at the sides of the first. When the larvae hatch out, the queen must forage for them, catching caterpillars, flies and other insects. Emerging from their paper cradles, her young will soon develop into female workers who take over the task of foraging and building. The queen then devotes all her time to egg laying.

As the young workers take over, additional stages of the paper comb are built below the first one. Each stage is enveloped in a strong paper wall protecting the occupants. By the end of July or August, the final stage is built, especially designed so that this batch of larvae will hatch into fertile males and females able to mate. The resulting architecture of the entire nest resembles a gray, football shaped piñata or an upside down teardrop.

In springtime, the queen works alone to build the first stage of a nest that will house her entire colony. *Photo by Robert Jeanne, UW-Madison entomologist*

About this time the colony begins to dwindle and die. Workers destroy the unhatched eggs and soon they too, along with the old queen, die of cold and starvation. All the skill in nest building, all the months of ceaseless devoted labor, ends with the last hatch—the fertile males and females. Mating takes place shortly afterward, probably on some attractive piece of vegetation following a ritual flight. The males then die and the hundred or so surviving females go into hibernation protected from the cold by a change in body chemistry. Hopefully, one will survive the winter to begin the cycle again next spring.

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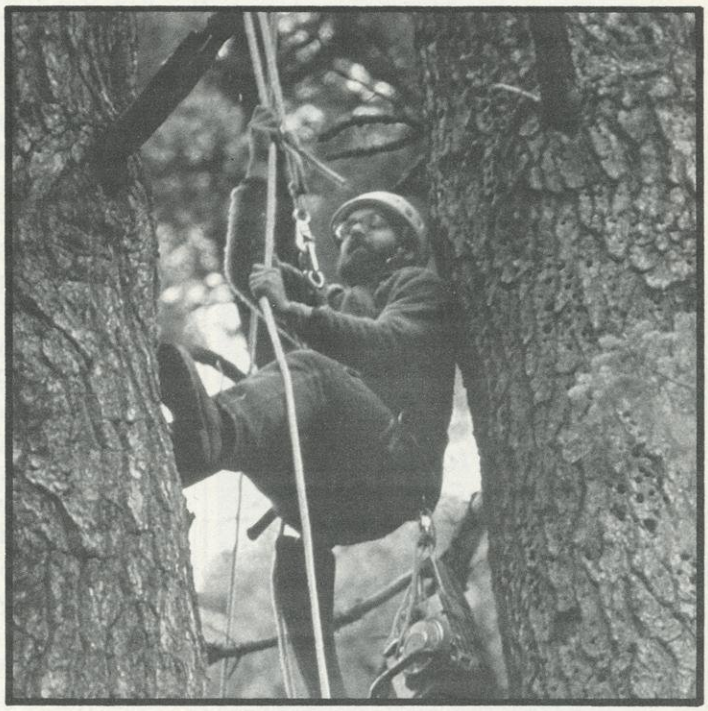

Front cover: Halley's Comet. (See story on page 8.) *Computer art by Eric Weaver courtesy of Color Graphic Systems*

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25 YEARS OF YCC: THE LEGACY CONTINUES

Gary Mueller, editorial intern, Ray Hendrikse, Chief, YCC

Photos by Ray Hendrikse

Much needed improvements in camp facilities came in 1967.

Nature has blessed Wisconsin with an abundance of natural resources. From the great Northwoods to the Southern Kettle Moraine, residents and visitors alike can enjoy millions of acres of public land that previous generations were foresighted enough to preserve for us. In addition to all the recreational and economic benefits those acres have brought, they have also provided a place where young people can work, learn and earn close to nature.

From the mid 1930's to early 40's, the Civilian Conservation Corps sent young people out on the land to fight destruction and erosion of natural resources. It was one of the most popular and successful public works programs this country has ever seen. The CCC left a legacy of conservation work that still brightens the landscape.

Statehouse Lake in 1962.

"Today few boys have an opportunity to feel tangibly useful to society. It is not enough to school their minds. They need to work with their muscles. They need to work outdoors, in a purposeful relationship to nature, to forge living connection to the experience of their forefathers."

Robert Lewis, Outdoor America May 28, 1961

Building on the CCC tradition, Wisconsin has since forged a new brand of conservation public works and is creating a legacy of its own. The Wisconsin Youth Conservation Camp (YCC) program will celebrate its 25th anniversary next June. Officially born on September 1, 1961, the YCC was unveiled as part of the state's $50 million Outdoor Recreation Act Program (ORAP) which was created to buy and develop land for public use. The act also provided for employment of the state's young people in needed conservation work projects. ORAP's source of income at that time was a one cent tax on a pack of cigarettes.

Within nine months, some 200 youths were enrolled in two fully operating youth conservation camps. By the end of the first summer over 400 young men had participated from camps at Statehouse Lake in Vilas County and a temporary facility on the White River in Bayfield County. The following year two new camps were built. The Ernie Swift camp on the Minong Flowage in Washburn County replaced the White River operation while another on the Mecan River in Marquette County brought the total to three.

The early YCC was administered cooperatively by two state agencies. The camps themselves were run by the Public Welfare Department, while the old Conservation Department, DNR's predecessor, was responsible for work programs. John Holmes was the first director. This unique sharing of leadership typified the program's goal of developing both human and natural resources.

The early YCC was open to youths in good physical condition between the ages of 16 and 19. Each county was alloted a quota based on population with one youth chosen from each high school on recommendation by the principal. Campers worked 40 hours a week and earned $18 plus room and board. Housing was rough, consisting mainly of tents. Workers participated in hundreds of conservation projects involving many types of labor. Besides the priority task of camp construction, they helped develop dozens of parks and campgrounds, cut hundreds of acres of diseased trees and brush to promote growth in pine plantations and worked on browse for hungry deer. The YCC also developed a vital system of fire lanes and access roads on public lands.

"I learned to handle a double-edged axe," recalls an early Statehouse Lake camper. "I had never even picked up an axe, let alone chopped down a tree before I joined the YCC. But we cleared 13 miles of fire lanes through virgin timber in just three weeks."

Timber stand improvement such as clearing, planting, thinning

and release projects, along with parks development were the main thrust of the early YCC operation. Two-thirds of the 79,880 worker days expended in the first five years of the program went into this kind of project.

In 1966 during one 12 week session alone, the camp at Statehouse Lake planted 30,000 white pine, pruned 28,000 trees, constructed 214 log fish cribs and built 17 miles of new trails from Arbor Vitae to Boulder Junction. Much of Copper Falls State Park was developed by YCC workers. Visitors there today are still using the roads, trails, picnic areas and campgrounds constructed in those early years.

The program faced its first real crisis in 1966 when the number of applicants for work at the camps dropped from 1402 to 936. Part of the reason was the mistaken idea that because the Welfare Department was involved YCC workers were high school dropouts and juvenile delinquents. But nothing could have been farther from the truth. The misconception was corrected by the Kellett Reorganization Act of 1967. That legislation created DNR and at the same time transferred sole responsibility for the YCC to the new department.

That same year many improvements were made in camp facilities. Worn out tents were replaced with cabins constructed by the campers themselves and wages went up to $20 a week. In 1971 a spinoff program found the federal government launching its own YCC program modelled after Wisconsin's. DNR added a fourth state camp in 1973 near Kewaskum in the Kettle Moraine which later became the first coed camp in YCC's history. In 1974, the law restricting attendance to boys was repealed and the following year, girls officially became a part of the program.

Camp work weeks were revamped in 1978, reduced from 40 to 32 hours. At the same time, 10 hours of environmental education were added.

By 1981 budget problems had hit the YCC along with all other government programs. Federal funding was "phased out" but despite state budget problems, recognition that Wisconsin had a staggering youth unemployment rate let the program persevere.

Today the resident YCC program is divided into two sessions of five weeks each. Enrollment at each session is 200, which permits employment of 800 teenagers annually. Counselors, who are mainly university students majoring in either science or conservation, are assigned at a ratio of one to ten. The jobs are open to everyone ages 15 through 19, but YCC jobs are not easy to come by. Since participation is limited, young people are selected through a random drawing and only one out of every four are lucky enough to be chosen. Although the method has been criticized, it is the best way to assure a representative cross section of the state's racial and socio-economic groups will attend. Minority participation is especially encouraged. All but one county was represented on the enrollment roster for 1985.

Annual budget for the YCC program is $981,000. Two-thirds

YCC workers often help in emergencies. This is a cleanup after the 1985 Buckhorn State Park tornado.

"I learned to handle a double-edged axe," recalls an early Statehouse Lake camper. "I had never even picked up an axe, let alone chopped down a tree before I joined the YCC. But we cleared 13 miles of fire lanes through virgin timber in just three weeks."

YCC girl hacks away at a fence boundary.

comes from general taxpayer revenue and one-third from segregated forestry funds which have their source in the property mill tax. About 80% of all monies go for salaries with the remaining 20% spent on education and recreation. Campers earn $3.35 per hour with $27.50 a week taken out to pay for food and lodging.

All four camps are completely self-sufficient and of similar design. Each includes an office, infirmary, kitchen, mess hall, bathrooms, cabins and a library.

"It's a good healthy environment," says Dede Nerbun, cook at Ernie Swift camp for the past four years. "It's one of the best learning experiences a person could get. I plan on working there as long as my legs can carry me."

Each morning campers rise at 6:30. They clean their cabins, eat breakfast and break into teams to work on several assigned projects near camp. By eight, they've climbed into vans to head for other sites, usually a fish, wildlife, forest or recreation area.

Every summer YCC campers improve miles of debris-jammed streams, prune and release hundreds of acres of pine, raze dozens of unwanted beaver dams, groom miles and miles of hiking and cross country ski trails, develop numerous acres of wildlife habitat, maintain hundreds of campgrounds and repair or replace miles of fencing.

"Everybody just figures they're only going to chop down trees when they get here," say Jim Kachalmeier, former Statehouse camper. "Few campers realize beforehand the wide range of jobs and physical labor required in conservation work."

DNR field managers let YCC personnel know which properties need work and how much. Emphasis is placed on variety to make sure each YCC worker gets as broad an experience as possible in conservation methods and environmental concepts.

"Before they came to camp many of these young people thought conservation was a romantic idea," says Thor Sande, former assistant director at Statehouse Lake," but after the first few days they realize that wise use of our natural resources requires toil, not talk."

The disciplines of group living are part of the learning process and require adjustment. Counselors and adults are called "sir" or "ma'am." Failure to comply with rules may result in pushups or an essay assignment.

"I think the success of the program is due in part to the high level of discipline," says Ray Hendrikse, a former marine who has headed the program for the past 14 years.

"It requires respect for property, others, and self," he says.

"The simple truth of the matter," says YCC Chief Hendrikse, "is that without the assistance of the youth camps, development, restoration and maintenance of state parks, wildlife areas, forests, streams and lakes would be severely reduced. Without them, conservation work would continue to get done, but to a much lesser degree."

Ray Hendrikse

But while stringent rules and regulations define camp life, there is also a fun, recreational side. Evenings and weekends, campers take field trips, fish, hike, swim, canoe and play basketball and baseball.

"I thoroughly enjoyed it," said Ilka Harris, a camp resident in 1982 and'83. "I felt it was a very worthwhile educational and work experience."

About 92% of the campers say they either "like" or "really like" their YCC experience. The popularity of the program is largely attributable to this high regard by those who attend.

From the DNR and public point of view, the historical evidence of success is striking. Ever since passage of ORAP in 1961, DNR has been increasingly dependent on the YCC work force for help and today these young people often perform services that might otherwise go undone for lack of funds or staff.

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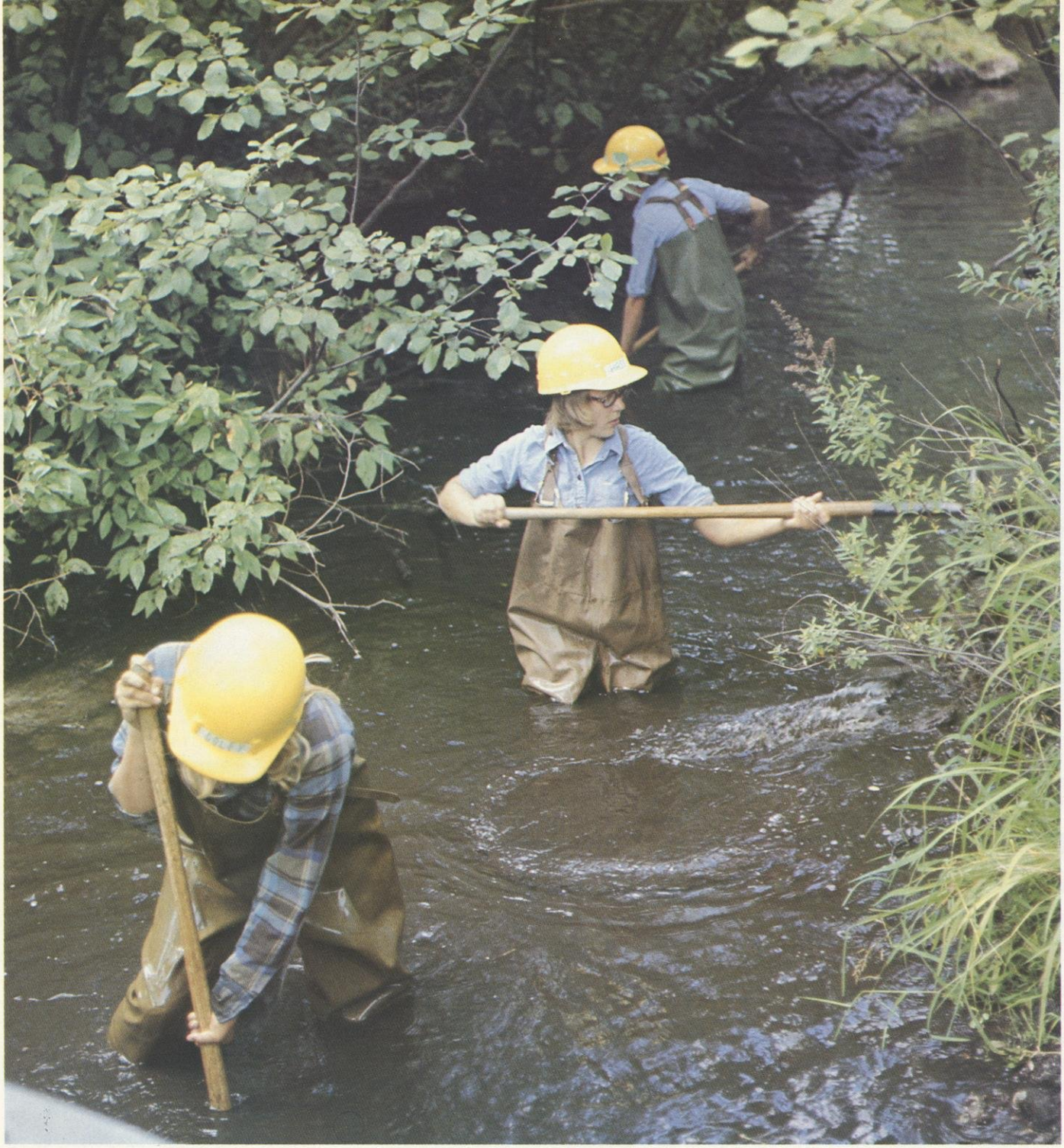
More than 850 young people worked in excess of 125,000 hours in state forests, parks and streams last year, contributing an estimated $3/4-million worth of labor. Besides doing important conservation work, the YCC performs a vital emergency function as well. When a tornado ripped through Buckhorn State Park last summer causing considerable damage, it was the YCC workers who went in to help clean up the mess.

