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NATURAL RESOURCES

June 1999 \$3.00



Catching
panfish

Saving Karner blues

Pelicans' feast

Burned by wild parsnip

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The buzz on cicada

It's a short season in the sun for this buzzing insect.

Story and photos by Charles Fonaas

Who among us hasn't heard that persistent hum in the trees on a warm summer afternoon? Most everyone knows the sound and many know the source, but few take the time to see the noisy little buzzer who simply insists on being heard.

Although more than nine species of cicadas are found in Wisconsin, the one most frequently encountered is *Tibicen canicularis*, sometimes called the Dogday Harvestfly. Although it may appear a bit fearsome to the person lucky enough to see one up close, it is completely harmless and the buzzing is its way of attracting a mate. The cicada may appear rather fly-like to some, but it is actually closely related to the much smaller aphids and leafhoppers.

The droning sound is produced by a pair of drumskin-like organs on the base of the abdomen. These vibrate at a high speed thus buzzing when the male cicada calls for a mate usually between mid-July and mid-September.

Once mating is complete, the female slits an opening in a small branch or twig with her ovipositor and deposits a small cluster of eggs. When the eggs hatch, the young nymphs drop to the ground, burrow down and begin feed-



Cicadas are more often heard than seen. Nymphs stay underground for years feeding on juices stored in tree roots. Full-grown nymphs climb the tree trunk, emerge as adults, mate and die within a week or two.

ing by sucking nourishing juices from the tree roots. The nymphs remain in their subterranean world for approximately two years before they are ready to emerge into daylight and begin their adult lives. Other cicada species have a 4–17 year life cycle.

After a cicada emerges, the 1–1.5 inch nymph climbs up the tree trunk for several feet, but usually stops below the branches. Then its skin splits lengthwise down its back and the adult cicada slowly pushes out.

As with several other members of the insect world, the adult cicada has a rather short life span, a few weeks, compared to its exceptionally long term juvenile stage. The adult cicada is not known to feed although it possesses a rather formidable looking mouth part that has been known to give a good poke to a careless handler or two.

If the robin is to many the harbinger of spring, then the cicada is perhaps an advance scout for autumn warning all who hear it to “enjoy the summer while you can for the end is near.” □

Charles Fonaas writes from West Allis.

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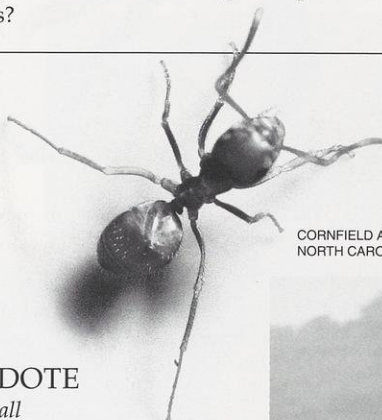


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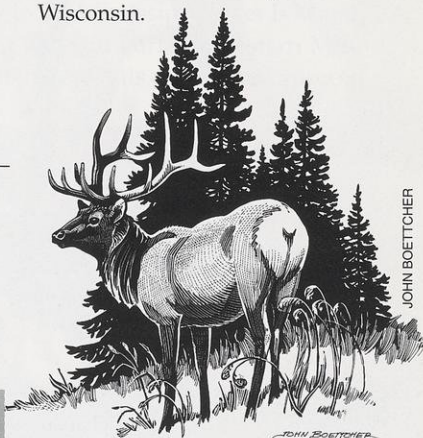
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FRONT COVER: A feeding male Karner blue butterfly.

ANN B. SWENGEL, Baraboo, Wis.

BACK COVER: Moonlight Bay Bedrock Beach SNA along Door County's Lake Michigan coast. For a map or more information, contact the State Natural Areas Program, DNR, Box 7921, Madison, WI 53707 (608)266-0394.

THOMAS MEYER, Mount Horeb



Pelicans' feast

The once-scarce
pouched birds now dine
in greater numbers at the
Mississippi River's
bountiful table.

On a late August day, a small flotilla, including two boats equipped for electrofishing and several flat-bottom boats, gathered near the mouth of Sommers Chute on the Mississippi River near La Crosse, Wis. Hungry for action, the wildlife and fishery biologists from the U.S. Fish and Wildlife Service and the U.S. Geological Survey waited in the boats for breakfast to begin.

On this particular morning, however, their companions had no appetite. The white pelicans they'd come to observe feeding left their loafing sites only under protest when a fishing boat strayed too close. The big birds seemed to prefer dozing in the sun rather than eating, moving only occasionally to stretch.

"The biologists were working on a project to determine what kind of fish the pelicans were eating," says Eric Nelson, wildlife biologist on the Upper Mississippi River National Wildlife and Fish Refuge. "Sampling was scheduled for three different sites on the river that pelicans consistently had been using throughout the summer."

The project is just one facet of a larger study of how white pelicans are distributed and which property they use along the Upper Mississippi River. Formerly a rare sight on the river, the white pelican is now becoming a regular at the Upper Mississippi's grand buffet.

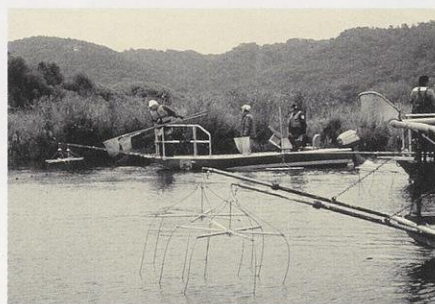
If the pelicans had cooperated, the birds would have been flushed off the feeding area as soon as they had started eating. Biologists in the flat-bottom boats would have moved in to mark the boundaries of the site, and then the electrofishing crews would have stunned any fish in the area, counting, identifying species, and releasing the fish unharmed. (This plan had worked well the day before at Weaver Bottoms, a backwater of the Mississippi River near Wabasha, Minn.)

"This technique works because pelicans follow a well-laid plan when feeding," says Mary Stefanski, refuge operations specialist with the Fish and Wildlife Service's La Crosse District. "Large groups of the birds form a squadron, herding the schools of small

fish into shallow water where the pelicans circle them and in a frenzied confusion of pounding wings feed on the buffet." An adult pelican on the average can eat three pounds of fish a day. Gizzard shad and emerald shiners seem to be the most available fish in the pelican's feeding areas on the river.

Pelican populations on the rise

Last year during August, more than 1,000 pelicans were counted on the Mississippi River from Alma, Wis. to



ERIC NELSON



RUTH NISSEN

(top) Biologists at Weaver Bottoms use boats equipped with electroshockers to stun fish and net them in areas where pelicans feed. Measuring the quantities and kinds of prey fish provides clues of where pelicans might live as they expand their range on the upper Mississippi River.

(above) Near Onalaska, Wis., pelicans loaf by the mouth of Sommers Chute where it empties into Pool 7 of the river.

Dubuque, Iowa. "During the last 10 years, pelican numbers have been increasing along the Mississippi River," says Stefanski. "There were a few stragglers (one to three birds) sighted about 10 years ago. Then about five years ago the numbers started to increase to the levels we see today." Flocks of the fish

eaters can be seen riding the thermals — gliding in a circular pattern while gaining altitude — lounging on sandbars in the river, or joining in the frenzy that accompanies group fishing.

"The pelicans spotted on the Mississippi River are either on the way to nesting sites, or are too young or too old to reproduce," Stefanski says. Pelicans reach breeding age between three and four years old. The birds old enough to reproduce develop nuptial tubercles or large ridges on the tops of their bills, and grow ornamental plumes or dark feathers on the tops of their heads. "The tubercles are not known to serve any function but folklore says they are an aphrodisiac," Stefanski says. "The tubercles fall off the adults once the young have hatched."

Pelicans nest in colonies on islands and peninsulas. The closest nesting colony to the Mississippi River is Marsh Lake at Lac Qui Parle in western Minnesota. In 1998, this colony had approx-

imately 15,000 adult pelicans, 5,000 young pelicans, several hundred cormorants, ring-billed gulls and a few great blue herons and cattle egrets.

The largest of Minnesota's three pelican breeding colonies, the Marsh Lake colony, was discovered in 1968. It has been studied as part of a banding pro-



PHOTOS THIS PAGE BY RAY MARINAN AND MARY STEFANSKI

Pelicans nest in colonies in sparse, rocky depressions just two neck lengths apart from each other. Eggs are incubated in the parent's clenched feet. The tiny three-ounce chicks are featherless and helpless. "Pods" or gangs of young pelicans form at one month of age. At 10 weeks of age, the pelicans can fly and feed for themselves.

gram since 1972. In 25 years, more than 27,000 pelicans have been fitted with a size 9 U.S. Fish and Wildlife Service metal bird band around one leg (mallards are fitted with a size 6). Band returns from this project have yielded important information on pelican migration and mortality. Pelicans from Marsh Lake winter in Mexico, Florida, Texas and other states along the Gulf of Mexico, and at several points in between. Band recoveries indicate that pelicans live a long time: To date, the oldest pelican from the colony is 14, but 30-year-old pelicans have been found. If the birds can avoid being shot, flying into power lines, or becoming entangled in fishing line — the major causes of pelican mortality — they can live for many years.

On the nest

Pelicans build nests on the ground by hollowing out a small depression and then gathering dead vegetation to use as lining from around the nest by pulling it in with their beaks. Their nests are placed about two neck lengths apart, just far enough to avoid being pecked by a neighbor while sitting on the nest.

Pelicans usually lay two eggs. Because they lack a brood patch — a patch of bare skin on the belly used by other birds to incubate eggs — pelicans incubate the eggs by grasping one egg in each foot.

The newly hatched chicks are orange-colored, featherless, helpless and homely. They are also very small (about three ounces), but they grow

quickly. Chicks eat partially digested food obtained by shoving their heads into a parent's pouch. (Pelicans don't actually carry live fish in their pouches to their young.) By the time they are one month old, the young birds begin leaving the nests and joining with other young pelicans in "pods" or gangs. The pods become a flurry of feathers when the adults return with food. The young are fed regurgitated fish until they are capable of flying and feeding on their own, at about 10 weeks. In September, young and old leave the nesting grounds and head for the coast.

The future for pelicans in Wisconsin is promising. Historically, it's likely that pelicans once nested on an island in Pelican Lake, southeast of Rhineland in Oneida County. However no documented breeding populations occurred in the state until 1994 when white pelicans attempted to nest unsuccessfully on Cat Island in lower Green Bay. Pelicans had been regularly seen in the Green Bay area since the mid 1980s before the attempts to nest on this small offshore island formerly used by the U.S. Army Corps of Engineers as a dredge spoil site.

"The second year there were nine nests and only one young was produced," says Tom Erdman, Curator at the Richter Museum of Natural History at the UW-Green Bay. The number of nests increased dramatically in the subsequent two years and by 1998, about 165 nests were found on the island, Erdman says. "During a visit later in 1998 at least 200 young pelicans were counted." Conditions in the lower bay are favorable for pelicans with ample supplies of gizzard shad and a limited number of herring gulls, so the pelicans can fish in peace.

Will the pelicans ever nest on the Mississippi River? "With an increasing number of pelicans spending the summer on the river, nesting could be possible if an island with minimal human disturbance is available to the birds," Stefanski says. □

Ruth Nissen is a biologist with DNR's Mississippi River-Lower St. Croix Team stationed in La Crosse.



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Ant species develop complex societies to find food, cover and shelter. The honey ant (*above*) tends a colony of black citrus aphids. The ants "milk" the aphids and eat a sugary excretion called "honeydew."

(*below*) The odorous house ant nests outdoors in bird nests, plant stems or under debris piles.



JIM BAKER, NORTH CAROLINA STATE UNIVERSITY

Antidote

The only cure for an infestation of these industrious social insects is more knowledge.

Holly Prall

Few people bother to consider the world of ants — until it appears that the ants of the world are mounting a colossal attack on the kitchen and environs. In mid-summer, you may have noticed ants invading the countertop cookie jar or Fido's food dish on the floor. In fall, streams of the industrious insects will put the bite on a bar of bathroom soap. What about those pale, winged ants that suddenly appear in a little cloud in the basement?

Are these serious infestations? Though some may think "an ant is an ant," in reality, there's great variety in the ant world. Knowing the dif-

ferences will increase your enjoyment of nature, and also help you mount a successful eradication campaign, should one become necessary.

Antipasto: What ants eat

Ants (family Formicidae) have become such successful insects because they are highly adaptable, with many species able to eat just about anything. The seed-eating Grease Ant (*Solenopsis molesta*), though among the tiniest of ants, earns its nickname "Thief Ant" by sneaking into the nests of larger ants and eating their larvae. Carpenter Ants (*Camponotus* spp.) eat other insects and

a variety of sweet foods, but they definitely do not, like termites, eat wood.

A favorite food of carpenter ants and many other species is honeydew — the sugary excretion of sap-sucking insects such as aphids, scale insects, treehoppers, and leafhoppers. The False Honey Ant (*Prenolepis imparis*) so loves to gorge on honeydew and plant juices that an ant may become stuffed to the point where it has difficulty walking.

In return for honeydew, which may be excreted on demand by the aphids, ants protect their aphid "herds," aid them in dispersal, and prevent a build-up of honeydew in their vicinity, thus keeping the insects free of fungal dis-

ease. Some ants, such as the Larger Yellow Ant (*Acanthomyops interjectus*), a nocturnal, subterranean dweller, live exclusively by tending root aphids for honeydew and perhaps eating some of these soft insects. This pale ant is not a serious pest even if it finds its way inside the house foundation. Ants may also consume the nectar of flowers or other plant juices and secretions.