"Buckhorn staff and DNR Fire Control personnel who assisted with the cleanup were all impressed by the YCC crew's discipline, cooperation and quality of work," said Robert Smith, North Central District Area Director.

While it's a given that the YCC workers are expected to perform the backbreaking, unglamourous tasks essential to resource management, they are also learning important work skills and attitudes.

"What we are really developing is human resources more than natural resources," says Jim Krems, former Camp Nancy director .

This is reiterated by YCC Chief Hendrikse who also says, "Our program accomplishes its goal of employing youth during a period of about 20% teenage unemployment while also offering academic and social opportunities which are just astounding. Its a very unique program."



YCC stream improvement projects, such as this one on LaBudde Creek, are an investment in both our natural and human resources.

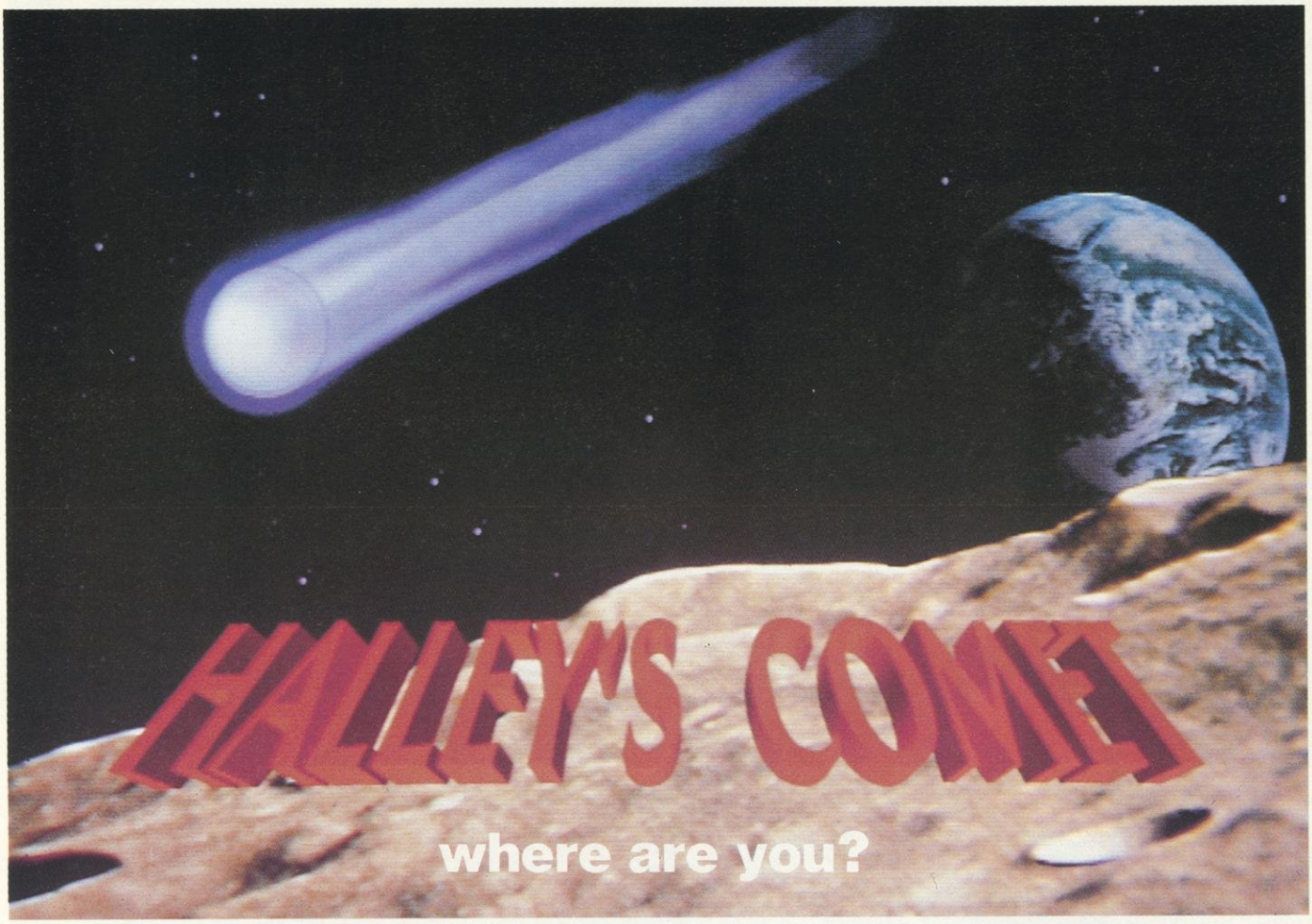
Hendrikse is also proud of the way the YCC educational format has developed in the last eight years. One important addition has been an environmental education coordinator for every camp. And each camp has built its own outdoor amphitheater where nature instruction can be delivered with a truly natural backdrop.

"The fact that education actually occurs in an outdoor setting, adds to the significance and understanding of the instruction itself," says Hendrikse.

The curriculum typically consists of classes in safety, conservation, ecology, energy and other related subjects.

In the YCC's 24 year history, 19,000 boys and girls have participated in the program and accomplished some $15 million worth of work. All that while, the goals have remained essentially unchanged—to provide young people with outdoor conservation work, environmental education, healthy work habits and wholesome recreation. Just how well it stacked up in accomplishing these can be summed up in a comment by the mother of a Statehouse Lake camper when she came to pick up her boy last year: "My son has blisters on his hands and a smile on his face."

Smiling along with him is the whole state of Wisconsin. It's been a good 25 years for everyone involved. The next 25 should be as good.



Computer art by Eric Weaver courtesy of Color Graphic Systems

What did people in Wisconsin think when Halley's Comet streamed past the earth on its last visit 76 years ago?

Mitzi Satran, Editorial Intern

It was the year 1910. Fighting Bob LaFollette was enunciating Progressive ideals in the US Senate and the census showed a Wisconsin population of 2,333,860. History's most famous comet had arrived for its 29th recorded appearance and overshadowed all other Wisconsin events. Some thought the comet may have had something to do with all the bad things that happened that year. There was the siege of Cameron Dam when John Dietz defied authorities for a week and two of his children and a deputy sheriff were shot. Later a car ferry between Milwaukee and Ludington foundered in Lake Michigan and 29 lives were lost. In May, with Halley's Comet overhead, a forest fire destroyed part of the village of Mosinee. The following July another fire near Chippewa Falls burned over an area 50 miles long and 40 miles wide killing three people and rendering 300 homeless. Near Merrill that same month forest fires threatened several villages and at one point 400 persons were evacuated in a train rescue. Earlier that spring a severe blizzard in southern Wisconsin left crops in a shambles. No wonder the eyes of the state were fixed on the heavens in 1910. Forebodings of disaster were part of the comet's history. Residents gazed upward, fascinated by a fireball that, unlike this year's flicker, lit up 80% of the night sky. The sight inspired keen interest, awe and apprehension.

Late 16th century version of a comet used on the title page of a manuscript.

Some people's fears were laid to rest by scientists of the day. On May 11, 1910, the Madison Democrat newspaper reported this reassurance from astronomers about Halley's comet: "It is perhaps unnecessary to add that the earth will not be in the least affected by this encounter and also that the sensational statements as to the influence of the comet on our world are utterly without foundation."

As further proof that the comet would not affect the earth, the newspaper added, "The coolish weather of the past week has rather

wrecked the common notion that the comet has something to do with the unusually warm spring."

But back in 1910, not all the so-called experts were equally reassuring. Due to the strange alignment of the earth and the comet, the comet's tail was scheduled to intercept the earth on May 18, 1910. Major H. B. Hersey, head of the Milwaukee Weather Bureau, commented in the Milwaukee Free Press on the danger from the comet's tail. It was thought to be composed of deadly cyanogen gas. Hersey said that he wasn't sure what would happen but that, "Death may ensue . . . the vapors and gases may bring death." There were predictions that it would kill people by the millions. But Major Hersey was confident about the earth's ability to withstand a hit by the comet. Though there "might be a great explosion, might be death and ruin at the point where the comet strikes, the comet will be destroyed and the earth will continue on its way, the same busy planet that it has been these thousands of years gone by."

With this contradiction of the reassuring and the frightening from experts, it's no wonder the plain people in Wisconsin were a little nervous.

In 1910 business boomed for fortune tellers. Hucksters sold powders, charms and medicine to ward off comet ills. An advertisement in the Beaver Dam Argus on April 29, 1910, warned readers to "watch for the comet, the red dragon of the sky" and use Foley's Honey and Tar for any coughs or colds caused by it.

Some residents took the alleged dangers to heart. They worried that the end of the world would come when the comet hit or enveloped the earth in poisonous gases. One of these was a Stevens Point woman who was taken to the Northern Hospital of Oshkosh by Sheriff Berry because she became "unbalanced" from brooding over religious matters and closely studying Halley's Comet which she believed would destroy the world within a short time. Her story was

The last pass

from the Florence Mining News, Saturday, May 28, 1910

Hundreds of Sky Gazers See Terrestrial Tramp—Has a Hazy Soft Glow With Tail Ten Degrees Long

Hundreds of Florentines Tuesday and Wednesday evenings viewed Halley's Comet riding high in the western heavens. With a clean sky and the moon not far enough from the horizon to dim with its radiance the gleam of the terrestrial wanderer, the opportunity for scrutiny of the sky tramp was excellent.

The comet at 9 o'clock, the hour when its brilliancy seemed greatest, occupied a position among the western constellations about 40 degrees high. It was directly in the west. About 8 o'clock in the evening Halley's wanderer showed a small portion of tail as a thin haze of light. It reached from the head in a southerly direction and dipped toward the horizon.

Measuring in the terms of the astronomers, it was said to be about 10 degrees long. An hour later the nebulous effect had disappeared and the head itself took on a hazy appearance. This was explained by the fact that gazers were forced to look at the head along the length of the tail, now pointing almost directly toward the earth.

The comet assumed what is said to be the second magnitude in size. It is easily distinguishable from the stars because it has a soft glow.

A twice told tail

by an observer who saw Halley's comet in 1910.

The truth is, I am not yet over it. Although I was only six at the time, I vividly recall my parents getting me up and dressed a little after midnight to go and look at the comet that was due to be at its best at 3:15 AM. My parents, my 13 year old big sister and I trudged up a small hill. We brought along my mother's mother-of-pearl opera glasses as the nearest thing we had to binoculars.

The comet showed right on schedule. I think the date was May 21, but I might be off by a few days. The comet appeared as a thing of grandeur, a great sweep of light curving across the black of the sky. With a gleaming head at one end, it was like a bright star with a flowing tail. The comet resembled nothing I have ever seen before or since. It was sky-filling, awesome and unforgettable.

Another 1910 memory

It moved slowly and majestically like a gorgeous fish. It seemed so close that you felt you could have reached out and touched it.

The famous Bayeux tapestry shows Halley's Comet fortelling the fall of Harold II of England in the Norman Conquest of 1066.

reported in the Green Bay Semi-Weekly Gazette on May 18, 1910. A story in the Milwaukee Free Press stated that at Houghton, Michigan, a 72-year old miner hanged himself because of his fear of the comet.

But others were more curious than frightened. Major Hersey, Edward P. Vilas and John H. Moss made plans to observe the comet in Milwaukee even if the sky turned cloudy. They would rise above the weather in a balloon. Unfortunately, heavy winds off lake Michigan foiled the attempt. But the technique was used elsewhere in other US cities.

In the north, the Florence Mining News said residents were eagerly awaiting a glimpse of the heavenly visitor. And taking a cue from the Big Apple where May 18 was dubbed "Comet Night" and treated like New Year's Eve with gala parties and glittering gowns, the paper suggested that comet parties would be in order in their town, too. It asked, "Who will give the first one in Florence?"

As the night for the earth to pass through the tail approached, both parties and precautions prevailed. Some people took comet pills. The Florence paper reported that farmers near Neenah removed lightning rods from barns and homes for fear the metal would attract dangerous substances. Even the US Hydrographic office in Washington warned wireless telegraph operators and vessel masters along the Great Lakes that wireless instruments and compasses might be affected by atmospheric conditions caused by the comet.

But just as the Madison Democrat predicted, the comet's tail passed through the earth with no damage. The tail, it pointed out was just like the fabled dog—all bark and no bite.

The Dodgeville Chronicle said the fears of a "jolt from the streaming tail of Halley's Comet may now be laid aside" because the comet's tail passing through the earth was not even noticeable. The Chronicle also reported that an aurora borealis display had danced across the northern sky on the night of the comet. Said the Chronicle with appropriate skepticism, "Whether or not the exhibition was due to the approach of the comet is for the astronomers to say — if they can."

Other strange and curious events attributed to Halley's Comet in 1910 were recounted around the world. It remains to be seen whether 1986 will seem just as strange to people 76 years hence. They'll have to judge all those space ships cruising by Halley's for a close look, all those advertisements for comet-viewing cruises down under and all those patient people with binoculars scanning the skies for what has turned out to be the celestial dud of the millennium. Chances are 1986 may seem even stranger to people in the year 2061.

French engraving of Halley's appearance over Paris in 1912.

An observer from the year 1456

Its head was round and as large as the eye of an ox, and from it issued a tail, fan-shaped like that of a peacock. Its tail was prodigious for it trailed through a third of the firmament.

Comet blamed for Peshtigo and Chicago fires

A Chicago science writer, Mel Waskin, says a comet—not Halley's, but Beilla II—caused Wisconsin's mortal Peshtigo fire that claimed 1,200 lives. He also blames it for the terrible Chicago fire and for another in Manistee, Michigan. All occurred on the same day, October 8, 1871.

Waskin claims Beilla II, carrying a load of dangerous, flammable gasses, entered the earth's atmosphere that day and exploded into three fragments, one hitting at each location. As proof he cites simultaneous occurrence of the three fires, eyewitness accounts of "fireballs" falling from the sky, and the speed with which the fire spread, which Waskin claims happened when acetylene and methane gases from the comet exploded.

So far Waskin's theory is only speculation. He's awaiting reaction from the world of science.

Peking astronomer blames Halley's for floods

A Peking astronomer has warned that Halley's Comet may cause floods along many of China's rivers. According to Wang Yongquan of the Chinese Academy of Sciences, floods occurred during nine of the comet's last 29 visits. In 1910 on Halley's last fly-by, dams and riverbanks collapsed on the Yangtze, Yellow, Huaihe and Liaohe rivers, killing many people.

China's historical record of the comet's recurrences every 76 years goes back further than that of any other civilization to the year 240 B.C.

The no-show spectacular:
a typical 1986 experience

On a bitter night this week a group of us gathered at the UW's Washburn Observatory to have our chance at the comet. We stomped our frozen feet as the Lake Mendota winds swirled in through the open dome. Astronomer Mark Slovak spent two hours searching in the southern sky, beneath the great square of Pegasus for the blur of Halley's Comet.

But the glow of Madison's lights and atmospheric turbulence left over from Saturday's snowstorm were too much for the giant telescope. The comet wouldn't come into view. We eventually gave in to the cold, deciding against sacrificing fingers and toes to science.

This is the quintessential comet story of our generation: We can tell our children about the time we didn't see Halley's Comet.

from the Wisconsin State Journal, 1986

Cartoon by Joe Heller

Advice from Astronomer Mark Slovak on how to view the comet

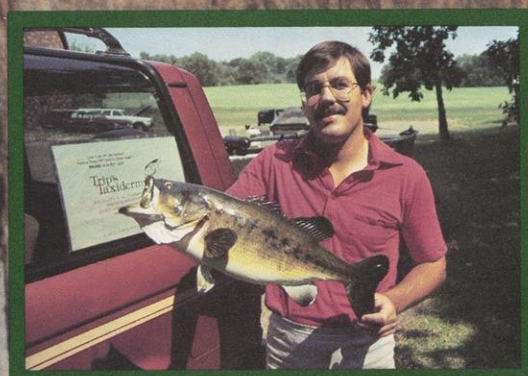
"Look at it out of the corner of your eye. It's spooky. You'll see this chalky blob and if you look straight at it, it'll disappear."

**Last night I saw up in the air,
That Halley's Comet wasn't there.
It wasn't there again today.
Gee Whiz, I wish it'd go away.**

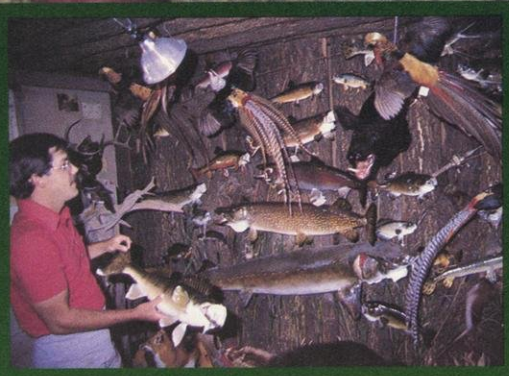
Cartoon by Virgil Beck

ARTISTRY IN ANIMALS

John Beth, Reedsburg



Taxidermist Randy Tripke. "You just wait for your customers' smiles and twinkling eyes when they see their trophies completed! There's a unique reward in that subtle moment.



Fond du Lac taxidermist Randy Tripke at his display wall.

Taxidermy is an ancient art. It freezes memories, requires talent and precision and is alive and well in Wisconsin.

Two Greek words, "taxis" meaning arrangement and "derma" meaning skin, make up the word taxidermist. It is a process by which animal bodies are preserved for display. While early humans treated skins for use in clothing, tents, blankets, canoes and trade, the first attempts to preserve bodies were the mummies of ancient Egypt some 6,000 years ago. But actually hanging a preserved skin on a false body to look like the original specimen is credited to the Dutch. A collection of birds was displayed at Amsterdam in 1517. The Royal Museum of Vertebrates in Florence displays a rhinoceros that was originally mounted for the Museum of Ulysses Aldrovandus in Bologna in the 16th century, the oldest known specimen of modern taxidermy.

From what first started as "stuffing" skins with sawdust, straw or whatever and putting braces inside to restore form, to modern scientific ideas and practices, the art of taxidermy is alive, well and improving all the time. I've encountered few professions that demand the same concentration and variety of skills—truly a great deal more than meets the eye. Fine museums illustrate the scope—all the way from hummingbirds to elephants with substantial precision and effort required at every step.

Photos by author

Taxidermist Scott Hill of Baraboo shows a full buck mount.

Typical of those in this unique industry here in Wisconsin is Randy Tripke whose shop is located a little north of Fond du Lac.

"People mount what they are proud of," says Randy, stroking his moustache. "Maybe this perch is the first fish a boy ever caught. It will be special to him for his entire life. No less so than this 35 pound muskie. Each experience is unique. Each specimen is special to someone, so to me as a taxidermist, it must also be special."

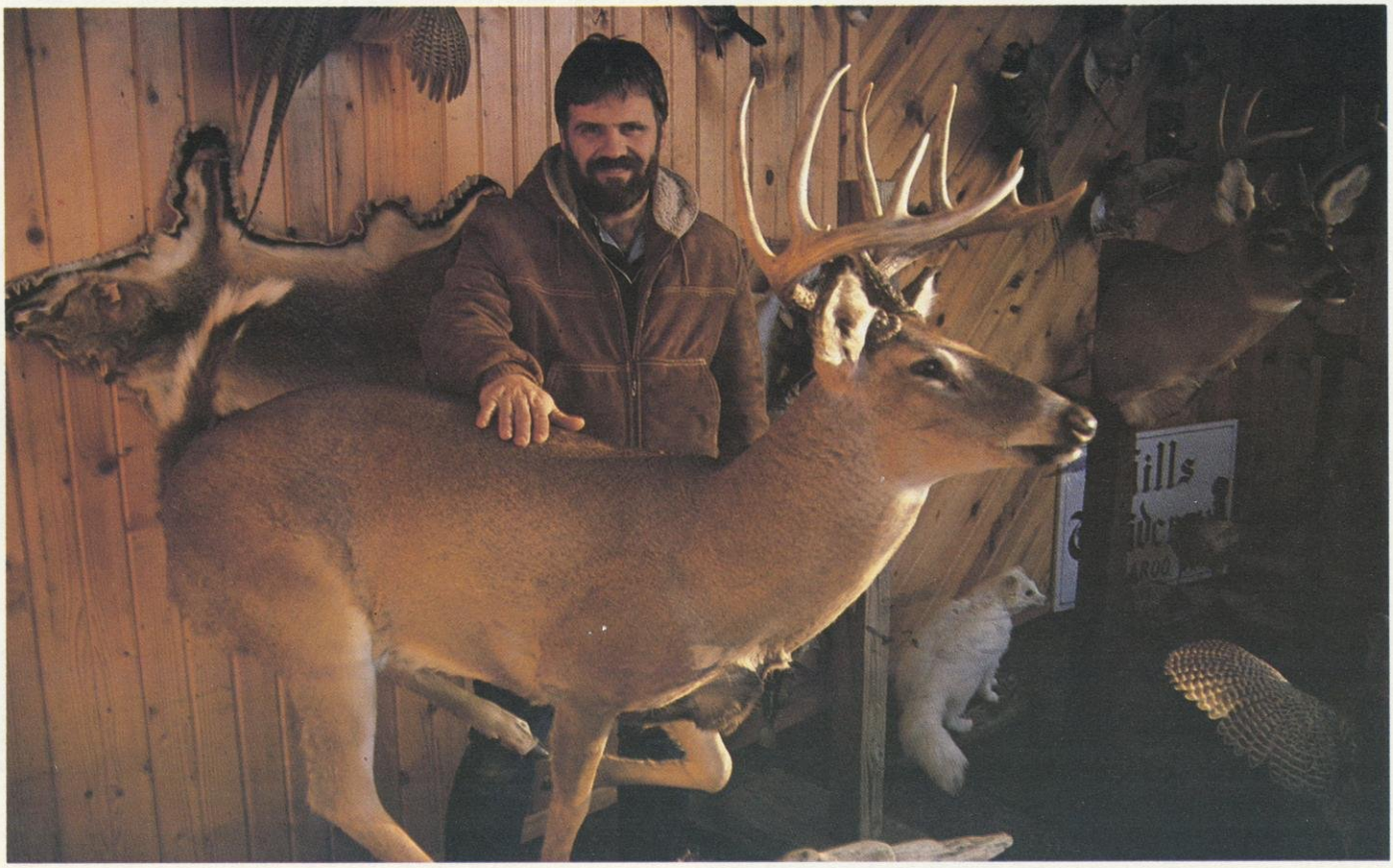
Although still a young man, Randy knows the priceless value of a good reputation. With virtually no advertising, last year some 70 deer heads, 125 birds, and 400 to 500 fish found their way to his small shop.

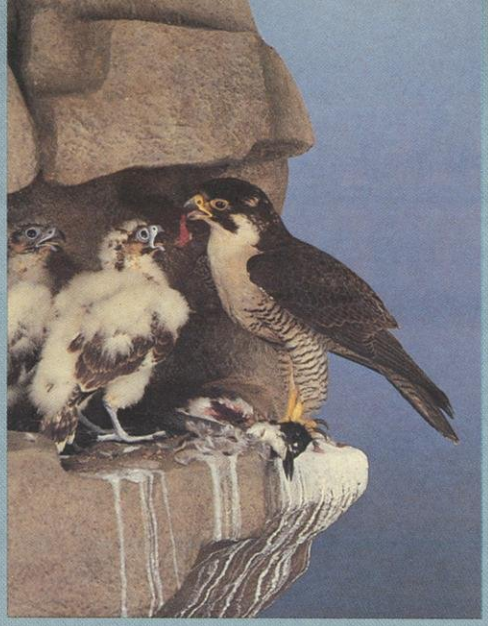
"Every one is a billboard for my business," he says. People love to show off their trophies. I get a lot of repeat and referral business. Almost too much!

"Taxidermy requires a lot of patience and a variety of skills, most of which in my opinion can be learned. Natural artistic ability is certainly valuable, but I think anyone who works hard can achieve good results, even if he or she isn't artistically gifted. Patience is the key and developing an eye for detail and realism."

Randy points out that customers only see the finished product and sometimes forget that the majority of the work is pretty "yucky."

"They forget how much time we spend up to our elbows in the butchering, fleshing, guts and slimy part."





Peregrine falcons, preserved in alcohol-filled specimen jars for 50 years, are almost reincarnated by the art of Milwaukee Public Museum taxidermist Greg Septon.
Photo by Greg Septon courtesy of the Milwaukee Public Museum

Reunion

Holly Kuusinen, Public Information, Endangered Resources

In 1921 the late Milwaukee Public Museum bird taxidermist Herbert L. Stoddard collected three peregrine falcon chicks from a nest on Gibralter Rock. At the time, this well-known naturalist could not have envisioned that today those birds would be an endangered species in Wisconsin. But he preserved them in alcohol and over the years they wound up filed on a shelf in the museum basement.

Now, 65 years later, through the miracle of modern taxidermy and the talent of the institution's current taxidermist, Greg Septon, visitors to the Milwaukee Public Museum can view the peregrines that Stoddard collected. They can also contemplate the "progress" that brought this regal species to the brink of extinction. "The Reunion" display, which will be on permanent exhibit later this year, has been a project of Septon's since 1979 when he came upon his predecessor's stored bird specimen jars.

Investigation revealed three downy young falcon chicks and an adult female. During the next two years, Septon carefully worked to restore the specimens and develop the museum exhibit as a tribute to Stoddard, who died in the late sixties.

Prior to structuring the eyrie for his display, Septon visited the place where Stoddard collected the family of peregrine falcons: "As I sat atop the nest ledge overlooking the meandering Wisconsin River, I wondered if peregrines would ever nest there again. Certainly the locale was ideal. There were plenty of prey species present. But now, Gibralter Rock is a 'park.' Rock climbers, picnickers and beer drinkers go there. They've left their signs scattered amongst the rocks. Since the peregrines' only natural enemies are man and chemical pesticides, they could nest there again, but only if man realigns some of his values. . . It's a matter of priorities."

Whether an animal or fish is a trophy can only be determined by the individual or angler. But if you decide you've got a "wall hanger," remember that the better the condition of the specimen when it gets to the taxidermist, the better the mount. Taxidermists do a better job of restoring color if blood and dog saliva are immediately washed off your trophy with cold water. Freezing your fish quickly and wrapping it tightly will help preserve fins and coloration. A good color photo helps, too! And never cut the throat of a trophy deer.

"Just clean the animal and prop it up or hang it head first," advises Randy. " Slicing the cape ruins it. If it's going to be mounted you'll save the taxidermist a lot of unnecessary restoration."

I watched Randy skin out a walleye and was awed at how easy he made it look. "I can skin this fish out, fillet it, and return the meat to the freezer before it really thaws. The customer gets the fish mounted and can eat the fillets, too!"

Modern chemical solutions and preservatives have removed many of the hazards once encountered in tanning and preservation. Gone are the days of arsenic paste and similar poisons. New materials are safer, better and leave no odor. Present day taxidermists also make use of "mannequins" or body forms which come in many types and sizes to make the finished pose more authentic. Some body forms are handmade to fit the specimen or the mannequin may be modified by hand.

Careful cleaning and drying are key factors in taxidermy with the ability to recreate and match the original character and anatomy of the animal essential for authenticity. "Drying the skins properly, especially for fish can take a long time, particularly, for big ones," says Randy. "Every effort must be made to remove the watery tissue and muscles, especially in the head so discoloration or shrinkage won't occur."

Although it began as "skin stuffing" in the middle ages, taxidermy today is an intricate art which creates lifelike facsimiles.

Precise stitching with special curved needles is used to pull the skin tightly over its new frame. Afterwards, modern paints and finishes are applied that produce life-like, long-lasting mounts. An air brush or hand brush may be necessary to bring out the life-like colors of your special male brookie or wild muskie. Good quality glass eyes are a must. Similar care is needed on animal or bird mounts.