When the outdoor foods they like most are in short supply, or competition is great, as in mid- to late summer, many ants will forage indoors for a variety of sweet, greasy, and protein-rich foods. The "scout" ants use pheromones — odorous chemicals — to communicate the location of a large food find with the colony. The scout first has a bite to eat, then promptly returns home, laying down a pheromone trail that stimulates the other ants to follow.

When the other ants leave the nest, often in numbers proportional to the amount of pheromone released, they wave their antennae in the air to find



JIM BAKER, NORTH CAROLINA STATE UNIVERSITY

not at all below 10°C (50°F), although the cold-tolerant false honey ant has been known to forage at temperatures close to freezing. In Wisconsin, many ants of different varieties have adapted to their environment by living in the soil or in other locations that allow them to keep the temperature and humidity at favorable levels. The ants move to deeper chambers or special winter nests when the weather is cool; their respiration may slow and reproduction may cease.

Ant nests vary in depth and in primary orientation — horizontal or vertical. For example, the notorious pesky ants that tend aphids on the roots of plants, such as the Cornfield Ant (*Lasius alienus*) and the pavement ant, often have mainly horizontal tunnels. The



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(left) Field ants swarm from July through September and are unlikely to forage indoors. (top) The tiny 1/16 inch pharaoh ant seeks greasy, fatty foods and dark, warm, moist sites.

(above) Mounds of field ants are often found in fields, woods or under stones.

(opposite) Carpenter ants feed on fungi growing on decaying wood and also eat sugary and greasy foods indoors.

traces of pheromone vapor. Scouts of some species, such as grease ants and Pharaoh Ants (*Monomorium pharaonis*) — a stubborn pest known to eat such unusual foods as toothpaste and soap — add their own traces to the trail as they return to the nest site. Because the trail is constantly renewed, a conspicuous, persistent track of many hundreds of ants may develop. This style of forag-

ing, known as mass recruitment, allows the tiny insects to efficiently exploit any food find before the scouts of any other species discover it. Some species of Field Ants (*Formica* spp.) have developed their own highly efficient foraging system: They make broad "ant highways" chemically marked and cleared of vegetation and debris.

Anteroom: Where ants live

Within limits, ants love heat. Most ants function poorly below 20°C (68°F) and

cornfield ant is known for hatching the corn root aphid and transferring it from grasses to growing corn. These same ants foster strawberry aphids and thereby undermine strawberry plants. The Pavement Ant (*Tetramorium caespitum*) has a reputation for girdling plant stems and eating their sap, and for storing seeds in its nest.

Most species in Wisconsin do not live in the open soil. Some nest under flat stones, like the pavement ant; or under the bark of a tree, like the carpenter ant. Other species build mounds. The mounds are not to be confused

Anticlimax: How to control household ants safely and effectively

1. Identify the type of ant. Know your quarry!

Control measures differ for different types of ants. A magnifying glass will aid in identification. You may need to capture an ant and preserve it in rubbing alcohol to examine it. For further help in identifying ants, submit a sample to your local extension service or a pest control company.

2. Is action necessary? Consider the type of ant, the number you see, where you see them, and other pertinent factors, such as the season. You may decide that you can put up with an occasional field ant in your kitchen in the summer, for example. But other species may cause serious problems in time: The pharaoh ant spreads quite rapidly. And while a few carpenter ants in the kitchen may simply be foragers from an outdoor nest, the repeated appearance of carpenter ants in other rooms suggests they are nesting in damaged or rotting wood — possibly a window frame.

3. Try simple measures first. Deny ants easy nest sites, food and water sources. In the kitchen, keep counters, appliances and floor surfaces clean; remove garbage daily; remove organic wastes from containers before discarding; and rinse recyclables before storage. Keep foods in glass jars or plastic containers with tight-fitting lids. A water moat, such as a pie pan containing soapy water, can be used to prevent ants from reaching sticky foods like honey, or other items such as plants. Sticky barriers such as Tangle-foot can also be used on the legs of outdoor plant stands, on foundation walls, or around the trunks of roses or trees to keep off aphid-promoting ants. Throughout the house, seal any cracks where ants may be entering.

To prevent a carpenter ant problem, remove or replace all damaged or decayed wood in your house. Ventilate attics, bathrooms and damp areas. Keep rain gutters clear of debris. Remove tree stumps and dead branches close to the house. Store lumber and firewood above the ground and away from the house.

4. Follow the trail. Take up the rear and follow the trail of ants to find the entry point or nest. Try killing ants you see with soapy water, and eradicating the trail with soapy water or a mild solution of vinegar and water. Seal the entry with silicone caulk (duct tape also makes a good temporary sealant).

If ants can be traced back to an outdoor nest, drench the nest several times with hot, soapy water every few days until activity ceases. Carpenter ant nests can be removed or treated with insecticide sprays containing pyrethrum.

If you do not see a trail, set up a stakeout: Put out a food



the ants like, then watch and wait — at night, for carpenter ants. Outdoor nests may be under siding, on wooden porches, or at wood-soil contacts near foundations. Indoor nests may be found in rotten woodwork as well as wall voids, hollow-core doors, foam insulation, or hollow beams. To locate openings into the nest, look for small piles of coarse sawdust and insect parts, known as *frass*.

If carpenter ants are nesting in a void or hollow space, apply some form of insecticidal dust directly to the nest. Drill holes for access as necessary. A plastic squeeze bottle filled about $\frac{1}{3}$ to $\frac{1}{2}$ full may be used to force the dust into the nest spaces.

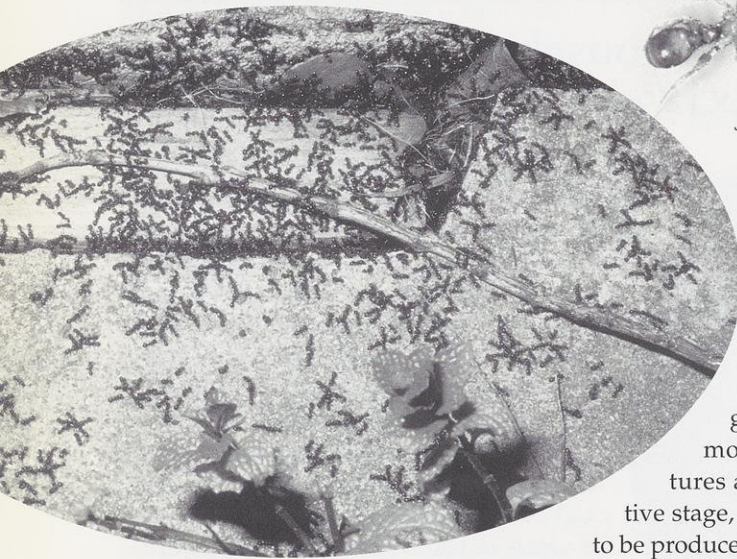
Nonglassified diatomaceous earth and silica gel work by attacking the waxy coating of the ant, causing it to lose moisture and eventually die. Wear goggles and a dust mask when applying dusts. Boric acid or a combination of silica gel and pyrethrums for quick knockdown may also be used. A small, light application of dust is best. If the dust is too thick, the ant will simply avoid the area. After applying a dust, make sure that all cracks and holes are well sealed, and that the area is kept dry.

For exposed nests try sucking up the ants with a vacuum. A liquid or aerosol spray for ant and roach control, such as one containing pyrethrum, may also be used. Be sure it is labeled for indoor use.

If you can't find a nest or point of entry, spray a chemical barrier around the house, windows and doors in a two to three foot wide band.

5. Set the bait and wait. For many species, baits are the best option when indoor nests cannot be located or are inaccessible, but the baits can take several months to work. Ant baits work as food is shared in the nest among all the workers and the developing brood. It is important that baits are mild enough so weakened ants will keep coming for more, but strong enough to eventually kill the whole colony. Since pupae don't feed from the bait, you may need to periodically treat the area to reduce carpenter ant populations.

Match bait materials to the ants' food preferences. Different baits are formulated against sweet-feeding ants; while others control protein feeders. A mixture of one-quarter teaspoon boric acid to about 4 tablespoons of a food ants like — honey, syrup, or peanut butter — can be placed on jar lids, small pieces of cardboard, or in straws set where ants are commonly found. Sealed, labeled jars containing a boric acid, food solution with holes punched in the top may also be used. Effective baits for other species like carpenter ants or pharaoh ants may only be available from licensed pest control companies.—H.P.



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Pavement ants (*shown above and on top*) build nests under slabs of concrete or masonry. Destroy the nest or bait them with peanut butter mixed with boric acid crystals.

with craters — the loose piles of dirt pellets kicked up by soil-dwelling ants during their excavations.

Rocks and bark warm quickly in the sunlight, and a raised mound has more exposed surface for the sun to intercept. Thus, in all of these nesting sites, ants catch more sunlight for their colonies to use in the early spring. Ants also move the larvae around in the nest throughout the day to ensure the proper conditions for the developing brood.

The pharaoh ant, introduced from the tropics, can live only indoors in heated buildings. A "tramp species," it often lives in close association with people and is sometimes carried in their belongings from place to place. This opportunistic nester has taken advantage of its small size to exploit unusual nesting sites such as the space between layers of linens or sheets of stationery. Another opportunistic nester is the Odorous House Ant (*Tapinoma sessile*), which, despite its name, is primarily an outdoor nester. It sometimes colonizes bird nests, plant stems, and spaces beneath urban debris.



JIM BAKER, NORTH CAROLINA STATE

Anticipation: How ants prepare for the next generation

After a certain length of time, ranging from a single warm season to five or more years, the colony matures and enters the reproductive stage, when sexual forms begin to be produced. A carpenter ant colony, for example, may reach maturity when it contains 2,000 or more workers and is three to six or more years old. At maturity, it produces 10 to 400 winged reproductive ants that will emerge and swarm during the spring in what is known as a nuptial flight.

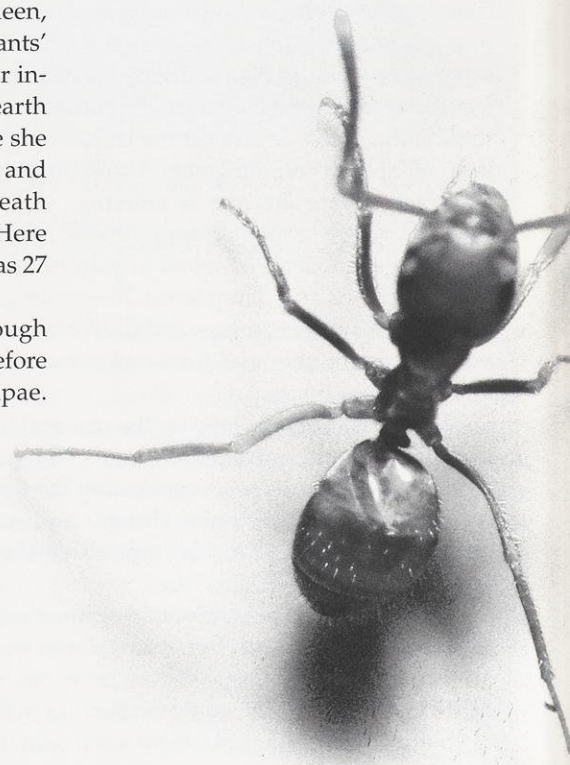
Queen ants, which may be twice as large as workers, have two pairs of wings (front longer than back) and a large hind section, or gaster. The males are typically slightly smaller and also winged. Generally, they play no role in the daily life of ant colonies and die soon after mating with a virgin queen, often by being devoured by birds (ants' main predator), other ants, or other insects. When the queen returns to earth some distance from the nest where she matured, she chews off her wings and digs a small hole, sometimes beneath the bark of a tree, log, or stump. Here she will lay 15 to 20, even as many as 27 eggs.

The microscopic eggs pass through two main stages of development before becoming adults — larvae and pupae. The larvae are grublike, blind, and often shaped something like a crookneck squash. The soft, colorless pupae resemble the adult in form. The queen nourishes them with nutritive juice formed from stored fat and the breakdown products of her huge flight muscles. For the two to 10 months it takes for them to mature, she never leaves the nest. Finally, the first workers mature,

and begin to care for the queen as well as her new brood. Nest building must also be done. The loss of even a few foraging ants during this period would be disastrous for the young colony. If the colony survives this initial, sensitive period, it is likely to continue growing at an accelerated rate.

Some species, such as the pharaoh ant and the odorous house ant, establish new nests exclusively by a process known as budding. A satellite nest buds from an established one when a few workers, often with one of the colony's many queens, leave to set up housekeeping at another location, again making use of chemical trails. With this method, the queens are never exposed to the risks of a nuptial flight, but instead mate inside the nest and walk to their new home. Most carpen-

Cornfield ants dig small craters in lawns and under rocks or logs. They enter houses searching for sweets and meats.



ter ant invasions are established by budding, when part of a colony walks in and builds a nest indoors.

Antiheroines: When carpenter ants are working on your home

Carpenter ants commonly move inside between November and early March.

ter ants generally choose softened or weak wood, with a moisture content of 15 percent or greater, sometimes under bathroom floors.

In nature, they occupy dead portions of standing trees, stumps, or logs, or burrow under fallen logs or stones. Silver maples are commonly infected and white pine not at all. Ants in outdoor trees may send out scouts to establish satellite colonies in firewood, lumber, wood debris, or possibly on steps, porches, decks and columns. Vegetation, utility wires and phone wires that touch the home often provide bridges from tree to house.

with the lemony smelling citronella by the larger yellow ant. An unpleasant odor described as "rotten coconuts" is emitted by odorous house ants when disturbed or crushed.