The mount's pose varies according to the owner's choice. "Most taxidermists have showrooms to give prospective customers a chance to see the operator's work and to make choices. I think a person should check these out carefully and not be afraid to ask questions," says Randy.

Don't expect a good taxidermist to do a hurry-up job. But do ask for an approximate cost and completion date. Then, be patient! It's worth waiting for if it's worth mounting. Prices vary from one taxidermist to another depending on the size of the operation, time devoted to it, backlog of work, and particular style of mounting. Reputation is the most important qualification, not price. Fish can cost anywhere from $2.00 or so per inch for a hobby or beginning taxidermist to $5.00 per inch or more for a reputable pro in demand. Prices don't always determine quality, though. Check the work and reputation, then decide. Taxidermists are uniquely individual in talent and attention to detail. A superb bird mounter may be only modest on fish and vice-versa. Check around.

Call ahead with a large specimen. Sometimes a shop will simply not have room to store a large trophy and you'll have to keep it until the taxidermist makes space.

Randy and other taxidermists do a lot of remounting or refurbishing of old trophies that are faded, damaged, or deteriorated with age because primitive early mounting methods were used. Such cases are best handled on a one-to-one basis. Call first and explain the situation, then take your old trophy in for examination. A good taxidermist will give cost and time estimates only if salvage is possible. Sometimes it's not.

"Pets are a big thing these days," Randy says. "Dogs, cats, birds, or what have you. You'd be amazed at the call for these!"

Exotic birds from game farms are also popular. Make sure they're obtained legally. It's against the law to buy and sell wildlife or fish taken in the field.

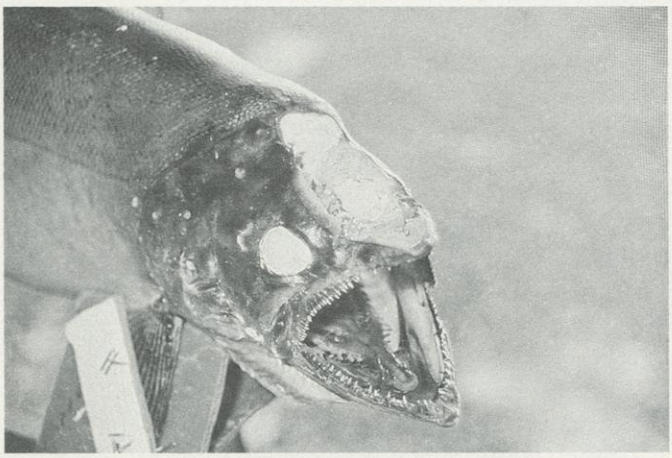
Many new innovations continue to come into the industry. Freeze-drying is among the most revolutionary. The unit to do this work costs over $15,000! Drying a raccoon in a freeze dry vacuum can take 12 to 14 weeks and use up $180.00 in electricity. These costs have made it more economical to do many small mounts rather than a few large ones. The results are fantastic and life-like, but the process is still relatively rare.

Synthetic mounts are also new and growing in popularity. For instance, an angler may catch a large tarpon 2,000 miles from home, weigh, measure, and photograph it, then release it alive. Next step is to have the taxidermist build a synthetic duplicate to match the original. Not something for everyone, but certainly a good idea, especially for the fish.

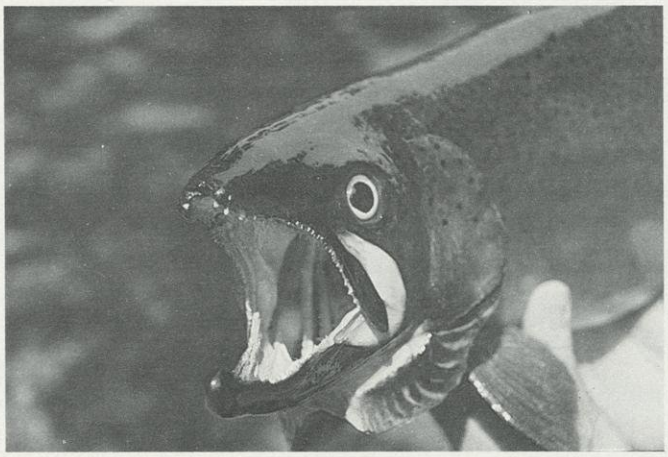
On Randy's back porch, dozens of fish hang air-drying in intermediate stages of mounting. They range from a four-inch bluegill to a seven-foot sturgeon. Fins are reinforced with cardboard or pins to dry in the proper "flair" position. Damaged areas are being repaired with plaster. Eyes have been removed and teeth are ready to be shined or painted. Gills are hung up to dry, waiting to be painted red, almost like an auto body shop. All the messed up, damaged stuff that comes in the door leaves like new—sometimes even better! Scars, broken fins, bullet holes, etc., are carefully repaired. Fins are lined with a flexible material to avoid brittleness. All these eventually turn into lifelike, beautiful facsimiles of the live animal.

Finally, when the customer comes in to pick up the trophy, the taxidermist makes suggestions for its care and display.

"Sometimes you wonder why you ever went into the business," says Randy. "But, if you love it, you just wait for the customers' smile and twinkling eyes when



Before: a trout in Randy Tripke's shop. Drying out, plastered and eyeless, it's being prepared for taxidermy.



After: the final product, ready for Tripke's display wall.

they see their trophy completed. There's a unique reward there in that subtle moment. When they leave, you think about which bill to pay, go to the freezer, pull out a fish and start all over."

So long as hunting and fishing stir our hearts and minds, we will dream of our own personal trophy, whatever it may be. Hope springs eternal on the next cast, fence row, river bottom, or snowy woodlot. When it happens, the taxidermist can be part of the picture and help to preserve your special memory. May you need one this season!

New law for taxidermists

A new law that will reinstate licensing and set up standards for the practice of taxidermy in Wisconsin will go into effect this year. Licensing was reinstituted by the legislature at the request of the Wisconsin Taxidermist Association (WTA) and DNR after abuses and problems surfaced as a result of deregulation in 1980.

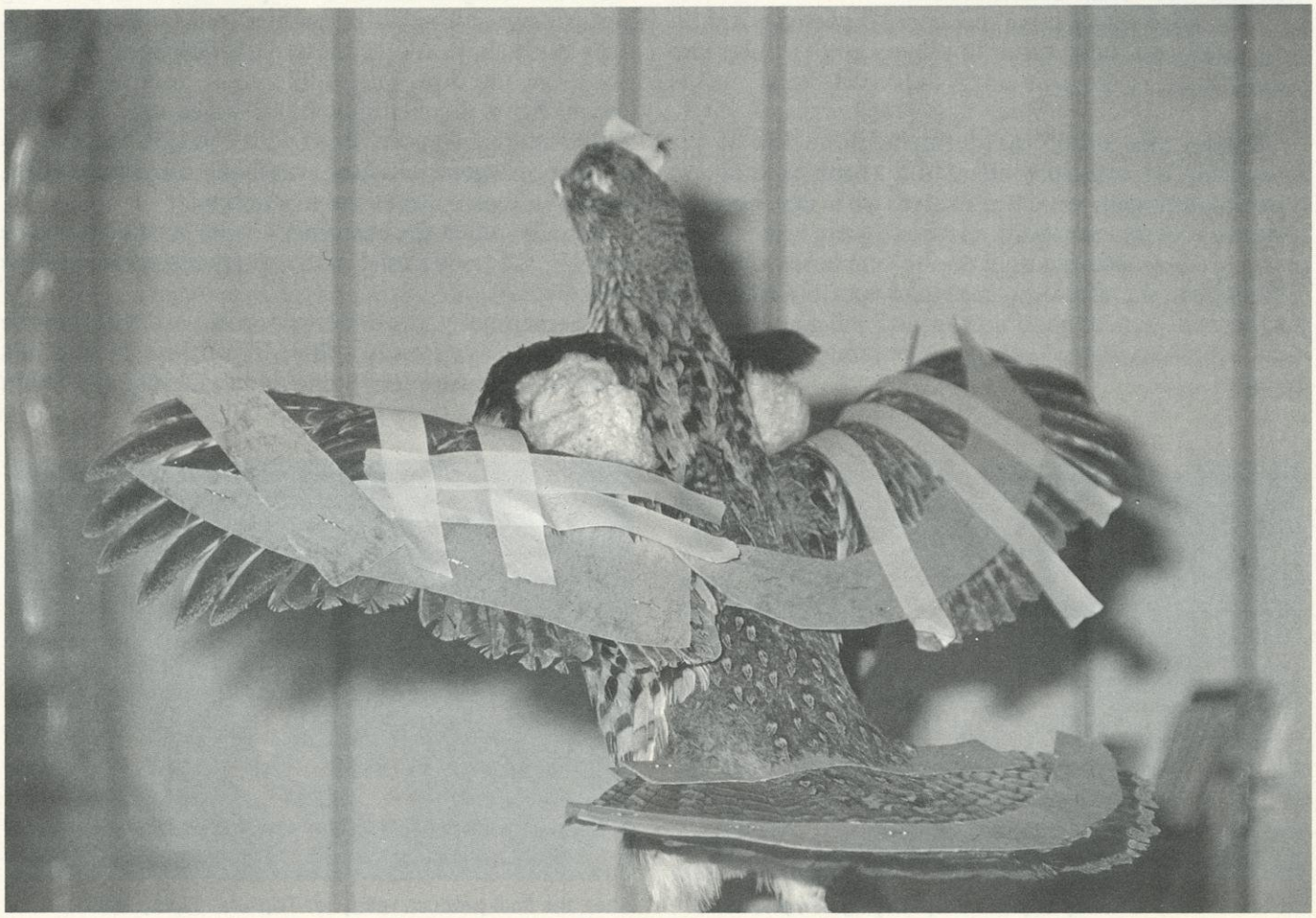
The new law will give taxidermists special possession limits on wild game and fish, and establishes conditions for storage of specimens to keep customer items separate from those owned by the taxidermist. It provides for DNR inspection of taxidermy establishments and requires that records be kept of transactions involving wild animals and fish. The license fee will be $50 and includes a fur dealer's license. There are an estimated 600 to 700 practicing taxidermists in Wisconsin with about 300 more student and part time operators.

To date, exactly how sale of wild animals and fish will be handled is being negotiated between DNR and the WTA. After deregulation a handful of unscrupulous operators were found to be illegally buying specimens from a few anglers and hunters who operated commercially. This led the WTA and DNR to cooperate in seeking legislation to correct the abuses.

Hearings and consultations with taxidermists to establish details of the new rules are currently underway.

Taxidermist Jack Lemke, past president and current member of the WTA Board of Directors helped spearhead the drive to reinstate the license. Said Lemke, "We want the taxidermists, DNR, and the sportsmen to go down the road together. We all must have a deep concern for wildlife and ethics."

DNR law enforcement specialists say this: "By and large, the taxidermists are a fine group, but like any business, a few bad apples can hurt them all. We want to get rid of those bad apples before they hurt the good ones. Our dealings with the WTA have shown they are a very responsible group of individuals. They want an honorable profession and so do we at DNR."



Taxidermist Tripke says careful drying is an essential part of the process.

Junior Rangers

A new nature education program called "Wisconsin Junior Ranger" was launched at 32 state parks last year and nearly 10,000 youngsters and their parents participated. The response has been enthusiastic. One parent remarked that the Junior Ranger Program is "a special service that says thanks for visiting our state parks."

Junior Rangers receive a workbook of self-guided outdoor activities. It is designed both for children from kindergarten to third grade and for their parents or supervising adults. With the book to guide them, they set off on park trails to examine such natural features as tree leaves, bird and animal habitats, smells and sounds of the forest, and even the shapes of natural objects. The program encourages family interaction and learning. It helps children develop an active awareness of the natural world around them and can lay the foundation for responsible environmental stewardship by the next generation.

The Junior ranger program is a family affair. Photo by Laurie Osterndorf

Scheduled for the future is a "Wisconsin Explorer" program for fourth through sixth graders. Its activities will include tracking, deer stalking, fern forms, and more.

After completing their assignments, children are awarded a certificate and a Junior Ranger sew-on patch. The Junior Ranger workbook also features coloring pages and follow-up activities, which can be completed on the trip home or in the child's own back yard.

Parks for Mobility Impaired

"A Guide for the Mobility Impaired," a new brochure, will soon be available to help people who use mobility aids, including wheelchairs, discover Wisconsin state parks. The guide examines state parks and forests one by one, and gives accessibility ratings of excellent, adequate, or minimally accessible for each. The brochure was prepared by a paraplegic using an electric wheelchair.

Pattison State Park near Superior is accessible to the mobility impaired. Facilities of some type exist at most other parks and more are being installed. Photo by Don Brereton

DNR hopes the brochure will encourage people with handicaps to explore and enjoy the out-of-doors, seeking out the properties and campsites which best meet their specific needs. The brochures will be available soon at all parks and forests, or by writing or calling the Bureau of Parks and Recreation.

Park inquiries. To request information about any state park call or write:

DNR Bureau of Parks
Box 7921
Madison, Wisconsin 53707
608-266-2181

Use this address when ordering printed materials, and when asking for additional information on any topic in this almanac or any other state park item. Information on a specific park, such as opening and closing dates and reservation information, is best obtained from the park itself.

Reserve a campsite by mail

About 40,000 campers per year take advantage of the Wisconsin state park campsite reservation system. By doing so they avoid the uncertainty and tension of possibly being turned away from a full campground upon arrival.

Reservations can only be made by filing an official application form. Forms can be picked up at state park and forest offices, DNR district offices and the department headquarters at 101 S. Webster Street, Madison. They can be obtained by mail by writing the Bureau of Parks, Box 7921, Madison, WI 53707. Reservations cannot be made by phone, but you can request forms by telephone at 608-266-2181.

The completed form should be mailed or delivered in person to the state park or forest where the reservation is requested and must arrive at least seven days before the desired reservation date. The camping fee, plus a $3.00 reservation charge, has to accompany each application, and applicants must be in the camping party that will occupy the reserved site. Applications for any given year cannot be postmarked before the first working day of that year.

Reservations are accepted for the season that begins May 1 and ends September 30, except at Peninsula Park, where reservations may be made through the last weekend of October. The minimum reservation period is two consecutive days (three for a holiday weekend) and the maximum 21 consecutive days.

Unfortunately, demand occasionally exceeds the number of sites available, especially at the five most heavily used parks (see **Explore and Enjoy**), and especially on the three major holiday weekends: Memorial Day, Fourth of July, and Labor Day. It is not unusual to receive more than 3,000 reservation applications at Peninsula during the first week of the year.