Antithesis: The other side of the story

Ants play an important part in insect control, in part by keeping more harmful pests away from the plants they patrol. Like spiders, indoor ants are likely



(above) Larger yellow ants tending their pupae. These ants are usually subterranean and nocturnal. They burrow under concrete but don't do much damage.

(above right) Carpenter ants will climb trees and enter homes where twigs touch the roof or crawl up foundations. Old firewood stacked against the house will also harbor ants.

You may hear their rustling in the walls at night. If the colony is active all year, the ants are likely to be in walls, door voids, ceilings, or other heated areas of the house. Other common areas are under outside siding and in wood-soil contacts near the foundation. Carpen-

Field ants have "soldiers" that are capable of biting both insect and human invaders, but ants have other means of defense. Many species secrete poisonous substances from glands to ward off intruders. Formic acid, excreted by field ants, is used in combination



HOWARD EVANS, GILLETTE ENTOMOLOGY CLUB

to eat flea and fly larvae, and other pests. Field ant species, for example, also prey on bed bugs, moths, young silverfish, and subterranean termites. Having ants patrolling your home's borders may be important in controlling termites.

In the woods, carpenter ants help decompose trees. Ants of all kinds aid in recycling nutrients. Organic matter accumulated in ant nests can add nutrients to soil and improve its structure. Digging by ants loosens the soil, increasing its porosity and making it easier for air, water, and plant roots to penetrate.

Consider the humble ant's positive contribution to the health of the environment. Then plan your control strategy accordingly. The guidelines accompanying this story should help you safely fend off ant invaders. □

Holly Prall is a freelance science writer from Greensboro, North Carolina.

WHITNEY CRANSHAW, GILLETTE ENTOMOLOGY CLUB

Panfish 101

Get started on a summer of outsmarting perch, crappies and bluegills.

Gary Homuth

Permanently affixed on our refrigerator is a bumper sticker: "My wife said, if I go fishing one more time she'll leave me. God, I'm going to miss her." She likes the message about as much as the fact that it is now *adhered* to the fridge! I love to fish and I'm glad to have this opportunity to share some tactics that have worked for me.

Whether you like to catch fish and release them, or add to the family larder, panfishing can provide you virtually 365 days of fishing opportunity. Here, we will focus on spring and summer fishing on open water.

To catch fish consistently, one must be willing to experiment with lures and baits to mimic what the fish are eating. You need to think about how you present bait to the fish, and when it's time to change locations. You need to pay at-

The people who regularly catch fish are those who take the time to understand fish life cycles and take educated guesses about where the fish will be and why they will be there. Like every other skill, you have to get on the water, practice your fishing techniques and make adjustments to entice fish into taking the bait.

In search of perch

In spring and early summer, most spawning behavior is triggered when the cold winter waters begin to warm. Among the many panfish species, yellow perch will spawn first when the water temps reach about 44 degrees.

Perch spawn shortly after ice-out and deposit their eggs on vegetation, submerged brush or gravel bottoms. After

the hook with a small fathead minnow or larger crappie minnow. Hook the minnow through the open mouth and then up *through* the top of the head. This allows the minnow to trail straight behind the lure and it won't work off so quickly.

Search out new weed growth in about four to nine feet of water. Cast out your line, leaving the bail open, and let the jig drop slowly toward the bottom. Pay close attention to the line lying atop the water. When the line stops moving, the jig is on the bottom or is hung up on a weed. (If the line twitches, it's a bite! Set the hook!) Take up the slack and slowly raise the rod tip to the 11 o'clock position and hold it there. When you think you've raised it

tention to water depth, note available plant cover or underwater structures that fish are using — and, to some degree, track the water temperature. It may seem like a lot of work, but it will become second nature and also give you respect for both fish and fishing.

Pick your fishing strategy before you pack the boat. Look at aquatic plant growth, vary baits and slow down your presentation to hook panfish like this bluegill.

perch spawn they leave the spawning site, unlike crappies and bluegills.

Pre-spawn and spawning perch are difficult to catch — their minds are elsewhere. Furthermore, fishing conditions can be brutal as early spring weather often brings raw winds and cold days. (Besides, many of us are turkey hunting!) I think your time is better spent concentrating on post-spawn perch moving out from the shallows into emerging weeds.

To find actively feeding post-spawn perch, try the technique called "weed wall-eye" fishing. I use a six- to seven-foot graphite rod with a very sensitive tip. I rig the rod with 4-pound test line and a 1/32 to 1/16 ounce jig. I tip

enough, cut your speed in half and it should be just right. This action just teases the jig off the bottom. When the rod stops, the jig floats back down while you maintain a tight line. When the line stops moving, lower your rod tip, wind in the slack and repeat this slow retrieve, bringing the rod up and holding it at 11 o'clock, etc. The fish usually strike as the jig is falling. Perch bite in a series of fast raps. Drop the rod tip for a few seconds while picking up the slack, lightly set the hook and bring in the fish.



(BOTH PHOTOS) ROBERT QUEEN



Using this technique you can cover larger areas of weeds in search of actively feeding perch. Don't get frustrated if you hook weeds once in awhile. If you get hung up on every cast, switch to a weedless jig.

When you locate perch, quietly drop an anchor. If it's windy, anchor each end of the boat so you are parallel to the weed line you want to fish. Switch over to slip bobbers, set just an inch or two off the bottom or on top of the weeds where you had a bite. Place a small split shot 15" to 18" above the hook and tie on a small ice-fishing jig like a Willy Worm or Rat Finky jig baited with

jigs and a variety of baits. Generally the larger perch are caught within inches of the bottom, so set your depth carefully. Also rig one rod without a bobber and just hang it over the side of the boat. Lots of times it will out-fish the other rigs.

A little later in the year when the water warms up, the weeds become too thick to penetrate. Time to try another technique! Put on polarized sunglasses and use an electric trolling motor or just slowly drift through the weed bed looking for "holes" or openings in the weeds. Panfish love warm water surrounded by the safety of weeds. They

run a few crab traps to peel the meat from crayfish tails to use as bait. On many northern lakes this is deadly bait.

Don't be surprised if these same techniques catch other panfish, walleye or bass.

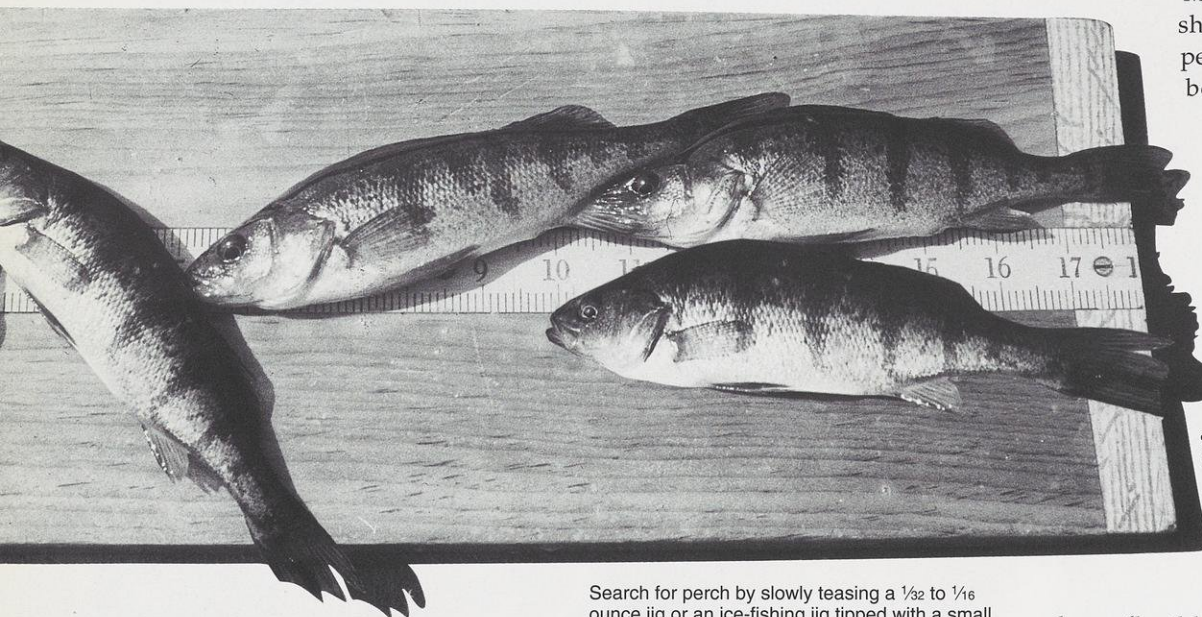
Chasing crappies

Sometimes crappies will provide the first action after ice-out. Search out lakes with dark or stained waters; they'll warm up weeks before the clear waters do. Look for shallow bays with 2-6 feet of water, where you'll find the warmest water in the lake.

Male crappies move into the shallow water first as temperatures increase. Crappies begin spawning when water temperatures are between 61 and 68 degrees, but the males can be caught long before that. Drift across the bay, casting as far as you can from the boat using baits like a pinky jig (a small pink lead-headed jig tied with white or yellow hair) suspended about half the distance from the surface to the bottom. This will require light line and a

long, flexible rod. Crappies are very spooky and it is rare to catch "a good one" — in the 11-13 inch range — close to the boat. Lightweight tube jigs in white, purple, yellow and pink also work well. Generally, you won't need to use live bait. Just fish the jig wrapped with feathers or hair. Don't place any sinkers between the bobber and the jig.

When you cast, you want the bobber to settle and the jig to drift slowly down. Crappies just suck the jig in, so you want that jig to drop very slowly. I prefer using long, thin pencil bobbers that lie flat on the water. When you get a bite these extremely light bobbers simply tip up and the fish feels no pressure at all. Your retrieve should be s-l-o-w. Move the bobber about a foot and lower the rod tip. This movement swings the jig upward at an angle, and



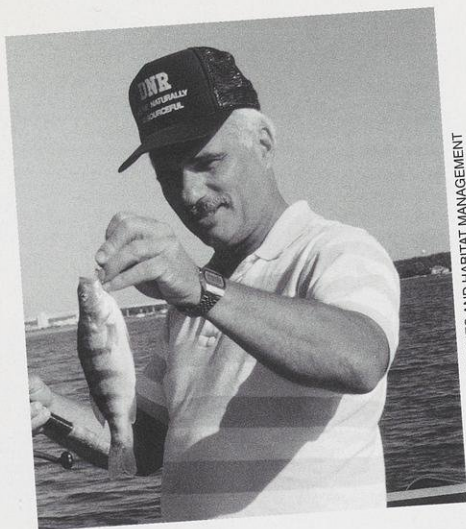
STEVEN L. SERNIS

Search for perch by slowly teasing a $\frac{1}{32}$ to $\frac{1}{16}$ ounce jig or an ice-fishing jig tipped with a small minnow on top of submerged weeds. It takes a light touch and quick reflexes to set the hook.

will hang out in these small pockets where they can pick off little bait fish and insects. Pop your slip bobber rig in the opening and fish around the entire edge of the opening.

Mark the outside edge of the weed bed with marker buoys and fish the entire edge, paying close attention to keep your bait within six inches or less of the bottom. Again, regularly change bait types and color combinations until you find what the fish are hitting.

As summer progresses and water temperatures increase, fish will be more active where the water is a little cooler. Focus your fishing on deeper outside weed edges and fish the first and last two hours of daylight. For the energetic,



DNR BUREAU OF FISHERIES AND HABITAT MANAGEMENT

spikes, wax worms, panfish leeches or pieces of worms or night crawlers. Experiment with color combinations of



(LEFT AND RIGHT) ROBERT QUEEN



DOUG STAMM WWW.STAMMPHOTO.COM

(clockwise from top left) Panfish will bite a variety of natural and artificial baits. You need to experiment with bait size, presentation and color. Keep a selection of plastic tube baits on hand. Try small jigs wrapped with dyed hair or feathers. These anglers tied into bluegills using live bait. The crappie took a jig and twister tail combination. Use small hooks, light jigs and light line to angle for panfish.

when the bobber stops the jig will slowly settle down. Experiment next to the boat and you'll quickly see the speed you'll want to maintain to the achieve the proper action.

As spawning temperatures approach, male crappies become more aggressive in searching out nesting sites. Like bluegills, crappies build nests, but their nests are in deeper water up to six feet down and are barely noticeable. Fishing crappie minnows on a #8 long shank hook will produce fish on most days just prior to



ROBERT QUEEN

spawn. It's an excellent choice for post-spawn crappies, too.

As temperatures warm up, concentrate your efforts in the evenings and early morning hours around outside weed edges, deep holes with fish cribs, sunken trees and logs. Again, be flexible. Change color combinations often, tip jigs with a minnow, speed up or slow down the presentation until you

figure out the fishes' patterns. Check the deeper holes adjacent to known spawning areas for pre-spawn crappies. Suspended fish will be easily found with fish locators. Work lightweight jigs tipped with small minnows slowly through the holes at the depth where you marked fish. You won't need to use any bobbers.



Fish congregate where their prey find food and cover. Try casting near downed branches, open spots in shallow weedbeds, piers and shallow rock piles for panfish.

ROBERT QUEEN



STEPHEN J. LANG

Strategies for bluegills

Much has been written about the ease of catching bluegills. Once they are on their beds just about everybody can catch them, because bluegills will defend their nests from any invader. I know it's tempting to fish them at spawning time — especially if you are fishing with children — because fishing action is practically guaranteed. However, the fish are vulnerable during spawning, and they need a few weeks to raise the fry that will provide your fishing enjoyment in the future. So think twice before zeroing-in on spawning bluegills.

Consider catch-and-release during this time. Pre-spawn presents a greater challenge. If you know where bluegills typically spawn on your lake, try backing off into 6–12 feet of water and fish for suspended bluegills earlier in the season. Use very small slip bobbers and small ice fishing jigs of various colors tipped with spikes or wax worms. Wet fly spider imitations tipped with a spike work well also. Focus on the zone from two to three feet under the water to about two feet off the bottom. Remember to use light gear.

Have patience, fish slowly, retrieve about six inches of line at a time and let the bait settle. Many times you won't detect the bite by watching the bobber. It is only when you lift the rod tip that

you will feel pressure.

It is critical to use really small bobbers that will barely stay afloat. Add tiny slip shot to the line to keep the bobber within a heartbeat of sinking, and pick calm days to fish. If you want to get fancy, many of the fishing catalogs now offer English style bobbers that may only weigh a few grams. Heck, you could use these to angle for bait!

Bluegills begin spawning when the water temperature approaches 67 degrees. Just prior to that time the males move to shallow water. Keep your baits small and cast far away from the boat. If using Willy Worms or similar plastic tubes, cut the tube off just behind the hook and tip the rig with a spike. With jig-style baits, your bite and hooking success will increase if you pay attention to tying a proper knot. You want the hook to hang horizontally and after every bite or snag, you need to readjust where the knot is on the hook ring so the lure is suspended horizontally. Concentrate your efforts on fishing in three feet of water or less, focusing on stumps, logs, brush or any kind of emergent vegetation.

After bluegills spawn, they drift back into deeper water and relate to weeds. Although bluegills feed throughout the

day, best action is within the first and last few hours of daylight.

Slip bobbers offer the most flexibility and a wide variety of baits can be used. The standard is a #8 long shank hook with worms or pieces of night crawler. Also try ice-fishing jigs, Willy Worms, Rat Finkies tipped with spikes, and wax worms that cover the point of the hook. Especially in northern lakes, panfish leeches far out-fish other baits.

During the dog days of summer, bluegills tend to suspend about 12 to 14 feet below the surface. Marking schools of bluegills is easy with most fish finders. For this kind of angling, I like to rig fly rods with open-faced reels and again use #8 long shank hooks baited with worms or pieces of night crawlers. I put rubber core sinkers about 15" above the hook. The more wind, the more weight is required. Put a slip bobber stop on your line as a marker that you will keep right at the water line so you can quickly return to the exact depth after each fish is reeled in.

If the wind picks up don't leave — just change your rig a bit. Above the #8 long shank hook, slide on a small chartreuse or orange spinner blade with a clevis spinning collar, then put four orange beads just above the hook. If there's enough wind to spin the blades, you're in luck. Many times this combination spooks the smaller fish but still attracts bigger gills.

So there you have it. A few tips on panfishing strategy, some encouragement to get out on the water, and a little marital advice: The bumper stickers you slap on the fridge ought to say something a bit more positive about your relationship. And perhaps you should try a less permanent method of attachment — like a magnet. □

Conservation Warden Gary Homuth fishes throughout the year for panfish on both northern and southern Wisconsin waters.



The quiet forests

HOW PRIVATE WOODLANDS
IMPROVE THE QUALITY OF
LIFE IN WISCONSIN

Heartwood



ROBERT QUEEN

Lyle Stockwell's voice warms when he speaks of his children, his wife Shirley, and the thick maple forest behind his log house. Says the Pierce County owner of S&S Sugarbush, when he's out among the trees that have been tapped by the Stockwell and Snow families for over a hundred years: "I love walking in these woods in wintertime."

What began in the late 1800s

with Shirley's grandfather, Merchant Snow, and passed to her father, Floyd, then to Lyle, then to their son Barry and, eventually, perhaps, to their 10 grandchildren, has become a tradition valued for the lessons and the living it provides. The grandkids and friends who help at tapping time come away with a bellyful of apple cake and a solid work ethic. The thousands of dollars that trickle in from syrup sales, divided by hundreds of hours invested, contribute to a decent nest egg for the two older folk.

After toiling in the same woods for over 40 years, Lyle has developed a certain intimacy with his trees, drilling into some of the same trees that dripped sap for Merchant in 1890. "Trees are just like human beings," he says. "There are some sweet ones out there, and some are not so sweet," he continues, with a sideways smile at his wife. "If they could talk, they'd really tell us a lot."

That intimacy is shared by all the forest landowners profiled in this series.

When you look at a state map, the yellow polygons of our metropolitan centers, the green blocks of public forests, and the ribbons of red Interstates and blue highways are paltry in comparison to the sea of white spaces that remain in private hands. Rails and roads link our cities, but it's the unseen network of people who have laid down roots in those white spaces that quietly sustains Wisconsin's forestlands.

Private landowners collectively own about nine million acres of forest, nearly two-thirds of the state's total of almost 16 million wooded acres. There are many, many more trees on these private lands than on public holdings, which account for one-third of the forests. Forest industries and other businesses round out the balance, with slightly more than a tenth. Nurturing private forests will be even more important in the future, as a growing human population demands more products and recreation space.

Once upon a time, the woods owned by ordinary citizens — many of them farmers — were considered by society to be less valuable than cropland. The owners did harvest trees periodical-

ly, but there was no special pressure to do so. City and village boundaries were still miles away, and there was no particular concern over land preservation.

But cities and villages no longer are miles away. The price of wooded land has skyrocketed. The lots are getting smaller, the woodland experience is becoming more precious — yet the trees themselves are needed more than ever.

Private woodlands help form critical wildlife habitat and, when kept together in big pieces, create a bulwark against the loss of native species. Private forests offer some of our state's best and most beautiful places to hunt and explore. A renewable resource, trees fuel an economic engine supplying thousands of jobs statewide.

Anyone who finds it worthwhile — financially or psychologically, or both — to keep Wisconsin's private forests intact at the end of the 20th century and the beginning of the 21st gives something to the rest of us. Cleaner air and water, improved wildlife habitat, more places to hunt and hike, and a thriving economy are the benefits private woodland owners help provide for everyone. Were those people to cash it all in, our publicly owned lands could not make up the difference.

Consider Loretta Becker and her late husband, Bernard, who as of a decade ago had sold almost 240,000 board feet of hardwoods to sawmills around the state. The Beckers have always relied on DNR foresters, and always had their 335 acres enrolled in forestry tax programs. Or the Whites of Madison, who have dedicated dozens of acres in several counties to wildlife and native plant habitat. They regularly sought advice from DNR foresters and other experts, and got financial help from state incentive programs. Or Charlotte Collier of Sauk County, who uses the federal Conservation Reserve Enhancement Program to grow trees on easily eroded former cropland.

Without these programs, some of Wisconsin's most ardent but little known conservationists wouldn't be able to manage, or to resist the temptation of selling wooded parcels when an eye-popping price comes calling. The tax law programs helped keep the Beckers afloat at a time when land was changing hands and rising in price every few years. With Bernard's ashes now scattered over their 240 acres in the Blue Hills east of Rice Lake, Loretta now regrets not buying one 15-acre piece he'd once favored. But her stance on the land they did buy is firm.

"I have a lot of other things I'd sell before that," she says.

That kind of tenacity is typical of many private woodland landowners. Here's where you'll discover what they've been doing on their forests — for you.

Big benefits from small holders

LARGE COMPANIES DEPEND ON SMALL WOODLAND OWNERS TO SUPPLY THE LOGS THAT KEEP PRODUCTION LINES ROLLING AND PAYCHECKS COMING.

It took the better part of a year, but sometime in late 1993, those in charge at Packaging Corporation of America (PCA) in Tomahawk (formerly known as Tenneco Packaging) realized they were running low on wood. Federal logging policies on publicly owned forests — which had been supplying the bulk of PCA's wood — had changed due to environmental concerns, and much less was being sold.

For a company that requires 400,000 cords of hardwoods and aspen a year to meet the demand for its product (the wavy wafers sandwiched inside corrugated cardboard), this was a big problem.

"It was kind of a gradual thing, but there wasn't a lot we could do about it," says Steve Guthrie, PCA woodlands manager. "We didn't have the tools in place."

PCA's experience is confirmed by state statistics. From 1967 to 1995, the average amount of timber cut from national forests in Wisconsin was down by almost 25 percent. At the same time, the volume of wood coming from private lands almost doubled.



JEAN MEYER

Seventy percent of Wisconsin's timber supply is grown on private woodlands, yet less than one in five private acres is logged with advice from a professional forester.

Guthrie and others heeded the warning, by the next year they'd devised a program to guarantee the firm would have ample supplies of needed wood. One result was their Forest Management Assis-

tance Program, which offers help to private woodlot owners in exchange for giving PCA right of first refusal to any cut trees. Many other forest industry companies offer similar management help to private landowners.

PCA didn't intend to become a surrogate for the DNR's forestry program, which also is available to coach forest owners. But it was clear that the Department of Natural Resources couldn't provide help to all. "We saw that a lot of wood was being cut without professional management in our area," Guthrie says. "And there were many more landowners that needed assistance than the DNR was able to help. That's still the case."

Forestry numbers confirm this. In Wisconsin, there are 250,000 individual private landowners, but less than a fifth of all parcels logged each year receive any professional advice or assistance from a forester. Gene Francisco, chief state forester, calls this "unacceptable." Wisconsin lacks enough foresters to help those who do call: According to U.S. Forest Service numbers, the state is about

Some companies like Tomahawk's Packaging Corporation of America, help woodlot owners manage their woods in exchange for the first rights to cut mature trees.



PACKAGING CORPORATION OF AMERICA

170 foresters short of meeting a goal of having one forester for every 30,000 acres.

The new PCA program worked. By 1998, private landowners had placed 20,000 acres in their program. PCA manages 160,000 acres of its own land as well. Together, the logs coming from these private forests provide about half of the company's current supply of wood. A small additional amount comes from independent loggers, who buy it from private landowners. The remainder comes from county, state, and federal forests.

The assistance offered to private

woodlot owners is free. PCA's foresters will work with owners of lots as small as 10 acres, and as big as several thousand acres. They will help landowners:

- establish goals for their tree stands;
- inventory the species, quantities and quality of trees in the forestland;
- draw up a long-range management plan, which may include preparing sites so trees can naturally regenerate; planting trees; culling diseased and defective trees; thinning stands; marking mature trees for harvest; and improving conditions for wildlife;

- obtain grants to help pay for these goals;
- use good conservation strategies to protect the environment;
- keep landowners abreast of new legislation and policies regarding forestry.

Today, the trees cut from Wisconsin's private woods are an essential part of PCA's business. "Without the wood coming off private lands, we could not keep our mill supplied," Guthrie says. And that would mean less wavy waferboard, which is very much in demand: "If people didn't

Help for woodland owners



City dwellers Sara Obern and Stuart Stotts received a state Forest Landowner Grant to share the cost of enhancing their 45-acre woodlot in Vernon County.

Stuart Stotts' plans for his 45 acres of hilly Vernon County land include no fancy blueprints or requests for utility extensions.

"We wanted the land just because we love that area," says Stotts, a Madison singer and storyteller. "We wanted a retreat place, a place for our kids to connect with land, to learn about being outdoors in a way that would be familiar.

Plus I'm really into sus-

tainable issues, and it's a place to learn about practicing that."

Stuart, his wife, Sara Obern, and their two young girls represent a new generation of landowners that want forested land less for its economic value than for its spiritual one. The two have planted fruit trees and ginseng, dug out dozens of invasive plants such as wild parsnip and prickly ash, and built houses for bluebirds. Stotts and Obern installed solar panels to power the lights and even a blender in the previous owner's trailer, which the family uses now but may replace someday with a small cabin.

They also have begun to think of the best way to manage the trees in their forests.

By buying a tract adjacent to the 10,000-acre Kickapoo Reserve and by foregoing ambitious development, the two are augmenting the reserve's ability to protect wildlife and plants. And with the receipt of a grant from the Wisconsin Forest Landowner Grant Program that will pay about two-thirds of the cost of a management plan, they hope also to help the area recover from the poor logging of past years. That includes repair-

ing erosion off an old logging road and allowing good trees to grow bigger. Most trees are too small to cut now.

"We want a diverse forest," he says. "We want high-quality timber for harvest over the next 30 to 70 years, for ourselves and for our children."

A number of state and federal programs can help the thousands of other new owners of small wooded tracts with similar goals. Here's a list:

The Wisconsin Forest Landowner Grant Program: A state cost-sharing program enacted in 1997 to make up for losses in federal support. It provides \$1 million every year, with a maximum of \$10,000 per landowner, for management plan preparation, tree planting, timber stand improvement, soil and water protection, fencing, wildlife practices, fisheries practices, buffer establishment, species protection, and historic and aesthetic enhancements.

The Conservation Reserve Enhancement Program: A federal program that pays landowners to plant trees on sensitive lands. Cost-sharing is available for wildlife plantings, grass establishment, erosion controls and stream buffers.

The Stewardship Incentive Program: A federal cost-sharing program providing up to \$5,000 per landowner to prepare management plans, plant trees, improve timber stands, protect soil and water, conduct prescribed burns, buffer streams, and protect wildlife and fish habitat. No money was allocated for 1999, but it may be restored in the future.

The Forestry Incentives Program: A federal program with cost-sharing capped at \$10,000 each year. It includes tree planting, timber stand improvement, preparing sites for natural regeneration, and restoring wetlands.