If you are unable to get a campsite at the park you first request, consider trying another. The 100-page guidebook, **Wisconsin State Parks: Explore and Enjoy,** can help you discover which of the more than 60 state park areas best fits your needs. The guidebook is available at all state parks, or by sending a $6.00 check or money order (no cash please) to: DNR — Parks, Box 7921, Madison, WI 53707.

Volunteers

Each year, hundreds of volunteers work thousands of hours in Wisconsin state parks and forests providing services that would otherwise not be possible. And the volunteers like to do it! They say it gives them a feeling of self-satisfaction and accomplishment, gives meaning to their leisure and offers experiences not possible in paid employment while at the same time letting them meet people with similar interests.

Think you might like it too? No matter what your interest or skill, there's bound to be a rewarding volunteer niche to match. State park and forest volunteers do everything from leading nature hikes to organizing evening programs or picking up litter. In fact, parks such as Heritage Hill are operated entirely by volunteers. Volunteer organizations also operate the concession service at Devil's Lake, the golf course at Peninsula and the ski hill at Potawatomi State Park.

Wisconsin recently began a campground host program patterned after some started by the US Forest Service and a few other states. Volunteer hosts greet and provide information to other campers and receive a free campsite in exchange. A list of DNR campgrounds seeking volunteer hosts for the 1986 season can be obtained at any state park or forest. The only requirements are an interest in camping and a desire to meet and assist others.

Volunteer at Hartman Creek State Park. The program can accommodate just about every kind of talent. Photo by Lois Haugner

If you're interested in the host program or any other volunteer service and would like more information, stop at any state park or forest for a visit with the superintendent. It could open the door to a rewarding summer in Wisconsin's beautiful outdoors.

Park Birthdays

One state park and one state forest will be especially popular this year among people who like birthday parties. Devil's Lake chalks up its 75th anniversary in 1986 and the Kettle Moraine State Forest observes its 50th. Aside from the regular celebration of the outdoors that can be seen daily from dawn to dusk in these two well known places, many special events are planned.

Both will publish and sell attractive color booklets commemorating the anniversaries and detailing with photos and stories the history, unique geology, natural attractions and recreational amenities of Devil's Lake and the Kettle Moraine.

Devil's Lake will feature music, a steam train, horse and carriage rides, dances, a photo contest, and fall color celebrations. For a detailed schedule call or write Devil's Lake State Park, Route 4, Box 36, Baraboo, WI 53913 (608/356-8301).

The Kettle Moraine's birthday party will include dedications of the Beulah Bog Boardwalk and Bald Bluff Scenic Overlook and Natural Area, and a special nature hike "Visit To A Stone Elephant." The full schedule of events is available from Kettle Moraine State Forest, Hwy. 59, Eagle, WI 53119 (414/594-2135).

State Recreation Areas

By Bruce Chevis

Most people know what to expect at Wisconsin state parks and forests: hiking trails, swimming beaches, quiet landscapes and abundant picnic areas.

But State Recreation Areas are a new breed of state properties somewhere between campgrounds and baseball diamonds. They are managed to fill a void between the passive outdoor activities of state parks and the structured outdoor activities of municipal playgrounds.

Wisconsin has three recreation areas: Bong, in Kenosha County; Browntown-Cadiz Springs in Green County; and Hoffman Hills in Dunn County.

Bong is a good example of what recreation areas are intended to be. Its offerings go beyond traditional state park activities. Hobbyists enjoy off road motorcycling, hunting, hot air ballooning, powered hangglider flying, dog trials and model aircraft flying. These activities require large tracts of land and the centerpiece of the Bong Recreation Area is a 1,100-acre special use zone. For example, on a typical spring weekend the west end of the special use zone may host dog trials while model airplanes use the east end. Most special uses are scheduled for specific days, in order to give all participants the space they need.

The public has indicated that state recreation areas are a popular way to satisfy the diverse recreation activities prevalent today and use of these areas is expected to grow.

State recreation areas can handle a broader range of outdoor recreation activities than parks. Photo by Mike Ripp

Readers Write...

We enjoy birdwatching and often go to the Cassville area for this. We have watched birds near the road leading into the Eagle Valley Sanctuary. Is it okay to walk up the road into the sanctuary or is this off limits to bird watchers?
Robert Bickley, Stoughton

The Eagle Valley Sanctuary includes approximately 1,400 acres along three miles of the Mississippi River about eight miles north of Cassville. At the northern end of the property are the sanctuary's nature center and hiking trails developed by the Eagle Foundation. Public access is also provided by county and township roads which run along and through the southern portion of the sanctuary. The Eagle Foundation welcomes visitors to the sanctuary property, but asks visitors to please not venture off the trails and roads.

The trophy deer shown on the back cover of the November-December 1985 issue was not shot in northwest Wisconsin. It was taken in Richland County by Mrs. Janice Beranek during the 1983 season. The buck scored 222 4/8 and ranks thirteenth in Wisconsin firearms records for non-typical white-tailed deer. I took the photo of Mrs. Beranek and her record whitetail at the Richland Center Police Department registration station.
Paul Brandt, DNR wildlife manager

I was very pleased to read the article about the Wisconsin Natural Areas Match Grant Program in the November-December 1985 issue ("New public-private partnership will preserve rare properties"). I have been interested in and supportive of protecting Wisconsin's very special natural areas for many years and was thrilled to learn about your exciting new program. The Nature Conservancy, DNR and all others involved deserve much credit.

My only question is, if I or others would like to make a private contribution to the Wisconsin Natural Areas Match Grant Program, how would we go about doing so? Please fill us in. Thank you.
Beth Eiseman, Madison

Many people have asked the same question. Contributions may be sent to: The Nature Conservancy, 1045 E. Dayton St., Room 209, Madison, WI 53703 (608-251-8140). They should be designated for the Match Grant Program. Every dollar given will be matched by an additional dollar of state funds.

Wisconsin Natural Resources' special acid rain supplement is an excellent presentation on the problem and we have distributed it to all our members in Wisconsin. Thanks for a good job.
Marchant Wentworth, Conservation Associate,
The Izaak Walton League of America, Inc.

Your interest is shared by many other organizations concerned about a clean environment. The comprehensive summary and analysis of research findings published in the magazine provided a basis for an acid rain control strategy recently recommended by the Governor's Acid Deposition Review Committee. The committee's recommendations on controlling sulfur dioxide and nitrogen oxide emissions in Wisconsin have been incorporated into a bill which is now before the state legislature.

Assembly Bill 694, coming up for consideration during this legislative session, would open a 1986 Wisconsin bear hunting season. Last year's season closing, due to a disagreement regarding the use of dog packs in hunting, gave Wisconsin black bear a much needed respite.

I am in favor of a bear hunting season, but not if the use of dogs is permitted, which bill 694 would allow. Northern Wisconsin provides ideal habitat for black bear and is by no means overpopulated by them. C.F. Leonhardt, Redgranite

If there is a 1986 bear hunting season in Wisconsin, it will only be through the cooperation of all parties involved. Unless the legislature passes a compromise bill before the floor period ends in March, there will be no 1986 Wisconsin bear hunting season.

Continued on page 22

Readers Write...

HELP US DECIDE!

I live near Weyauwega, a small town in southwestern Waupaca County, an area of dairy farms, lakes, rivers, marshes and small woodlots.

I have had an experience that is giving me mixed feelings on deer hunting, human nature and doing what is right.

I hunt in a triangular shaped woodlot of approximately 18 acres. In our area there are numerous such island woodlots surrounded by corn and alfalfa fields. All the land is privately held and hunters are local farmers, their families and friends.

It was about 9 o'clock opening morning of the 1985 deer season. I was situated dead center in this woodlot. I heard five shots to the west of me. I knew my brother-in-law was sitting along the fenceline and became alert. A few minutes later, I saw seven deer, does and fawn, coming down a wooded hill. Their speed told me someone or something was moving them. They were trotting through the woods and moved off to the north without coming into range. I was watching the first of them enter the corn stubble when I noticed a bit of movement out of the corner of my eye—a solitary deer sneaking down the hill.

This single deer and the recent shots sent the red flag up in my mind—buck. I maneuvered as close to the crest of the hill as I could without betraying my position. The deer was coming up the hill toward me—it had horns. He lingered a couple of minutes below the crest, out of sight. All of a sudden, he rounded the hill at a run. He ran just north of me, seemingly not noticing my presence. Up with the gun, I shot. He dropped immediately.

I walked over to the animal. I had not led him enough and caught him high in the back just forward of the hind quarters. The deer was down, immobilized, so I shot him in the neck. The deer now dead, I decided to walk the 30 yards back to my stand for my thermos. I had an urge for a cup of coffee. Picking up my thermos, elated that I had the good fortune to see and kill a buck, I went back to dress it out. Returning, I saw a blaze orange hat appear over the crest of the hill. The other hunter walked up to the deer and said, "Gutshot—just what I thought."

Now, I'd never seen that man before, but he told me he was hunting on Ray's land and that he had shot the deer. This surprised me because the buck was moving when I shot it. Yet, the stranger claimed he had shot the animal only 75 yards from me. He described his stand and shot, and I calculated that he was 325 to 350 yards from my location. We proceeded to discuss ownership of the deer.

He said that the deer had lain down three times between his shot and where it died. He then told me of the unwritten law that the first hunter to put a killing shot into a deer owns the deer. I told him that a gutshot deer could cross three property boundaries before dying.

I knew how jealously regarded fencelines are and the general opinion on twice or thrice shot deer. Many of those attitudes grow out of trespassing and ruined hunts. It kept going through my mind that this jasper sat nearly on my fenceline and was claiming a deer in the middle of my woods—one that he had gutshot, but that I had dropped and finished it off. There he was on his knees, at the deer's belly, pressing for an agreement that it was his deer. I was so angry, thinking how I would never have approached another hunter as he did me and questioned ownership. I walked back to my stand; he was dressing the deer. I sat on my stand and fumed about what a fool I had been and was.

Finally, I cooled down and walked back and told him he could drag the deer down the hill and drive up the lane to get it—save him some work. He chose not to!

While I've never attended any formal hunter safety programs, I didn't go without training. I learned from a conscientious uncle in the northwoods. Included in his training were safe gun handling, courtesy and "wait for a good shot." Especially in an area with a high hunter concentration—"a good shot or no shot."

I've mulled all this over in my mind since that day, and I cannot honestly say whether I made the right decision or not. The other hunter has "his" deer, but my hunting companions and neighbors look at me funny when I tell the story. The decision was made. I'm not looking for justice. I'm just looking for your opinion:

Whose deer was it?

Jim Preuss, Weyauwega

Well, readers, what do you think? Write and tell us.

A HAWK CALLED THE BIG BLUE DARTER

Cooper's Hawk and Quail. *Sculpture by Ron Tepley, 5112 Four Mile Road, Racine, WI 53402; courtesy of Leigh Yawkey Woodson Art Museum*

Research has concluded that the Cooper's hawk can be deleted from the list of threatened species in Wisconsin.

George J. Knudsen, White Pine Nature Center, Hayward

Some animal names are descriptive, like the black bear, snapping turtle, or bluebird. Other animal names don't even give you a hint about an animal's appearance, color, or habits. Take the Cooper's hawk, for example; it got its name because a Mr. Cooper named the bird years ago. Over the years, nicknames evolve for animal species just as they do for people — from their appearance or behavior. If your friend has red hair, it seems he just has to be called "Red," or if he's six-foot five, weighs 290 pounds, and is strong, naturally, he's "Moose!" Similarly, the Cooper's hawk is nicknamed "Big Blue Darter" for good reason.

Cooper's hawks hunt the forests and brushlands for their meals. They're swift, fierce and keenly sighted and are so maneuverable they put computerized airplanes back into the Stone Age. Many times I've seen this feathered bullet quickly close the gap between itself

DDT once threatened survival of the Cooper's hawk in Wisconsin, but since use of that chemical was banned, the bird's future looks healthy. *Photo by Robert N. Rosenfield*

and a frantic bird. Then, in a puff of feathers, collide with its prey, take it to a nearby perch or to the ground, pluck its feathers and have it for dinner, piece by shredded piece. These projectile-like flight spurts combined with its gray-blue back have earned it its Big Blue Darter name.

In flight, the Cooper's is easily recognized by its series of rapid wing beats followed by arrow-straight glides. Compared to most other hawks, it flies relatively low. But on occasion, I've seen a Cooper's hawk spread its shortish wings, fan its long tail, and soar at great heights — no doubt pretending to be a big red-tailed hawk!

Two close relatives, the larger goshawk and the smaller sharp-shinned hawk, resemble the crow-sized Cooper's in silhouette and flap-glide pattern. Bird watchers often scratch their heads wondering which species just shot by in a blue streak.

Since these three hawks are primarily fueled by eating other birds, they are known as "bird hawks," but they'll eat other critters — meadow mice, ground squirrels, small snakes, etc. — when they get the chance. The largest bird I've seen a "Big Blue Darter" attack was an adult hen pheasant 30 feet ahead of me as I was hunting rabbits. The pheasant managed to escape into blackberry canes. I doubt that the hawk even saw me, being so intent on nailing that pheasant.

Hawks have always fascinated me, the Cooper's being one of my favorites. At age 12, I met this species on a very personal basis. Walking in an oak pine forest I became the subject of verbal abuse delivered by two of these toughies. Circling above me, landing on branches with the force of anger, and circling some more, they really bawled me out with constant kek-kek-kek-kek calls. They sure did get my attention, and I saw their washbasin-sized twig nest high in a nearby white pine. Being a kind of dumb kid, I climbed the tree. The higher I climbed, the bolder one of them became, probably Mom Cooper's. Peeking into the nest that contained three fuzzy, white babies, I was treated to a whack on the head. I descended the thirty to forty feet in a hurry, with one parent hawk still giving me fits!

During the 1930-1950 period, I regularly saw these woodland-loving hawks while on my nature study outings. Then, after World War II, DDT entered the environmental picture and, along with other birds of prey, the Cooper's hawk population dropped to a record low statewide. From the 1950s to the '70s, I saw an average of less than six birds a year. Not

A successful Cooper's hawk hatch from strong, not chemically weakened eggs, means that again—big blue darters from little fuzz birds grow. *Photo by Robert N. Rosenfield*

surprisingly, in the '70s the Cooper's hawk was placed on Wisconsin's threatened species list, where it remains to this day.