The Wildlife Habitat Incentives Program: A federal cost-sharing program capped at \$10,000 per landowner, for wildlife plantings, grass establishment, fencing, prescribed burning, improvement of wildlife and fish habitat, restoring wetlands, and developing farm buffers.

use cardboard boxes, we'd be out of business."

The trend toward reliance on private lands shows no sign of reversing. Federal forestry officials are continuing to close off or reduce harvesting on some portions of national forests to protect wildlife habitat, prevent erosion, and manage large tracts for wildlife and recreation as well as timber. Harvests from private woodlands are important in making up the shortfall from public lands. 🌲



DNR FILE PHOTO

260,000 individuals and families own nine million of 16 million acres of Wisconsin forestland. Wood from these lands fuels diverse forest products businesses including paper and timber production.

When is a small woodlot too small?

DEVELOPMENT PRESSURE CAN
SPLINTER PRIVATE WOODLANDS. SOME
OWNERS ARE WORKING HARD TO
KEEP WOODLOTS TOGETHER AND
CREATE THRIVING HABITAT.

In St. Croix County, it's urban dwellers from the Minneapolis area that want vacation homes in the woods. In Sauk County, it's people from the greater Madison area looking for the same thing. In Dane County, it's developers of subdivisions and shopping malls absorbing every nearby pasture. Every year more forest and cropland gets chopped into smaller and smaller parcels,

and the trend is creating a new set of challenges.

Charlotte Collier, a dreamer from Sauk County, and "George," a resolute owner of 27 wooded acres just west of Madison, are confounding that trend. It's not an easy one to buck.

The statistics are staggering. Fifty years ago, according to DNR estimates, there were about 130,000 owners of private woodlands, many of them farmers with several hundred acres, who didn't flinch when it came time to harvest a few dozen acres. The logged trees enjoyed a second life as paper and cardboard and

2x4s and flooring, among hundreds of other uses, and many Wisconsin residents received paychecks as employees of those businesses. The farmers got a break on their taxes by keeping the forested parcels in the state's forest tax law programs, which require periodic harvests.

By 1997, though Wisconsin hadn't gained any more land, the number of private woodland owners had doubled — to about 260,000 — while the median size of those tracts had shrunk to about 55 acres. By 2010, that median parcel size could drop to 35 acres.

If we cared only about deer and squirrels, those smaller parcel sizes wouldn't be cause for alarm. And if we could recycle wood endlessly and efficiently, cutting fewer trees wouldn't matter, either. But the real world isn't so simple.

It's kind of like baking a batch of brownies and opting to divide the pan into a few big pieces, instead of 24 tiny squares. Less interior area is exposed with bigger blocks of land, and even if some squares are eaten, many big ones still touch each other. If those larger brownies were the Wisconsin landscape, birds and mammals that need more contiguous territory could still survive. But once that landscape is sundered into bite-size bits, those critters lose ground to the species that best adapt: Deer. Squirrels. Raccoons. Cowbirds. Garlic

"Fragmented habitat is never as valuable as pieces all connected. My goal is to preserve it and leave it in better shape than I got it." — Charlotte Collier



ROBERT QUEEN



This lot is sold, but private woodlots can use tax incentives to maintain a green buffer to urban sprawl and patchwork development.

mustard. Buckthorn.

All the while the cornucopia of animal and plant species our country once boasted is being diminished.

In the Baraboo Bluffs of Sauk County, some species are at risk as the forest is chopped into ever-smaller parcels. Many private landowners in the area are working with Sauk County, the DNR and The Nature Conservancy to hold the big woods together. You won't see scarlet tanagers in woodlots split by houses and driveways, but they can be found in older oak forests in and around the bluffs. So can Acadian flycatchers, hooded warblers, box turtles, and many kinds of amphibians.

Public forests clearly maintain forest

health. Private ones can too, given our support. And when we do, everyone benefits.

In rural Dane County, one man keeping the encroaching city of Madison at bay is so determined to maintain his privacy that he won't even let his name be printed. "George," a retired surgeon, traveled the width and breadth of the United States almost two decades ago before settling on a 30-year-old house on wooded land in the Town of Middleton, just west of Madison. "I thought I was moving too far out of town. Guess what? The town caught up with me," he says.

Now, with a subdivision he describes as "hideous" just over the hill, George is

thankful he persuaded a friend to sell him 20 more acres of woods a couple of years ago. The parcel provides a bit of rural charm to an urbanizing area and acts as a buffer against future development. That tract, enrolled in the state's managed forest program, has been selectively logged and will continue to grow trees and harbor wildlife, including Ralph, the rattlesnake that visited in 1997, and a lovely king snake that appeared last summer.

In Sauk County, Charlotte Collier went out of her way to keep a large stand of



Maintaining woodlots can slow housing development on the forest fringe. Homes on scattered parcels create demand for roads, utilities and other public services.

woods intact and even found a way to marry it to a parcel next door. She started in 1972 with a look homeward from across the ocean.

She'd been working overseas as a government nurse. One day, she and several co-workers mused about what would happen if they were killed in the line of duty. One person said she'd ask to have her flag-draped coffin sent home. And Collier realized that she had no place she called home. "I was sort of feeling rootless," she says.

She called her mother in the rural Baraboo area, gave her power of attorney

and instructions on what kind of land to buy, and by September she was the owner of her first 240 acres, an abandoned farmstead in the Baraboo Bluffs. Twice more she bought land, in 1976 and 1990. Now her holdings total 330 acres, and best of all, they all touch each other. "It's all contiguous, and I'm determined to keep it that way," she says. "Fragmented habitat is never as valuable as pieces all connected."


One edge borders another large, undisturbed piece. "So the animals have about 600 undisturbed acres," she says.

"My goal is to preserve it and leave it, if possible, in better shape than I got it," Collier says.

Some of her efforts are less about doing something than about leaving the land alone to recover naturally from what some might call the misguided attempts of the past. That's true for one moist nine-acre parcel that had been drained of its water and farmed. The tiles now are broken, and Collier prefers them that way. "I keep hoping a sandhill crane will decide to rest there someday," she says.

It's meaningful work, she says. "I like to at least pretend that I favor the Native American attitude about land — that we don't really own it, we just take care of it. And then it will, in turn, take care of us."

Sharlotte is now thinking about legal

means to ensure that her land will never be developed. On the fringes of Madison, George has the same idea, planning eventually to give his woods and house to The Nature Conservancy. That union would produce an impressive dowry, as the whole 30-acre tract was recently assessed for just under five million dollars. "But that was for the 'best use' value," George says, chuckling, amused at the thought. "That's for development. And that ain't gonna happen." 

Wildlife in and on woodlands

ENHANCING PRIVATE WOODED ACRES FOR WILDLIFE AND PLANTS PROVIDES VALUABLE HABITAT FOR A HOST OF SPECIES — AND A FEW SURPRISES FOR THE HOSTS THEMSELVES.

Inviting wildlife into your life has a price, it seems. But it's a price Loretta Becker appears willing to pay.

Becker, who with her late husband Bernard was Wisconsin Tree Farmer of the Year in 1986, built her house in 1979 on the fringe of a forty in Barron County that had been owned by her grandfather in 1899. It's part of about 335 acres they own in the county. The land is well stocked with oak, maple and ash, and trees are harvested periodically.

Some of the harvests are done to improve habitat for specific wildlife species. Other areas have been left alone, even around the house. There, islands of

prairie flowers attract scores of chickadees, nuthatches, cardinals, and hummingbirds. And also, somewhat unfortunately, woodpeckers, who seem not to appreciate that Becker's cedar-sided house is no longer a living tree.

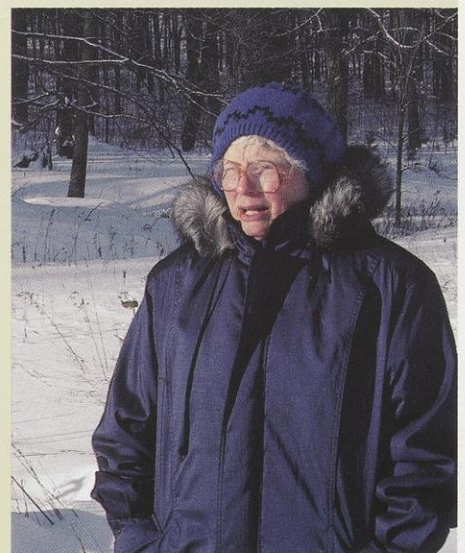
The siding is riddled with their holes. "I go pound on the wall, and they'll go away for a little bit, then they come back," Becker says, sighing. She figures her best bet is covering the cedar with vinyl, which she is in the process of doing. But her home in the woods proved its worth only recently, she says: "I was standing talking on the telephone, and a bald eagle flew right over the house."

Ponds have been dug on Becker's land,

Loretta Becker's Barron County woods grow oak, maple, ash and shelter wildlife like the white-breasted nuthatch.



R.J. AND LINDA MILLER



KATHERINE ESPOSITO





Yellow lady's slippers (opposite) and raccoons thrive on the edge of the White's wooded acres.

as they have on 57 acres in Juneau County owned by Grace and Maury White of Madison. A place formerly occupied by a watering tank turned out to have a spring nearby. A neighbor told the Whites, and they later dug it out with a backhoe.

"To have water on woodlands is real special," says Grace. "Whatever's on the land that wants a drink, can find it." That includes deer, raccoons, wood ducks and foxes, according to the tracks the Whites have seen.

The Whites also planted an 8,000-square-foot prairie aside the forest in 1993, and birds have flocked to the site. Bluebirds, orioles, finches, rose-breasted grosbeaks, hummingbirds, and one she can't name: "a gorgeous, gorgeous, deep blue bird."

"It's good for the birds," Grace says. "It's really good for us."

The federal Stewardship Incentive Program helped the Whites, who also own a tree farm in Washburn County, pay for some of their efforts to go beyond agriculture and timber production. "It's really much better, because you are thinking about more than growing trees," Grace says.

Grace has been thinking about more than trees for some time now. She's been



"It's good for the birds. It's really good for us. We're thinking about more than growing trees." — Maury and Grace White

captivated by the yellow lady's slipper, a type of orchid listed as "uncommon" in the *Falcon Field Guide to Tallgrass Prairie Wildflowers*, but often seen at the White's Juneau County farm.

The couple already had deliberately begun to create one new prairie on 8,000-square-feet of former alfalfa and corn fields near the woods, working with private consultant Joyce Powers of Prairie Ridge Nursery in Mount Horeb. But one year, the Whites realized that the little patch they'd found of the flowers with the inflated yellow sacs had nothing to do with any recent efforts. The flowers were in a woodland opening near the new prairie, and the Whites decided to encourage them. They snipped out competing plants such as Queen Anne's Lace and several kinds of clover, and built a fence to keep out marauding deer. "Last year, on that little plot, we had over 100 orchids in bloom at one time," Grace White says.

She added that people just seem to know those flowers are special. One summer, when Maury was a patient at the Mayo Clinic in Rochester, Minn. she stopped at the land and picked a single yellow orchid she hoped would cheer him up. But passersby on the Rochester streets just glared at her. "I never did that

again!" she says, chuckling.

In a separate half-acre scattering of oaks, the Whites also discovered many other original prairie plants: pasqueflower, leadplant, bird's-foot violet, and many types of native grasses.

In nearby woods amidst a stand of Norway pines, they located small numbers of trailing arbutus, with its fragrant pink flowers and evergreen leaves. The same plants were found on another six acres the Whites own in Vilas County.

Over in Sauk County, Charlotte Collier and local forester Fred Clark have been nurturing another rare species, the prickly pear cactus, high up in the thin, sandy soils of the Baraboo Bluffs off Highway 33. After fire suppression became part of our modern ethos, the cacti gave way to cedar, which Collier and Clark are now cutting out with the help of a federal habitat restoration program. Old aerial photographs from the 1930s show only a few cedars, she says. Their goal is to create the right conditions for the now-dormant prickly pears to grow again in profusion. Many naturalists have visited the site to see the work in progress and document the effort. ■

Working the woodlot

WITH A GOOD IDEA AND A LITTLE TIME, THE PROFITS LOCKED IN TREES WILL REVEAL THEMSELVES TO THOSE WILLING TO PUT IN THE EFFORT.

To find trees that truly take one's breath away, one should take a wintertime walk in a 100-year-old maple sugar bush, such as the bush that's been in the Lyle Stockwell family of Pierce County for three generations going on four.

Some trees have been tapped continually since the late 1800s, when Merchant Snow, grandfather of Lyle's wife, Shirley, took over the practice from a local band of Native Americans. Cutting the maples down would be folly; a maple tree isn't even old enough to tap until it's been growing for close to half a century.

Even though the Stockwells sometimes wonder what drives their mania to make maple syrup — especially when they recall the year they delayed washing sticky goo from hundreds of buckets until the next season, or the time Lyle got to talking too much and a Jacuzzi-sized kettle of sap boiled down to burnt amber — in the end, it's the love of trees that keeps them going.