After the ban on use of DDT, things finally began to turn around for the Cooper's. From the late 1970s to the present, I have observed a very encouraging upswing in numbers. Other bird watchers and professional biologists have noted an increase, too. Personally, I feel the Cooper's hawk is rebounding toward a healthy future, and I sincerely hope so. I for one, am pretty fond of having the "Big Blue Darter" around. You can help support the preservation of endangered and nongame wildlife by donating to the Endangered Resources Fund on your Wisconsin income tax form.

The Cooper's hawk returns

Robert N. Rosenfield, John Bielefeldt and Raymond K. Anderson all of UW-Stevens Point, with William A. Smith, DNR biologist

The radio-signal from the transmitter that was attached to a tail-feather of the Cooper's hawk was now very loud. Suddenly, the adult male hawk bolted from a stand of jack-pines, flapping fast and hard toward some foraging sparrows. At the last moment the songbirds detected the predator and plunged into the protective cover of a nearby shrub. But the hawk dove into the bush and then departed—holding its lifeless quarry. The Cooper's hawk then flew back to the nest with food for its three hungry offspring.

Although it had captured prey for its young several times a day during June and July, this was the only time we had actually observed a kill. The signal from the transmitter revealed the bird's foraging range and habitat use surrounding its nest.

The Cooper's hawk is listed as a threatened species in Wisconsin and since 1980 we have been investigating its nesting ecology. We looked at reproductive success, nesting density, toxic chemical levels in eggs, nest site habitat, and the reuse of these sites in subse-

quent years. Initial funds were provided by the Wisconsin Department of Natural Resources.

The Cooper's hawk is slightly smaller than a crow and is one of three short-winged, long-tailed forest hawks of North America. The others are the smaller Sharp-Shinned hawk, often confused with the Cooper's and the larger Goshawk. All three are fast and agile enough to prey mostly or partly on birds. The Cooper's takes mainly medium-sized prey such as blue jays.

In Wisconsin, the Cooper's hawk begins the breeding season with courtship and nest-building during late April and early May. A clutch of four to five eggs is incubated into early June, and the young fledge in July.

The Cooper's hawk was a common nester in eastern North America in the early 1900's, but populations were greatly reduced by human persecution. Illegal hunting and trapping persisted into the 1940's. From 1929 through 1940, band returns from nestlings showed an annual loss due to illegal shooting of first-year birds that ranged from 28 to 48%. More Cooper's were shot than some legally hunted ducks during those years.

The widespread use of organochlorine pesticides, especially DDT, beginning about 1947, further added to the hawks' peril. These long-lived contaminants became concentrated in food chains, including those of hawks that feed on birds, the main prey of the Cooper's hawk. Correlations were reported between thin eggshells and the presence of high levels of DDE (the major breakdown product of DDT) in the hawk's eggs. The thin eggshells (16% thinner than eggs laid prior to 1947) resulted in eggs being broken in the nest and lower reproductive success. By the 1950's and 60's the Cooper's hawk had become a rare breeder in eastern US. This was further verified by reduced numbers of autumnal migrants at Cedar Grove Ornithological Station on the Wisconsin shore of Lake Michigan and at Hawk Mountain Sanctuary, Pennsylvania. By the early 1970's, however, there were indications that the population was recovering, but reports were contradictory. To date, the Cooper's hawk is designated as threatened in a number of eastern states including Wisconsin.

Because DNR had records of only about 40 nests from 1935 through 1979, we didn't expect to find very many when we began the nesting survey. However, naturalists, falconers, DNR personnel and others helped us locate more than 170 where we've been able to gather data.

To help find them on our own, we developed the technique of playing a tape recording of the Cooper's hawk alarm call while searching potential habitat in forested areas. We guessed that breeding birds might be lured to the taped calls because vocalizations play a key role in the day-to-day nest activities of adults. Birds sometimes responded to the tapes by flying right toward the sound source. When they sighted us, they usually flew straight back toward the nest. We followed and were able to confirm many nests.

Radio transmitters attached to tail feathers revealed the Cooper's hawk range and activities. *Photo by Robert N. Rosenfield*

The survey showed Cooper's hawks nest statewide in a variety of wooded habitats including deciduous, coniferous and mixed pine-hardwood forests. We even found nests in pine plantations in the Kettle Moraine State Forest. Nesting densities varied around the state, but the highest, about four nests in 10 square miles, was found in southeast Portage County. This is an area of rolling farmland interspersed with oak woodlands. To the best of our knowledge, this figure represents the highest known nesting density of Cooper's hawks in North America.

Further good news came from chemical analysis of 12 eggs sent to Patuxent Wildlife Research Center in 1980. DDT and other contaminants were found in all of them but levels were below those known to be harmful. Similar results came from Cooper's hawk eggs collected in other eastern states that year.

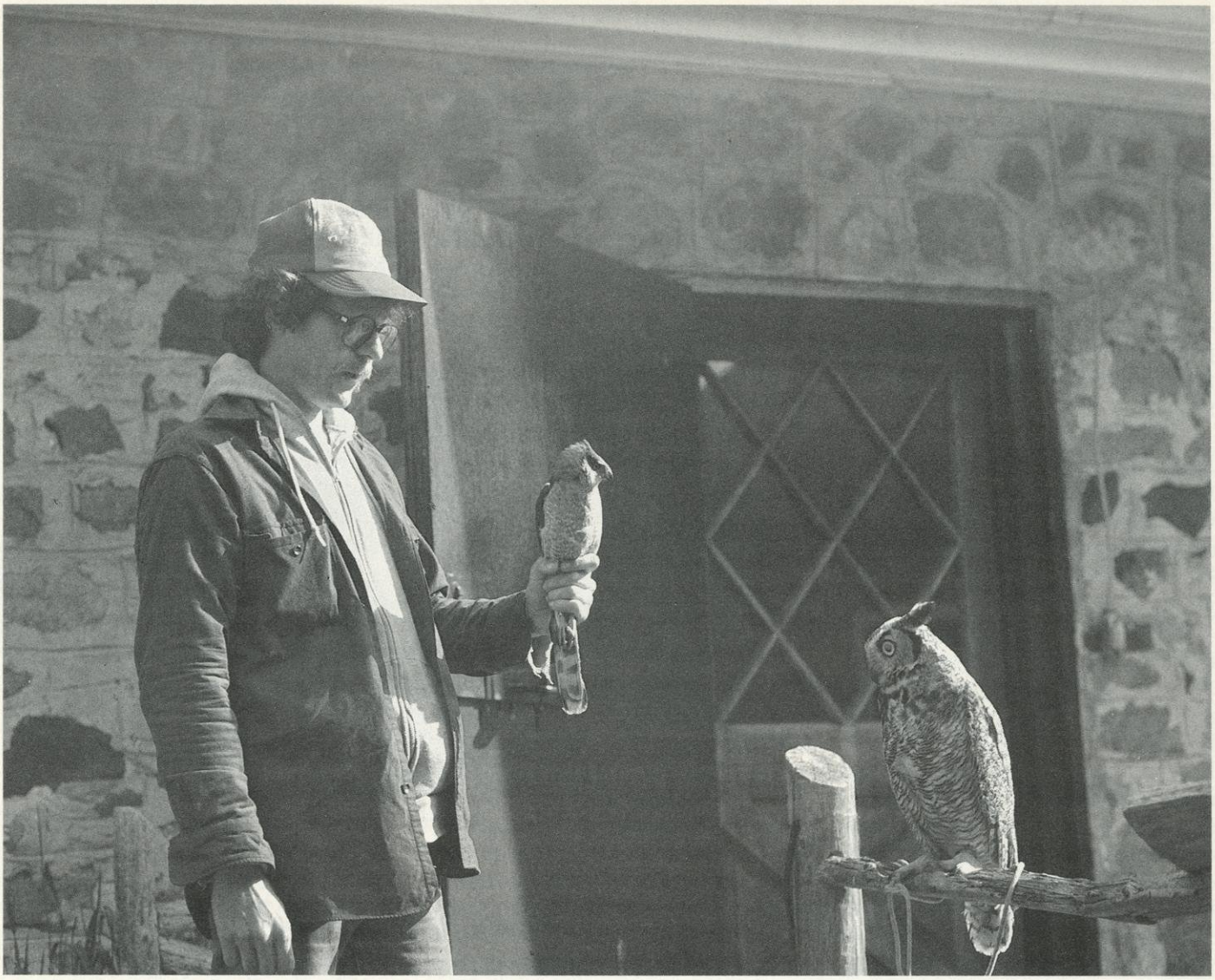
Along with the low levels of toxic chemicals, the average of almost four young per nest in our study is as high or higher than any other such data reported for this species.

Clearly, these findings suggest that a healthy population of Cooper's hawks exists in Wisconsin. Therefore, we have recommended to DNR that the bird be deleted from the list of threatened species.

Recovery of the population seems to have been a result of stricter regulations on pesticides, especially the Wisconsin ban on use of DDT in 1970, followed by the federal ban in 1972 and by the legal protection afforded all birds of prey. Migration counts along with breeding studies in other eastern states have also indicated an upward trend in Cooper's hawk populations. This recovery, which followed the ban on DDT in the US, is similar to that documented for both the bald eagle and the osprey.

Although the Cooper's hawk appears to be faring well, biolo-

Facing page: That awkward age—a month old Cooper's hawk. *Photo by Robert N. Rosenfield*



Researchers used a live owl as a decoy to help capture Cooper's hawks and locate nests. *Photo by Robert N. Rosenfield*

gists are concerned about the loss of nesting habitat which still poses a serious threat. Few data are available on the impacts of habitat change but fortunately our study provided some information. For example, the nests in pine plantations in the Kettle Moraine State Forest. We also found several nests within cities. The hawks bred in small woodlots while frequent human and auto traffic passed nearby.

Since 1983 our research has focused on documenting the year-after-year importance of traditional nesting sites. To determine this we trap and band adult hawks by setting a long high net near the nest tree and using a live owl as a decoy behind the nest. The owl is a blind bird donated to the study by rehabilitators. We camouflage ourselves nearby, waiting for the adult hawks to attack the owl, which they recognize as a threat to their nestlings. If all goes well, the hawk is entangled in the net and then banded. If the nest site is used the following year we try to recapture the parents to see if they are the same banded individuals or new unbanded birds. Site fidelity by the same hawks or site reoccupancy by new birds has allowed us to identify perenially attractive sites. Such reuse has stronge implications for the future of Cooper's hawks. It means that DNR can direct attention toward a relatively few sites should more intensive management become necessary down the road.

A solvent recovery system helps Quad/Graphics' new Lomira printing plant meet air quality standards. *Photo courtesy of Quad/Graphics*

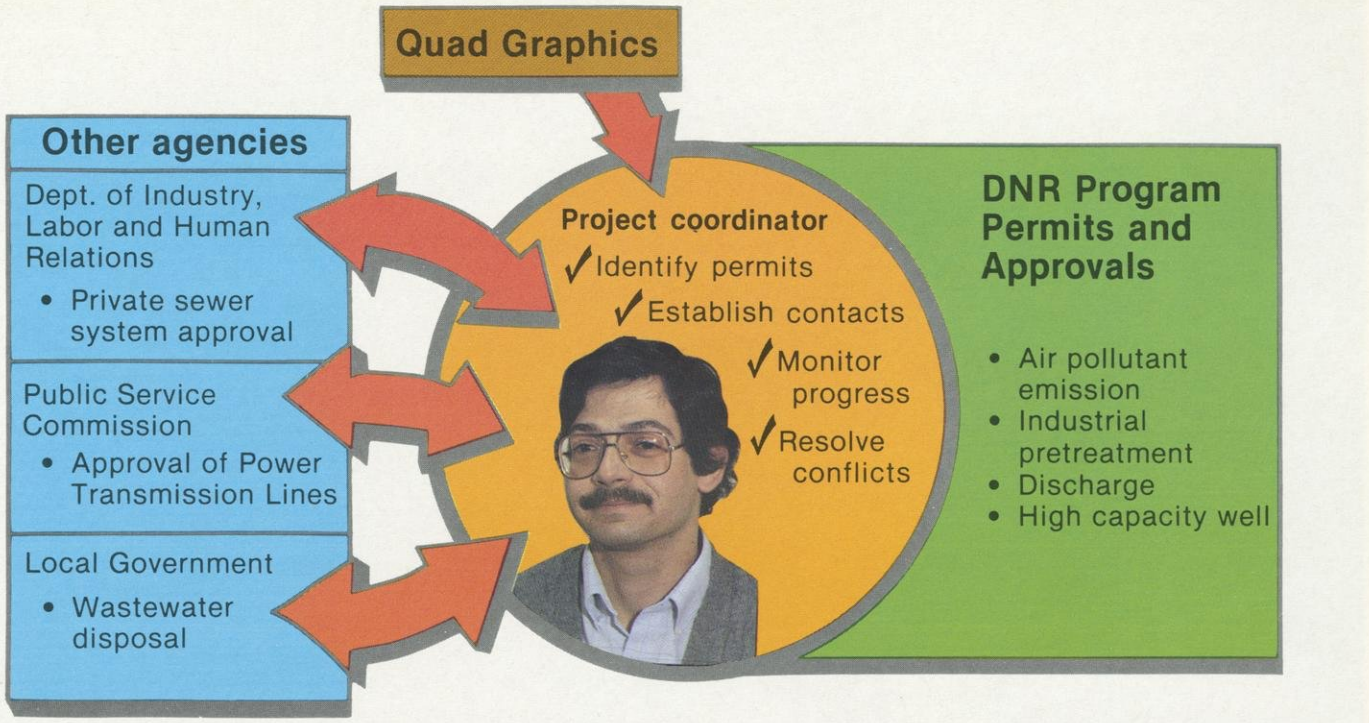
ENVIRONMENTAL PROTECTION WITHOUT PAIN

Steve Ugoretz, Environmental Specialist

When DNR appoints a special project coordinator, it helps business, avoids confrontation, keeps people happy and protects the environment. Here's a case in point.

A major Wisconsin printing firm wants to expand operations and stay in the state. But to meet air quality requirements it must locate its new plant in an area with clean air. In addition, to make sure the environment is protected, several permits are needed before the company can operate the plant. This brings representatives of the printing firm to DNR with a problem. "We want to expand in Wisconsin," they say, "but we need the plant running in time to meet contract commitments. What can you do to help us through the maze of permits and environmental reviews?"

For Quad/Graphics and other companies, large and small, the answer is project coordination. This process allows DNR to assign an individual employee to guide applicants through the state's often complicated network of environmental laws and procedures. The employee becomes a coordinator who can act as contact person and expediter for all department dealings with the applicant. Such special handling is most likely to occur when the project involves multiple permits and complex de-



DNR special project coordinator Steve Ugoretz moved the paper and speeded the permit process. *Photo by Bob Queen.*

terminations that cross lines of command such as district to district or central office to district. After an initial meeting with the applicant, usually with Ollie Williams, the department's permit coordinator, the advantages of appointing such an individual often become apparent. The coordinator may be either a DNR district or central office staff member. Because of their familiarity with many department programs and broad knowledge of state resources, staff members from the Environmental Analysis and Review Program are often chosen to follow through on this kind of assistance to industry.

The project coordinator's duties include ensuring that the applicant knows the requirements for all permits and other actions needed to carry out their construction plans. The coordinator must also establish and maintain communications with the applicant, negotiate changes needed to meet regulatory requirements or protect the environment, identify significant environmental concerns and work to resolve them. In a way, the job involves acting as an advocate for both DNR and the "client." The coordinator works to move the applicant's paper smoothly and quickly through the regulatory structure, establishes a schedule for consideration of the proposal and makes sure the schedule is met.

Quad/Graphics is a well-known Wisconsin printing firm with headquarters in Pewaukee and plants in Sussex and upper New York State. Committed to maintaining a strong presence in the state, Harry Quadracci, the company president, looked for an expansion site which met requirements of size, location, accessibility and, most importantly, clean air. He found such a site just north of the Village of Lomira in northeastern Dodge County. Acting rapidly, he bought an empty former canning factory and started the process of turning it into a major printing plant. The story has become well known as an example of cooperation between government and business. Perhaps less well known is the role of the DNR project coordinator in making sure the process would run smoothly.

Realizing that this project could be complex and that timing was an important factor in its success, Linda Bochert, Executive Assistant to DNR Secretary C. D. "Buzz" Besadny, appointed me to coordinate the department's regulatory and environmental review of Quad/Graphic's proposal. Before the firm's new rotogravure presses could roll at Lomira it needed an air quality emission permit, a high-capacity well approval and a municipal pretreatment approval. All three are handled by DNR.

The Lomira location, away from southeast Wisconsin, was chosen because there is little danger there of unacceptable amounts of ozone forming in the air when emissions from the printing plant occur. Ozone is unsafe to breathe and in the Milwaukee area, under certain atmospheric conditions, reaches unhealthful levels. Volatile Organic Compounds (VOCs) from various inks and cleaning solvents are common printing plant waste products and can be a component of ozone. DNR requires their treatment to protect the air before permits can be granted. Quad/Graphics proposed to install the proper treatment equipment and got the permit. The remaining permits have also been granted, based either on already-completed installations or adequate plans. The municipal pretreatment permit was necessary to make sure the heavy metal chromium is removed before the firm's waste water goes to the

local sewage treatment plant. Chromium is an electro-plating residue and will wind up at a safe hazardous waste landfill licensed to handle it.

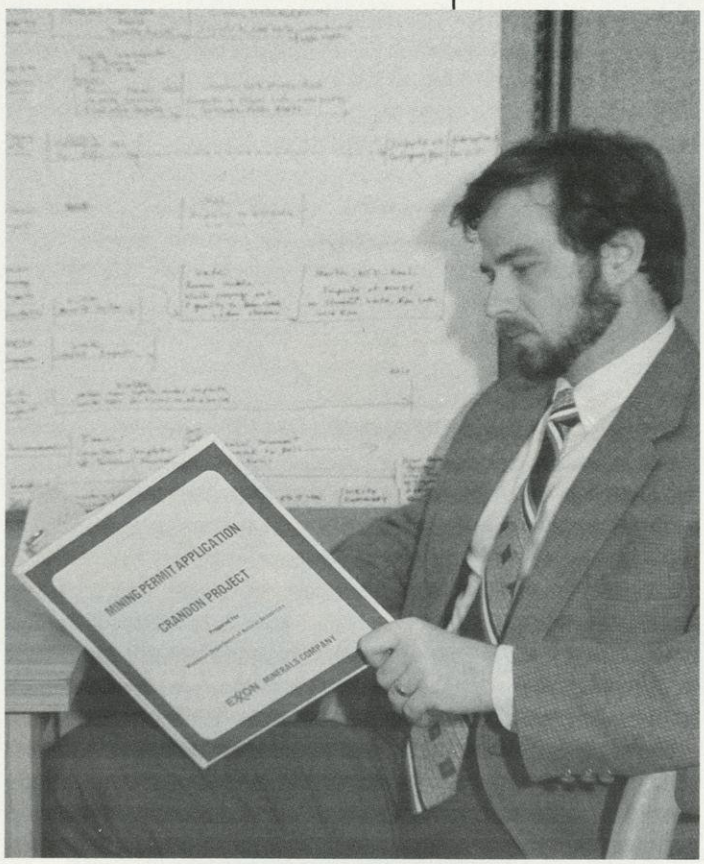
All of the paperwork on these items from both Quad/Graphics and DNR moved through me and I saw to it that each step was expedited so there was no delay. Other State agencies were also involved. Quad/Graphics needed an approval from the Department of Industry, Labor and Human Relations (DILHR) to use an existing septic system for treating sanitary wastes. In addition, as the plant grows, its demand for electric power will grow. Eventually, a new line to protect against power outages and supply more electricity will be needed. The Public Service Commission (PSC) must approve new transmission lines and DNR helps them evaluate environmental impacts. As project coordinator, I work with those other agencies, as well as, DNR to see that their requirements are met and that Quad/Graphics isn't held up for lack of one of their permits.

Another part of my job is to inform the company about issues that need to be addressed to protect existing resources in the area. Sometimes just checking with an area wildlife manager or park superintendent can identify potential problems before they occur or start the ball rolling towards solving them. For example, Quad/Graphics was advised to keep a nearby woods intact, if possible, to preserve local amenities, save greenspace and maintain various hardwood species.

All in all, DNR is happy with the cooperation it has received from the company and Quad/Graphics is happy with the way the Department has helped it towards the necessary approvals. Thus, by having one person responsible for tracking a project, and moving it through the permitting process, the needs of an applicant can be met while, at the same time, ensuring that environmental resources are protected. The confusion that multiple contacts can cause has been avoided and all parties are satisfied. This process has also worked for other projects, most notably the Exxon mine in Forest County. There the number of DNR permits and approvals and other agencies and interest groups involved has demanded close control of all activities. Robert Ramharter, an environmental specialist in the Bureau of Environmental Analysis and Review, has been managing this complicated project, dealing with the company, local governments, other state agencies, the press and the multitude of interest groups involved in this precedent setting project.

At DNR's district office level, the project coordinator role has often been assigned to the Environmental Impact Coordinator. For example, in the West Central District, Gordy Slifer has been the Department's representative on several projects. Gordy negotiated a complicated arrangement with Northern States Power Company in which NSP agreed to a land swap. The firm gave 87 acres that had been slated for the Tyrone Nuclear Power Plant for inclusion in the Tiffany Wildlife Area. In return, it received a high-speed rail turnout that will be useful if a coal-fired plant is developed on the site. In the Lake Michigan and Southeast Districts, DNR Environmental Impact Coordinators have upheld the public's environmental interests in negotiations with the US Army Corps of Engineers and with the Wisconsin Department of Transportation (DOT).

Whether dealing with a private company like Quad/Graphics, a utility, or another agency like DOT, an ounce of coordination has proven to be worth many pounds of confrontation. Indeed, the process of project coordination should continue to be an important part of the Department's future in dealing with business in a "user-friendly" way. It often leads to better respect on each side for the other's goals and responsibilities and to environmental protection without the pain.



Robert Ramharter, an environmental specialist in the Bureau of Environmental Analysis and Review, coordinates DNR permits and approvals for the proposed Exxon mine in Forest County. *Photo by Bob Queen*

Quad grateful

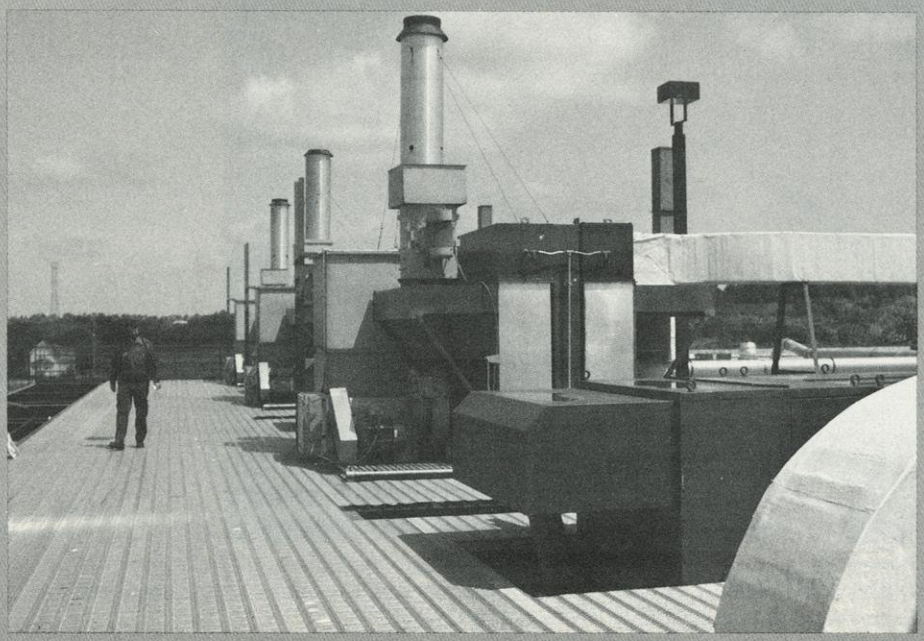
Quad/Graphics President,
Harry V. Quadracci, with his father,
Harry R. Quadracci, Chairman of the Board.
Photo courtesy of Quad/Graphics

We want to express our thanks for the response of the State of Wisconsin in obtaining the required permits and approvals involving our new Lomira, Wisconsin plant. We recently received our permit approval for the new Gravure printing operations and understand that the approval of the waste water pretreatment permit has been signed. While your department handled the bulk of the review, we have appreciated the response of all State of Wisconsin agencies in meeting the rather tight and restrictive schedules needed for our "fast track" project.

Based on our recent experience in other states, I admit to being doubtful of the assurances given by you and your Department last spring that the timetables involved could be met. Given the normal review periods which are allowed, we could have expected the permitting process to take anywhere from nine to 12 months. Instead, we were delivered signed permits within five months of our initial inquiry, less than two months following finalization of our permit applications, and at least one month ahead of our projected schedule for this work. And at intervals, the process was reviewed and kept on track to assure completion of all permit applications avoiding any potential disruptions in the process. The Department of Natural Resources staff is to be commended on their efforts and cooperation extended to Quad/Graphics personnel in seeing this project to conclusion.

The permitting for a Gravure printing plant is extremely involved and we have been educated as well as aided by the state. While one could say this is an isolated incident, we have always been assisted in meeting our expansion needs whether it be the permitting of individual web offset presses (more than 20 in the past 7 years) or the construction of new plants or plant additions (12 individual building projects involving over one million square feet of space). The cooperation of all state agencies has been the rule and not the exception. This latest project only serves to confirm our past experiences and again prove the value of cooperation between business and the State.

Harry V. Quadracci
President
Quad/Graphics, Inc.



DNR approval of air pollution control equipment was required for Quad/Graphics' Lomira expansion. The installation will be similar to this one at the the firm's Sussex site. *Photo courtesy of Quad/Graphics*

The UW-Madison Zoological Museum

Terry Devitt, Science Editor, UW-Madison

Photos by author

A place where, among other things, you can look at 8,000 mammal specimens, 10,000 skeletons and 12,000 bird skins.

For museum curator Frank Iwen, space is like money: There's never enough. But to Iwen, the man who cleans, catalogs and stores thousands of bird and mammal specimens for the UW-Madison Zoological Museum, the battle for space is the good fight. You never know, he says, what these collections will mean to future generations.

Few people are more drawn to the need for good museum collections than biologists. Iwen's point is well made, however, by the case against the pesticide DDT, a case made with the help of Wisconsin bird eggs, collected in the last century and squirreled away for decades before wildlife ecologist Joseph J. Hickey used them to study eggshell thinning in peregrine falcons.

"Twenty years ago," according to Iwen, "biologists first noted that the eggshells of some birds were getting thinner, thin enough so that eggs were inadvertently crushed by parent birds. Using our collections and others, Hickey was able to look at the thickness of eggshells through time and see exactly when the shells started to become thinner.

"He found that the eggshells remained constant in thickness until a period right after World War II, the time when DDT first began to be used widely. After that finding, it was only a matter of time before the link was made between DDT, its interference with calcium metabolism in birds and the thickness of eggshells.

"The point is that we really don't know how some of these collections are going to be used in the future. There was no way the people who made those collections in the 1800's could have seen how their eggs would be used."

With that maxim in mind, Iwen helps preside over what many consider to be one of the finest zoological research museums in the country.

"The key word here is research," says Iwen. "Although we do put up some displays for the public, our primary mission is to serve as a resource for university, state, federal and private sector researchers. The vast majority of our collection is not mounted, but prepared, cataloged and carefully stored for quick access by scientists."

According to Iwen, both the stature and collections of the museum have been enhanced by a climate of close cooperation between museum and DNR personnel. He says a sort of symbiotic relationship has evolved over the years.

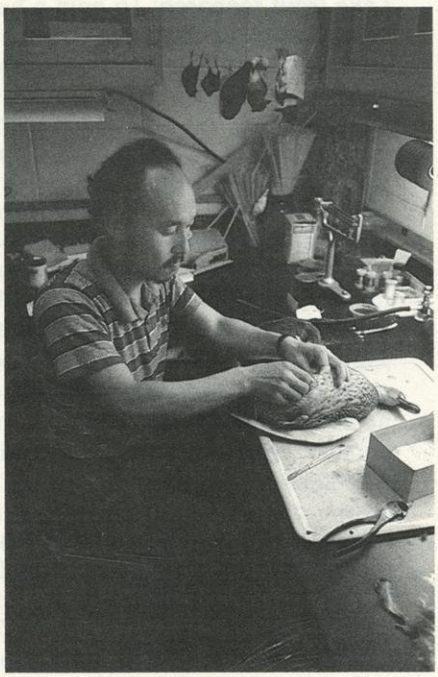
"Many of our specimens are obtained from wardens, wildlife managers and other DNR personnel who work in the field. In return, some specimens are mounted and loaned to DNR for use in traveling exhibits or at DNR district offices and headquarters."