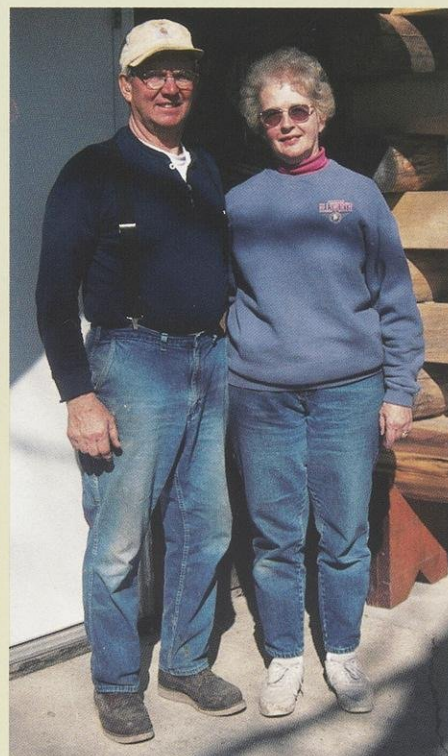
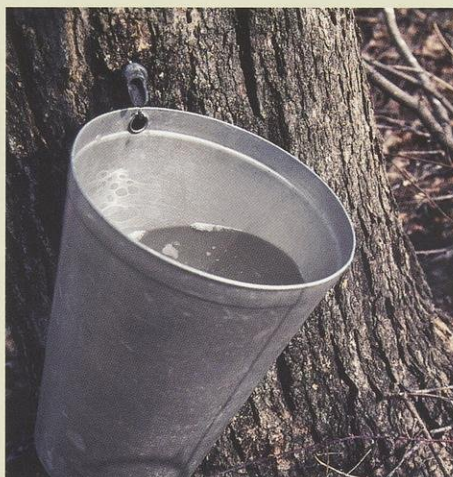
"If you enjoy doing maple syrup, you'll hang on to your land for that purpose," he says.

Lots of other landowners are finding ways to glean profits from their woods. The income helps them keep their land, and gives

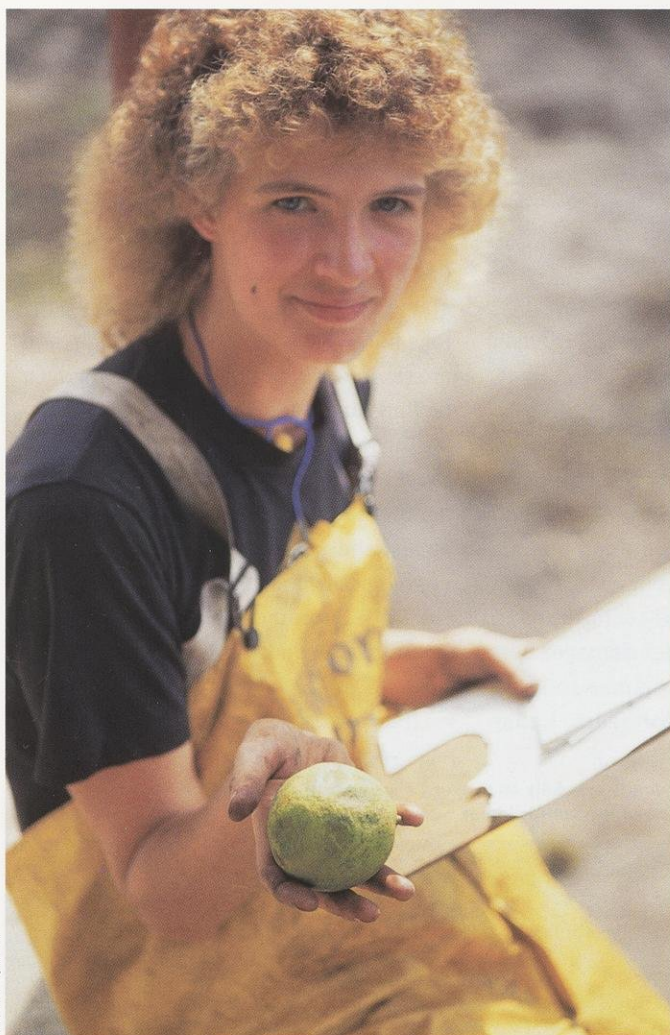
the rest of us a bounty of riches: scores of spectacular wooded vistas, delicious food products like maple syrup and black walnuts, precious habitat for the wildlife we enjoy watching, and raw material for the paper and plywood that help everyday life move forward.

Some entrepreneurs are even turning weedy trees such as buckthorn, prickly ash, and box elder, plus snippets of known beauties like oak and walnut, into one-of-a-kind ballpoint pens and letter

Lyle and Shirley Stockwell (right), their antecedents and descendants have tapped their Pierce County sugar bush to make maple syrup each spring since the late 1800s.



PHOTOS THIS PAGE BY KATHERINE ESPOSITO



Even small woodlots can produce more than paper, lumber, flooring, furniture and firewood. Black walnuts husks can be used for dyes, and the nuts inside will grow seedlings. Other tree parts are used in abrasives, pharmaceuticals and food flavorings.

Spring Green, along with two similar co-ops farther north, figures that if an owner gets more money by selling the wood at retail instead of wholesaling it through a sawmill, that owner will take more pains to keep and improve the land.

This past winter, one Iowa County resident looked at two possible options for harvesting 40 acres of trees with the goal of leaving healthier trees to replenish the woods and shelter wildlife. Local sawmills, which would have sold the 122,000 board feet of mostly low-grade lumber to yet another buyer, wanted only the better trees and bid about \$18,000, roughly the amount it would cost to have the lot logged. But the owner chose to go through the cooperative, which will

Meanwhile, the list of ways for forest owners to find value in their woods never ends, it seems.

Small entrepreneurs are growing botanical herbs such as ginseng and goldenseal in woodlands, plus foods such as shiitake mushrooms, which grow on old logs. Larger companies that buy wood from sawmills all over the state use a tree's chemistry in more mysterious ways: in Manitowoc, the Red Arrow Products Co. drenches wood smoke with water to make liquid smoke. The barbecue sauce that flavored last summer's July 4th steaks may have originated in a Northwoods backyard.

LignoTech of Rothschild takes lignin, a by-product of the acid sulfide pulping



A Spring Green craftsman makes equally lovely pens from red oak (top) and the less-valued buckthorn.

saw, dry, and market his wood directly to woodworkers, high school shop classes, and fireplace owners. Those buyers will pay full retail prices and sometimes even more, due to increasing interest in protecting the long-term health of forest ecosystems.

By using this method, the owner expects to share in more of the profits from the trees. It may provide incentive for him and for others to keep their wooded tracts together.

process, and uses it to make cement flow better and to strengthen animal feed pellets. Even car batteries need lignin to help them hold a charge, says Jerry Gargulak, LignoTech research manager.

Over in Tomahawk, Fraser Papers looks for white birch all over Wisconsin and elsewhere to produce xylose, also made from lignin. Another company changes the xylose into xylitol, a type of sugar that can't be fermented by normal bacteria. It's particularly useful for toothpaste, chewing gum, pharmaceuticals and other products where tooth decay is a concern.

And, when ingenuity falters, there's always...firewood. But not just your average face cord of hewn oak. No, we're talking convenience — a carefully dried, shrink-wrapped, \$3.79 (\$4.89 near Chicago) cube of split wood, perfectly sized for an evening's romance before a toasty fire. It could be oak, hickory, or maple, but the packs are united by one trait: each piece was cut from a branch nobody else could use.

Dennis and Harold Norslein of Black Earth's Norske Wood Works sell the foot-high cubes, as well as bigger stacks for fund-raisers and tinier sticks as fire-starters, from Detroit to South Dakota and places in between. They get the wood from all over southern Wisconsin.

Harold says there's a philosophy behind their business. "A lot of treetops are left to rot in the woods," he says. "But there's a use for almost anything. You have to find it." 🐾

Plan to do it right

WHEN LOGGERS FOLLOW BEST
MANAGEMENT PRACTICES, THE TREE
HARVEST BENEFITS THE FOREST
OWNER AND THE FOREST, TOO

The first hard decision made by the five families who own a forested paradise in the Town of Maple Plain in Barron County was whether they wanted to log any trees at all.

But the popples on 35 acres had run out of steam, and were starting to fall. So Vicky Nelson and five other owners weathered that decision, and moved on to the next: finding a good logger.

The one they chose treated their land with TLC, as Vicky and the others wanted it. He cut only the aspen and basswood the owners had marked, leaving oaks, maples, and pines to grow taller and stronger, to nourish the wildlife they love and to preserve the beauty they enjoy.

And when he saw their little stream, he treated it with care as well. He installed a temporary rock crossing to allow his heavy truck to pass over without causing undue erosion.

He left plenty of trees adjacent to the water to stabilize the banks and provide shade so the water wouldn't get too warm in summer. And after all the trees were cut and the big machines had left, the logger seeded the roads he'd made to prevent future erosion.

Some might contend that since the creek was so little and so local, that any extra dirt and slash in the water, or the felling of nearby trees that shaded it, wouldn't have hurt anything.

Try telling that to the caddis and stone flies that hatch every spring in cold, clear tiny streams like the one in Maple Plain. Waters like these are nurseries for the baby fish until they are big enough to swim downstream, where both two- and four-legged predators wait eagerly. If the water is warmed and depleted of oxygen, and clouded by sediment washed off an exposed bank, the flies and the little fish can die.

With creeks both large and small crisscrossing every square mile of Wisconsin forestland, it's little daily decisions like these that keep our waters gleaming and can prevent a community from wondering where all the good fish went.

In Wisconsin, we call techniques to prevent erosion and water damage "best management practices," and good loggers have used them for years. Lanky

Barry Stockwell of Pierce County, son of Lyle and Shirley, with 20 years of logging on his resume, has seen some bad erosion, and he avoids it on his own jobs every way possible. He diverts rainwater from brand-new logging trails into underbrush, so it doesn't wash the soil straight downhill. He places logs lengthwise in a stream for machinery to drive over — the logs allow the water to slip through, and are taken out when the job is finished. Or he finds another route altogether.

These ideas and dozens more are contained in "Wisconsin's Forestry Best Management Practices for Water Quality," a small handbook written especially for loggers, landowners, and field managers by the DNR Bureau of Forestry. The guidelines are mandatory on public lands and voluntary on private lands.

It's new private landowners them-

Barry Stockwell (left) logs woods carefully to prevent erosion and divert water from logging trails. "You have to take care of the woods like it was your own."



KATHERINE ESPOSITO

selves, however, who are spearheading the drive to cushion the impacts of tree cutting on the land and neighboring waters, according to Barry Stockwell. If a job muddies up a creek and there's dirt washing off tire ruts, he'll hear about it. "People don't like it, and they're gonna complain about it," he says. "You try not to do that. You take care of the woods like it was your own, or I do, anyway." 🐾



ROBERT QUEEN

Restoring logging routes heals the land, preserves water quality and looks better than leaving a rough scar.

Permission to come aboard

MUCH PRIVATE WOODED PROPERTY IS OPEN FOR PUBLIC USE — IF YOU KNOW HOW TO ASK.

When it comes to hunting space, Adams County might not be the first place that comes to mind.

Look on a state highway map, and you won't see any shaded green blocks that signify big expanses of state, county or federal forests. A greenhorn hunter might aim for Jackson County instead, where half the county is public forest. It turns out, though, that there is prime hunting space in Adams County on the white-colored private lands between roads and towns. And there's a lot of it — 444 parcels each forty acres square. Nekoosa Papers owns most of the parcels, but many other spots are owned by everyday people who also get a break on their property taxes by allowing hunters onto their lands.

In the Town of Adams alone, 51 blocks of forty acres each are owned by Nekoosa and open to hunters. Consolidated Papers owns a handful more, and two private citizens fill out the rest.

The woodland owners who participate in state forest tax programs give the public something in return: a place to play.

Statewide, 2.5 million acres of land owned by 25,000 landowners are enrolled in forest tax programs. While not every acre is open for public use, most provide hundreds of places for hunting, fishing, skiing and hiking.

The basic idea is to select the woodlands you want to explore ahead of time. But finding those places takes work. Here are some tips:

The Department of Natural Resources publishes a computer listing of properties enrolled in the Forest Crop Law program, which are open for public hunting and fishing, and also for properties under the Managed Forest Law, which are available for hunting, fishing, hiking, cross-country skiing or sightseeing. You'll be charged 10 cents per page for the printouts. In some southern and southeastern Wisconsin counties, no properties are enrolled; in central and northern counties, the printouts can run to 20 pages or more. Ask for an order form for the Forest Tax



ROBERT QUEEN

Carol Nielsen of DNR's Forest Tax Unit shows samples of plat books, DNR forms and printouts that people can use to find private lands open to public recreation.

Law Printouts by writing the DNR Information Center, P.O. Box 7921, Madison, WI 53707. You'll also find the order form online at <http://www.dnr.state.wi.us/org/land/forestry/ftax/openland.htm>.

Each printout lists the owner's name, how long the property will be enrolled in forest tax law programs, and map coordinates — township, range, section and quarter section. Use these printouts side-by-side with county plat books to locate

the lands.

For easiest access, try industrial forests, which comprise almost half of the properties enrolled in forest tax programs. Many corporate owners produce brochures about their wooded properties and offer maps with plenty of detail. Their lands often are posted with signs to assist visitors.

If you seek other private woodlands, you'll need to get the landowner's mailing address from the county treasurer. Permission to enter these open tax law lands is not required, but keep in mind the following restrictions: Public "access" gives you the right to walk on these properties only during legal hunting, fishing or other recreational seasons and hours. You can't camp, pick berries or mushrooms, or trap without permission, and you can use only portable blinds and stands unless you and the landowner agree on something more permanent. You don't have the right to drive your vehicles onto these lands, or to trespass on closed lands.