But the relationship is deeper than just exchanging frozen carcasses for mounted birds and mammals. In a variety of ways, the Zoological Museum and DNR work together to provide scientists with raw material needed to further basic knowledge of fish, mammals and birds that help define the wild character of the state.

A program of particular interest is the wolf project. Iwen and others at the museum have worked closely with Dick Thiel of DNR's Bureau of Endangered Resources. Thiel, well known for his studies of Wisconsin wolves, uses the UW-Madison museum as a repository for dead animals he's found in the field.

"Our concern with this project is primarily that of preserving the wolf material for further studies," Iwen says. "I think this is critical because the wolf, an endangered species, is barely hanging on in Wisconsin. By preserving wolf skeltons and skins for researchers we can perhaps gain new insights into an animal that the state is working very hard at trying to reestablish.

"To many people, the value of studying skin and bones may not



Working closely with DNR, the museum cleans, catalogs and stores thousands of bird and mammal specimens for future generations.

be obvious. But it's frequently possible to learn as much about an animal by studying it in the lab as it is to learn about it by observing it in the field."

Dead wolves, found by Thiel and others, are brought to the museum where they are photographed, skinned and prepared for post-mortem examination by veterinarians at the National Wildlife Health Laboratory on Madison's west side.

"We'll do a rough preparation of the specimen here so that the veterinarians can look at it and take any organ samples they deem necessary. We are usually involved in the post-mortem where we look for signs of disease or some other trauma that may have led to the death of an animal.

"Sometimes people find animals that are so badly decomposed that only the hide and part of the skeleton are left. In a case like that, we can clean and prepare what's left and look at it to see if perhaps the animal was killed by a poacher, hit by an automobile or died of natural causes. Knowing just how these animals died is important. The information is crucial to people at DNR who are trying to get the wolf reestablished here."

Working in a similar vein, museum experts often lend their expertise to wardens who enforce state and national game and wildlife laws. With a staff of seven curators and other professionals, the UW-Madison Zoological Museum is a resource frequently tapped for expert witnesses as well as forensic determinations.

"We have helped law enforcement people identify things like eagle feathers," according to Iwen. "The trade in eagle feathers is, of course, illegal. There are people on our staff who can identify eagle feathers at a glance. We're frequently called on to give testimony as expert witnesses in cases like that."

Museum resources are also used by DNR wardens to become familiar with types of wildlife. For example, instead of just collecting one or two specimens of a particular bird, the museum makes an effort to collect a variety of specimens of a particular species. Individuals within bird species vary and they also display different plumage at different times of the year.

"Because we have the specimens readily available and centrally located, it's easy for wardens to come in and study the different plumage of ducks, for example. With this knowledge, it's frequently possible, by looking at the feathers, for a warden to tell if a

DNR, University Collaborate

There is a long tradition of cooperative efforts between the Wisconsin Department of Natural Resources (DNR) and the University of Wisconsin-Madison. That tradition continues today as DNR personnel and UW-Madison faculty, staff and students work together on dozens of projects. Although it is impossible to list all of them, a brief description of some will be of interest:

Lake trout research: To gain a better understanding of why stocked lake trout in Lake Michigan fail to establish self-sustaining populations, DNR is helping support the work of UW-Madison Sea Grant researcher Ross Horrall. Horrall and others are studying the history of native lake trout and comparing characteristics of trout spawning reefs in Lake Michigan with those in Lake Superior where remnant populations of lake trout still survive. This group is also studying the possible effects of lake contaminants on egg and sac fry survival as well as better ways to plant trout on their former spawning reefs.

Aquaculture: In the Great Lake region, aquaculture plays a key role in the management of fishery resources and has potential as a method of food production. Working through the Sea Grant program, scientists are conducting studies to determine the proper dietary and environmental needs of cultured fish species like walleye, trout and whitefish. This research is supported in part by DNR and takes place at the UW's Aquaculture Research Laboratory at DNR's Lake Mills Fish Hatchery. The lab is operated by Sea Grant and the UW-Madison College of Agricultural and Life Sciences in cooperation with DNR.

Acid Rain: The experimental acidification of northern Wisconsin's Little Rock Lake is a benchmark study that will help scientists understand what will happen to certain northern lakes if they continue to be dosed with acid rain. This study, which involves dividing the 45-acre lake with a plastic curtain, is being conducted by DNR, the US Environmental Protection Agency, UW-Madison's Center for Limnology, UW-Superior, the University of Minnesota, the University of Minnesota-Duluth and the US Geological Survey.

Water Resources Management: Teams of UW-Madison graduate students, working under the auspices of the Institute for Environmental Studies (IES) Water Resources Management Program, have worked closely with DNR specialists to study and produce comprehensive watershed management plans for Black Earth Creek in Dane County, Fox Lake in Dodge County and Lake Redstone in Sauk County.

Wetland Mapping: IES faculty and research assistants from the UW-Madison Environmental Remote Sensing Center have used satellite imagery, aerial photography and other remote sensing techniques to help DNR map Wisconsin's extensive and important wetland areas.

Remote Sensing: The Remote Sensing Center has also conducted studies for DNR and NASA to determine the potential of using Landsat satellites to monitor water quality of Wisconsin lakes.

Wildlife Damage Program: Begun in 1983, this DNR-administered program works through Wisconsin counties to help offset damage done to crops and property by wild animals. Students in the UW-Madison wildlife ecology department help DNR specialists prepare educational and informational materials and help formulate new ways to stem wildlife damage problems.

particular bird has been killed out of season."

DNR field biologists, according to Iwen, can use the museum's collections in other ways, too. "If a field researcher is interested, for example, in coming up with a radio collar for an animal that he'd like to study in the wild, he may begin his work at the museum by examining and measuring different specimens of that animal. It's nice if you have some specimens to work with when you're building a device for use in the field."

The museum also emphasizes public education. Working in concert with DNR, it has been able to bring at least part of its collection into the public eye. With, among other things, 8,000 mammal specimens, 12,000 bird skins and 10,000 skeletons, there is much to interest the public.

"We make a lot of our material available to people at the DNR who are on the educational side of things," says Iwen. "They go to many schools in the state to preach the message of endangered species and it helps if they have some specimens to show students. We frequently provide DNR with mounted specimens on a long-term basis for these kinds of programs."

If some materials are too rare or too fragile to loan out, museum personnel can make and supply facsimiles. For example, museum curator John Dallman in recent years unearthed the remains of several mastodons from farm fields near the Dane County town of Deerfield. He's also excavated remains of giant beaver, 500-pound creatures that once inhabited the state's lakes and streams. Since skulls of giant beaver are rare, it's not possible to loan out the museum's only intact skull. However, Dallman has made casts of this skull and of selected mastodon bones for display in the ice age exhibit at the Southern Unit of the Kettle Moraine State Forest.

Along with fossil bone facsimiles, bird skins and animal skeletons, museum curators also lend their expertise. All museum specimens require careful and periodic maintenance. Insect pests and rodents along with ordinary wear and tear can take a toll on a museum's collection. Even simple exposure to sunlight or excessive humidity can greatly harm a bird or mammal skin.

"Specimens need care even after they're mounted or prepared and that care requires a knowledge and understanding of how best to preserve certain materials," says Iwen.

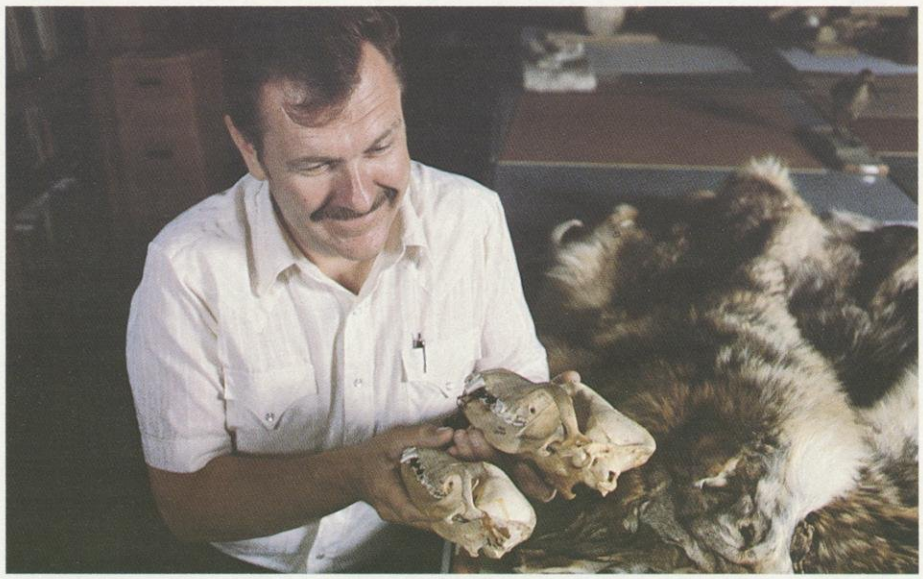
Using this expertise, museum curators have been able to help care for and preserve mounted specimens used at various DNR facilities. According to Robert Wallen, a naturalist at the MacKenzie Environmental Education Center, not only does the Zoological Museum occasionally provide skulls and specimens that would otherwise be difficult for state agencies to get, but it also lends the expert advice of its curators.

"They've helped us rejuvenate bottled specimens, brittle bones and worn mounts," Wallen says. "It's behind the scenes kind of work, but it's important. The various bird, bobcat, fisher, wolverine and other specimens in our conservation museum play an important role in our educational programs. Some of those materials are hard to come by. It's crucial that we keep them in good shape."

But while UW-Madison Zoological Museum curators interact in many ways with DNR, Iwen says the most important ongoing project from the museum's standpoint is obtaining specimens from DNR.

"I think that's absolutely essential. This material must be preserved and it takes a special effort on the part of the field worker to get it to us. We are very appreciative of those individual efforts made over the years."

Preserving wolf skeletons and skins for DNR research could prove to be a lifesaver for this Wisconsin endangered species.

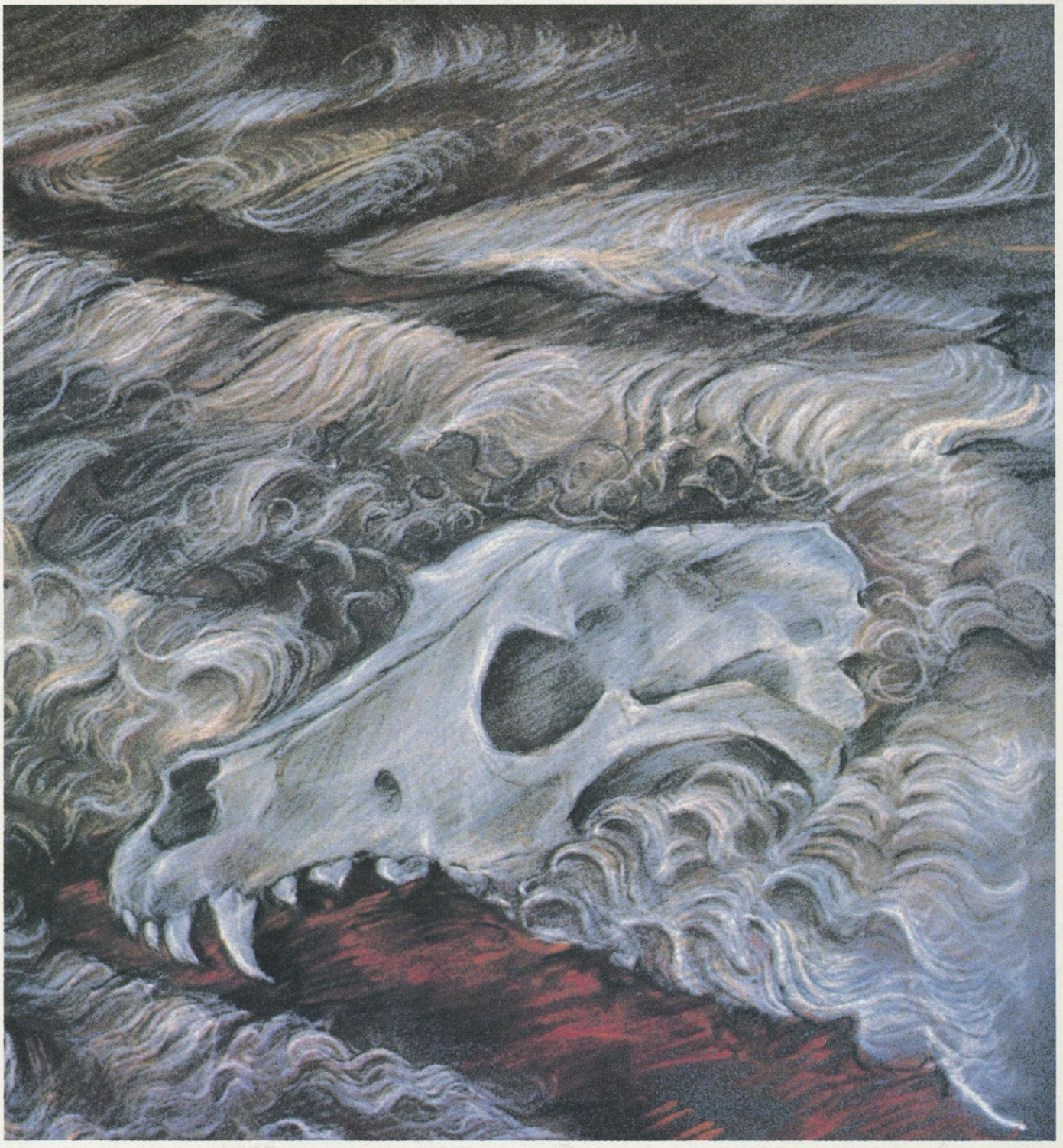


Museum Tours

To meet the educational needs of school and civic groups from around the state, special tours of the UW-Madison Zoological Museum can be arranged. Tour participants are able to view much of the mammal, bird, fish, reptile and mollusk collections.

At present, a special exhibit on the trade and exploitation of wild animals and the products made from them has been prepared by the university in conjunction with the US Fish and Wildlife Service. The exhibit, *Species for Sale,* is free and open to the public. The display is in Room 123, Noland Hall, 250 N. Mills St., Madison, and can be viewed between 8 a.m. and 4:30 p.m Monday through Friday.

Teachers and leaders of civic groups can arrange special tours of the Zoological Museum by calling (608) 262-3766. The museum is located on the fourth floor of Noland Hall on the University of Wisconsin-Madison campus.



Wolf's skull painting by Katherine K. Rogers

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