It's best to contact private landowners at least several weeks ahead of your hunting, fishing or hiking trips. First, you'll want time to establish a courteous relationship; people like to know who is on their property, even if it is open to the public. Second, the owner may indeed let you drive cars onto the property, and point out paved roads, dirt roads, fence lines or easements available to you. Third, if you are hunting, the landowner can advise you if other people will be hunting on the property at the same time.

If you are refused permission, work through the local forester to resolve the issue. Don't break trespass laws, damage fences or take other steps to antagonize landowners.

Contacting landowners early is important. Hunters who wait to request permission until the last few days before gun and bow deer seasons open are often disappointed, says Carol Nielsen, DNR's assistant forest tax supervisor. "They contact DNR in a hurry to get the forms, then they contact the landowner just before the season," she notes. "That's a poor



Private lands enrolled in some Forest Tax Law programs provide public access for hiking, nature observation, fishing and hunting during established seasons and hours.

time to ask permission, because landowners may be hunting the property themselves or may have family and friends using the site."

She advises hunters to start looking as early as summer, and to use common sense and everyday courtesy: pick up trash, leave fences intact, and pay attention to boundaries.

Manners don't always prevail, unfortunately. Some of items found in the woods

owned by the Timber Company of Port Edwards include old tires, washing machines, lawn mowers and car batteries, says Doug Maurer, a senior analyst. Still, the money saved in taxes outweighs the drawbacks of picking up the trash. The firm has 250,000 acres from Adams to Bayfield counties in the Managed Forest Law program, and those forests are taxed at less than half the rate for woods not enrolled. ...

On a few acres

WOODLAND OWNERS ARE BUILDING
A PLACE TO TEACH EACH OTHER AND
PLANT THE SEEDS OF SELF-HELP
FORESTRY.

It's the rare person who gets to sustain a pleasant childhood memory into perpetuity, but it happened for Elvira Seno. As a child, Elvira lived with her family near Burlington, and she enjoyed visiting friends who lived in an old stone house on 131 acres to the east. There, she and her friends explored the woods, tromped around the swamp and caught grasshoppers near the grassy farm fields.

Elvira was a determined person who became a determined physician in the days before women were welcome in the field. She had a distinguished career as an Army doctor serving in several over-

seas posts, working later in Veterans Administration hospitals stateside. When Dr. Seno retired in 1974, she learned that the wonderful homestead she had visited as a child was for sale, so she bought it and lived there for 20 years before her death in 1996.

Dr. Seno settled in, but she didn't settle down. She rented out the tillable land and set about planting the rest in trees. She made plans with foresters, cruised the hardwoods, removed brushy invaders, culled out weak saplings and harvested mature trees. She learned to use a planting spud to hand-plant thousands of trees. When she had to give up physical labor during her last three years, she brought in mechanical tree planters. A total of 49,000 trees took root on 44 acres of the fallow fields and pasture.

"During those last few years, she realized that the only way to make sure the property stayed the way she remembered it would be to find someone who could guarantee it would not be developed," recalls her brother, Les Seno, a retired Beloit dentist. She tried to interest several organizations and finally turned to other woodland owners through a nonprofit educational foundation of the Wisconsin

Woodland Owners Association.

Dr. Seno fully enjoyed her trees, fields, wildlife and flowers, and she wanted to find a way to pass on the practical advice she had learned to other folks. One of her goals was to provide a forest learning center for area schools, forest landowners and the area's large urban population.

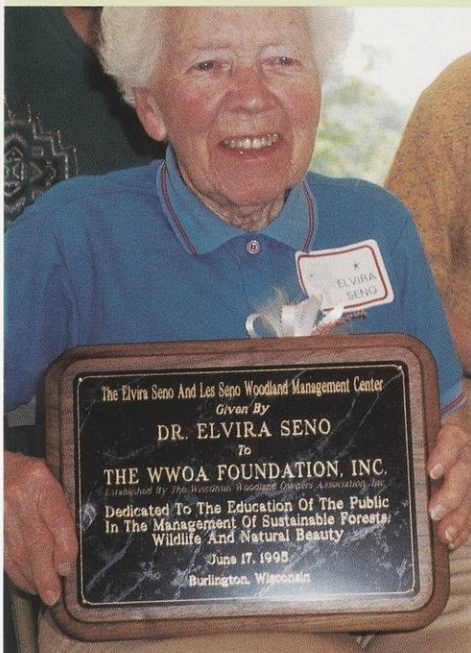
At the Seno Woodland Management Center, her vision survives. The forest center, located five miles south of Burlington and seven miles east of Lake Geneva, is now slowly taking shape. It can be found off County Highway P, where Walworth, Kenosha and Racine counties meet.

Less than 35 miles from Milwaukee and Chicago, less than an hour from Janesville and Beloit, the center is well situated to serve adults and students alike who spend more time on the pavement than in the pines. A perpetual easement, held by DNR, ensures the land will remain as a forest and outdoor learning center.

A parking lot has been built, and the foundation of an old barn will be shored up this spring before it is renovated into a classroom and conference room. An old stone house has been renovated into a property manager's cottage. A garage has

Dr. Elvira Seno willed that her 131 acres be dedicated to forest education and research.

The Seno Woodland Management Center in Walworth County is near Chicago, Milwaukee, Janesville and Beloit schools that already show interest in learning forestry principles and conducting ecology classes.



PHOTOS THIS PAGE COURTESY OF SENO WOODLAND MANAGEMENT CENTER

been cleaned out so visitors have a dry place to get out of the rain.

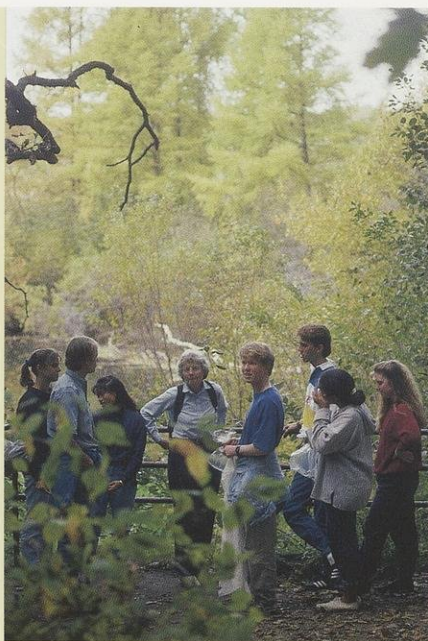
Staffing is lean. There are a couple of part-time caretakers, a property coordinator and Dr. Les Seno. He lends a hand building birdhouses, pruning trees, sprucing up trails, erecting signs and renovating buildings.

Plans for the center are ambitious and Property Coordinator Jerry Lapidakis has the drive and optimism to make it happen, with help. Visitors will enter the site near two acres of buildings adjoining a parking lot. The 77-foot barn will be the focal point for activities, meetings and exhibits. A garage, sheds and even an old chicken house could be made into meeting space. A screen house might become a butterfly house and the old brood house would make a dandy greenhouse. An observation pavilion on a high point would provide an excellent overview of the woods and fields.

The Seno property's greatest strength is the opportunity to show visitors sound land use, practical research and forest management in a small space. Sixty-six acres are covered with trees, including 20 acres of natural hardwoods and 44 acres where oaks, white ash, sugar maple and black walnuts were planted. An eight-acre stand of oak was cut 20 years ago and shows how a well-planned harvest can naturally regenerate trees. The red oak, white oak and black walnut now in that stand are 20 feet high and growing.

As the old fencerows are plucked clean of exotic species like multiflora rose, European buckthorn and honeysuckle, they are being replanted with native shrubs. These will provide both food and cover to wild turkeys, deer, foxes, coyotes, mink, skunks, chipmunks, muskrats, rabbits and woodchucks. More than 125 bird species have been spotted on the property, with some setting up housekeeping in Dr. Seno's bluebird and wood duck houses.

Three acres have been planted in prairie grasses and another four acres with large bur oaks are turning into an oak savanna. Several smaller openings of a quarter-acre or less will be kept as oak



Math, science and social studies classes can be built into woodland experiences.

savanna openings containing grasslands and wildflowers. A few fields adjoining wooded areas will be planted with native tall-grass prairie species.

A wetland bog and tamarack marsh on the north end will provide a place to study the trees, plants and animals that thrive in wet soils. The Senos built and maintained trails throughout the property, but the wetland area will need a boardwalk to keep visitors dry and away from fragile stands of plants.

Dr. Elvira Seno stipulated that the property should be used for active research on the issues private landowners face. "Part of what will make us different from a nature center will be the research plots and the chance to provide training grounds for state agencies, local resource agents, schools and youth leaders," Lapidakis says.

"Our property plan calls for research plots to demonstrate erosion control techniques, ways to plant and harvest trees that maintain water quality, soil studies and urban forests. We also have a special mission to provide urban residents with the opportunity to study trees, and to create programs for those who own small properties of one to ten acres.

"We also want demonstrations for

city-lot homeowners that show proper shade tree selection, landscaping, backyard forestry and maybe some specialty plots like a small butterfly garden."

The site will be more accessible when there are toilets, meeting rooms and a little more finished space, but that hasn't stopped some nearby educators. The Burlington area schools, Badger High School in Lake Geneva, along with naturalists from the DNR and George Williams College in Williams Bay, are organizing teacher workshops at the Seno Center. And a class from New Trier High School in a northern Chicago suburb is considering a research project here.

"We have a lot of dreams for the Seno property," Lapidakis says. "We want to work with nearby nature centers and schools. We want to provide research space for small projects and we'd like to stress private land management to show the kinds of activities individual landowners can do. We also want to show people who don't own any land that it's important to preserve and manage these private lands and small woodlots that make up the majority of Wisconsin's forests. Meeting these goals will fulfill Dr. Seno's dream for her farm."

TOP RIGHT PHOTO OF HARDWOODS BY MIKE LUEDCKE. ALL OTHER COVER PHOTOS BY ROBERT QUEEN.

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Big plans for a little butterfly

The public/private partnership to protect the tiny Karner blue covers more land than any conservation plan in the nation.

David Lentz

Imagine walking through the woods and the forest steadily grows brighter. Suddenly you emerge into an opening — flooded with bright, warm sunlight, bathed in brilliant, knee-high whirls of green leaves and the bluish-purple flowers of wild lupine. The scene, now punctuated with bursts of orange butterfly weed, was once overshadowed by a dense cover of jack pine.

The beauty of nature is that this picturesque scene will once again grow back into a forest stand. But for a short time, ecologically speaking, it will be an equally beautiful barrens opening and home to the federally endangered Karner blue butterfly. In time, the emerging tree seedlings will mature and form a canopy, shading out the wild lupine. A nearby stand of timber may be harvested, opening the forest floor again and the wild lupine seeds waiting in the ground will once again flourish and bloom. The Karner blues move back in and again find a home.



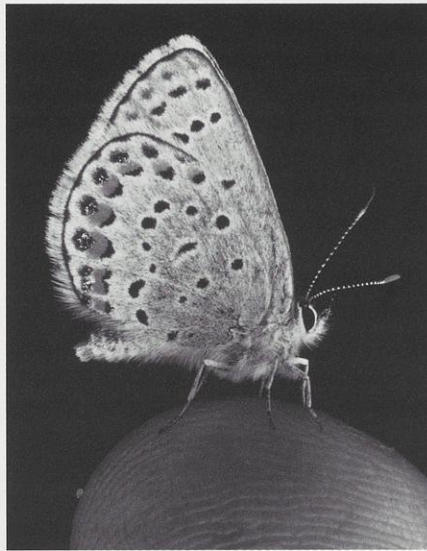
Wisconsin is home to the largest population of one of the nation's smallest endangered butterflies — the Karner blue.

The Karner blue butterfly (*Lycaeides melissa samuelis* Nabakov) lives in grassy and partly shaded areas on the dry, sandy soils of central and northwestern Wisconsin. About the size of a postage stamp, the Karner blue male is sky blue, while the female is darker blue and brown with bright orange spots along her outer wing edges. Both males and females look alike on the underside.

The Karner blues pass through winter as eggs and hatch in April. The butterflies have a larval (caterpillar) stage which feeds exclusively on wild lupine plant (*Lupinus perennis*).

In mid- to late May, the larvae turn into chrysalises, emerging as butterflies in early June. The adult butterflies feed on wildflowers through June, then lay eggs on the wild lupine in July. This second brood of the year will go through the same life cycle later that summer, except that their eggs will not hatch until the following April.

DNR's Endangered Resources staff survey lupine stands and open areas to map the butterfly's shifting range in the state. More than 275 locations in Wisconsin are home to Karner blues.



THOMAS A MEYER

How tiny is tiny? A Karner blue rests on a thumb tip.

A species in trouble

The diminutive Karner blue butterfly has fed on wildflowers in Wisconsin since the last Ice Age. At one time, Karner blue populations were found from Minnesota to New England. In modern times, the butterfly's populations have become increasingly rare in much of its national range, and it is increasingly vulnerable to extinction.

Karner blues are completely dependent on the wild lupine as their sole food source during their larval stage. Wild lupine grows in open sandy areas that can contain some trees. Lupine habitat becomes more rare as other vegetation grows and shades the stand. Sunny locations are also developed by people. Because of this habitat loss and decreasing butterfly populations, the U.S. Fish & Wildlife Service listed the Karner blue butterfly as an endangered species in December 1992. This listing began a program to recover Karner blues across their entire national range.

Interest in saving the little colorful flits brought together a diverse partnership of public and private groups who have developed a remarkable and

flexible conservation plan. The plan helps Wisconsin landowners and land managers continue routine land uses in areas where Karners live while protecting the butterfly and still complying with the Endangered Species Act.

The plan for protection

Landscapes change too slowly for people to see day to day, but nature is a shifting mosaic. The mix of open spaces, ground cover, shrubs and trees grow slowly. If you could speed up time, you would see these shifting patches as the land naturally matures and human activities change the land.

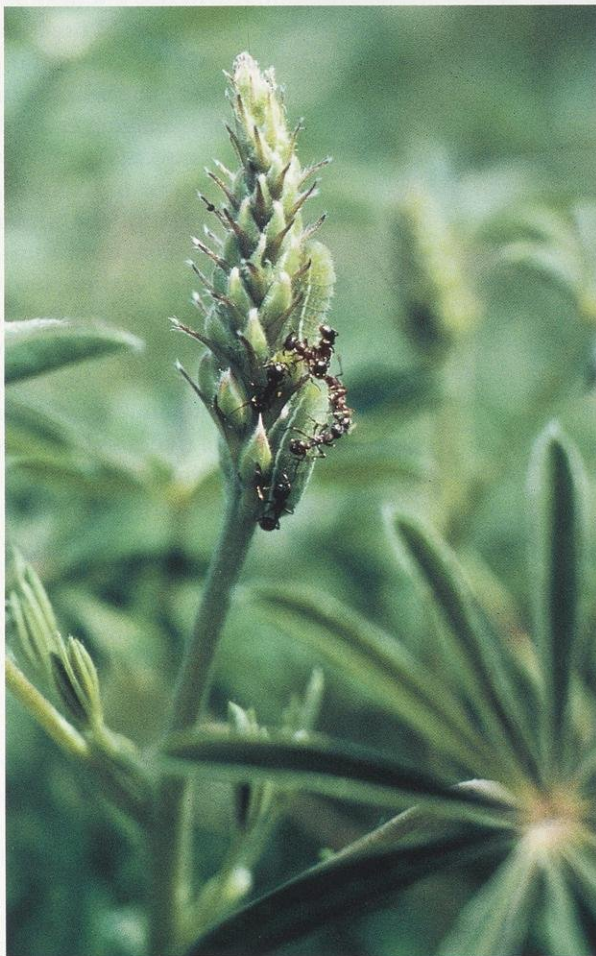
Wild lupine is a "disturbance dependent" species that thrives as lands are opened, more sunlight reaches the forest floor and the soil is turned over. "Disturbances" like tree cutting, grazing animals and forest fires open the canopy. In modern times, more open habitats like pine barrens and oak savannas have become rare as wildfires were contained, and wild herds of grazing bison and elk were heavily hunted. These natural ways of clearing the land were replaced by timber harvests, prescribed burning, and brushing and mowing of rights-of-way along roadsides and utility line corridors. These human actions can encourage the growth of wild lupine and other wildflowers, and such activities are important conservation strategies proposed in the Karner Blue Butterfly Habitat Conservation Plan (HCP).

The 26 partners in the HCP engage in a wide variety of land uses across diverse habitats on the nine million acres of Wisconsin that they manage. All have ideas for conserving and promoting butterfly habitat, whether they manage conservancies, commercial forests, utility and road corridors, or a variety of public forests, parks or natural areas to help sustain the rare butterfly.

The HCP aims to conserve wild lupine habitat in ways that are biologically sound and economical for landowners. The plan identifies ways to set back natural succession and provide the sunshine wild lupine needs to persist. This might be accomplished by

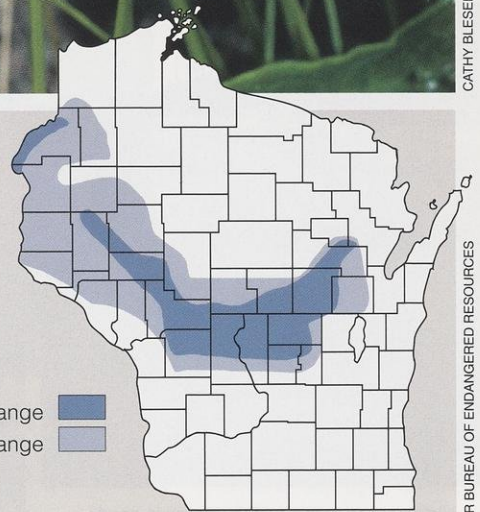


DAVID R. LENTZ



Where Karner Blue Butterflies Are and Where They Could Be

Documented Range
High Potential Range



(clockwise from left) Karner blue larvae and ants are visible on this lupine bud. The butterfly larvae only feed on young lupine. The adult butterflies will feed on other wildflowers like the goldenrod and butterfly weed shown above. Karner blues are primarily found in the grassy, sandy soils of central Wisconsin, but their potential range is larger. (below) Fields of lupine in sunny barrens and open areas are good places to search for the diminutive butterflies.



changing the time of year when roadside rights-of-way are mowed or raising the mowing height when butterflies are in their egg stage. It can be accomplished by cutting timber or burning prairies in patterns that provide continuous shifting habitat, or by artificially planting suitable open areas with wild lupine.

Avoiding a "spotted owl"-type impasse

Though the butterfly is tiny and its habitat occurs in small patches, the proposed statewide HCP for Karner blues is considered the largest conservation effort in the nation. Wisconsin is home to the largest remaining populations of Karner blues in the world, and the 26 HCP partners are committed to protect

on a larger scale. In my role as HCP project coordinator, I believe conserving endangered and threatened insects is not easy. You can't expect to protect individuals, so we aim to conserve butterfly populations. We think that the cooperation of our 26 partners on the large amount of land that they manage will adequately conserve the Karner blues. Smaller private landowners whose parcels contain butterfly habitat would be welcome to join the conservation effort. We will be evaluating whether this practical approach works in sustaining Karner blue butterflies on the larger land holdings.

Since the habitat needs to be disturbed periodically to maintain the open conditions, a hands-off approach would doom Karner blue habitat as natural succession would grow taller vege-

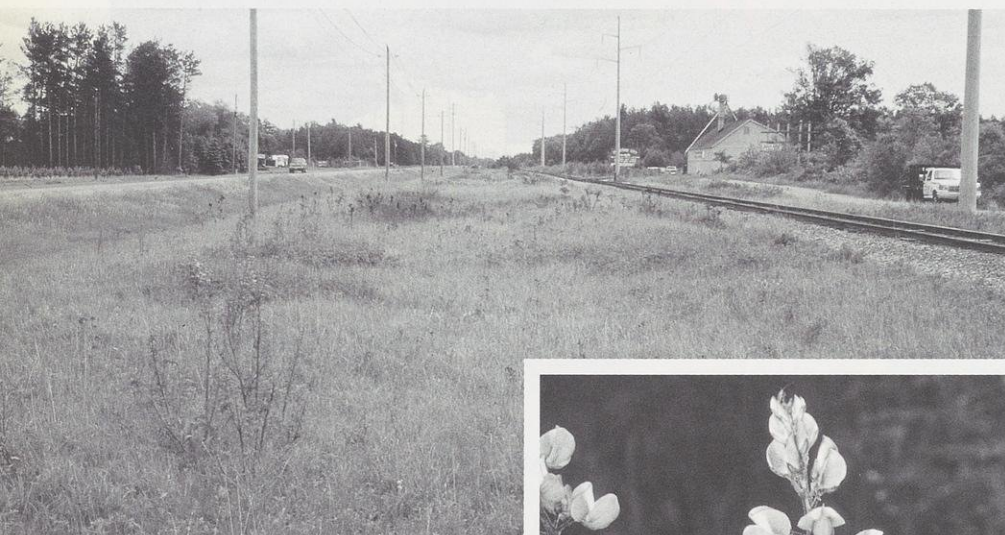
tation that would shade out lupine. The new HCP approach gives landowners more leeway to design conservation strategies that are effective on their land, to continue land uses the owners select and to pursue less costly ways to protect butterflies.

By designing habitat plans with the Department of Natural Resources and groups like the Audubon Council, the Sierra Club, and the Wisconsin Woodland Owners Association, the HCP partners received a broader perspective of options. The landowners are still clearly in the driver's seat and assume responsibility for being good land stewards, but the self-designed management plans are better tailored to the property and are more likely to succeed than a plan developed by top-down, inflexible regulations.

The Wisconsin DNR and the U.S. Fish and Wildlife Service will closely monitor if enough people who own parcels that are critical to the butterfly's survival can be persuaded to take part in the program. It will test if a flexible system can still protect wild lupine, Karner blue habitat and butterfly populations into the future. Time will tell if this model works for managing endangered and threatened insects.

It has been 70 years or more since many of the jack pine timber stands were harvested on their natural rotations. For a short time after those harvests, Karner blue butterflies will flourish. As the forest matures and the lupine gradually ceases to bloom, the plan is to harvest contiguous tracts and patches of mixed age tree stands. Then the lupine seeds waiting in the ground will be released and butterflies will move onto fresh habitat. The thoughtful strategies that public foresters and private landowners consider can help restore open pockets of green lupine with purple flowers, orange butterfly weed and the flitting Karner blue butterfly. □

David Lentz coordinates the Karner Blue Butterfly Habitat Conservation Plan Project for DNR's Bureau of Endangered Resources in Madison.



Highway and railway rights-of-way in sandy soils can make Karner blue butterflies into a roadside attraction. Clearing and mowing along the route gives lupine (right) a chance to grow along these sunny corridors. Utility companies and transportation workers are important partners in the Habitat Conservation Plan to sustain Karner blues.

more than 265,000 acres that will conserve the Karner blue butterfly and meet the intent of the federal Endangered Species Act (ESA) — but it won't be managed in a traditional way.

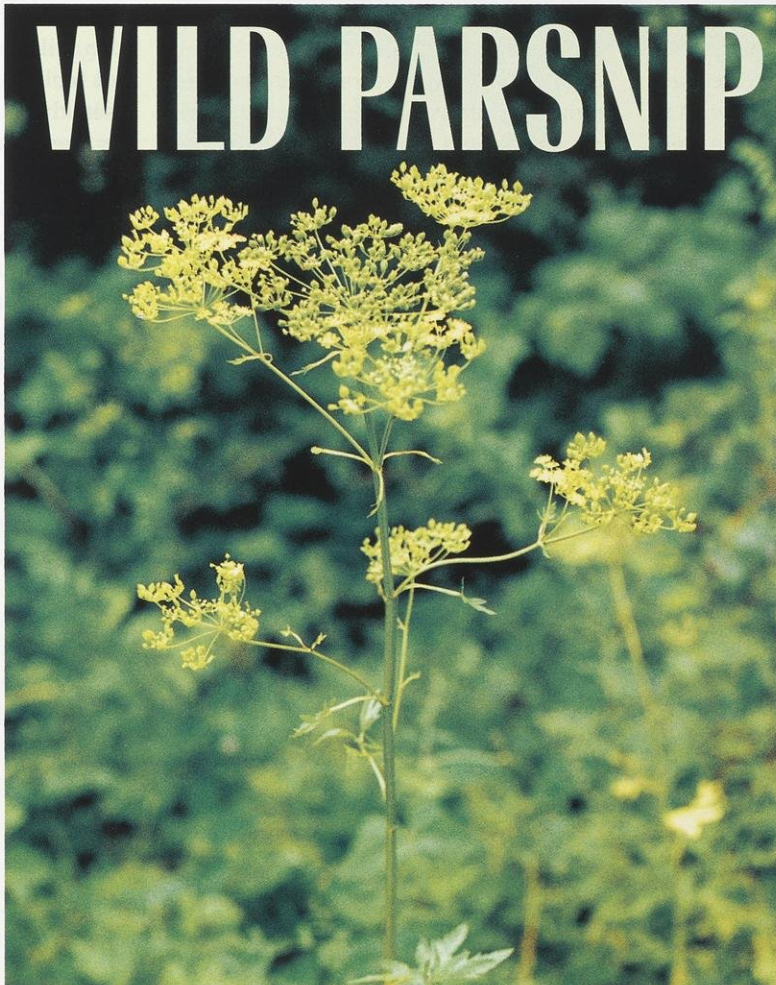
HCPs are more typically designed to protect individual organisms of an endangered species on a particular tract of land. Though the insects are small, it's important to protect them



Burned by

WILD PARSNIP

Story and Photos by
David J. Eagan



Sun-induced burns from a common weed can stump medical professionals and outdoor enthusiasts alike.

As children, we are warned away from fires and stoves, though most of us learn the truth of that lesson the hard way. But what if wild plants could cause burns, too — and nobody ever told you which ones? Well, such plants do exist, and if you spend time outdoors, chances are they have burned you or someone you know. And equally likely, neither you, nor your doctor or nurse recognized the burn for what it was.

Unexpected patches of redness and blisters following a romp in the woods or fields usually are blamed on poison ivy, stinging nettles, insects or spiders. But there's another potential culprit: Wild Parsnip (*Pastinaca sativa*), the hobo brother of cultivated parsnip. Wild parsnip contains chemicals in the juices of its green leaves, stems and fruits that in combination with sunlight can cause an intense, localized burn — actually, a sunburn.

In my research for this article, I found that very few people, including medical professionals, know this plant and can confidently recognize its burns. At a recent dermatology conference, I was told, slides of wild parsnip burns were shown at a “stump-the-experts” quiz session. Only a few in the audience knew the answer.

One physician I spoke with referred to the plant as a “medical orphan” that might be mentioned in medical school,

but is rarely covered in detail. And even doctors familiar with how wild parsnip looks on skin would have trouble identifying the plant in the field.

Parents, pharmacists, landowners, naturalists, teachers, park employees — I asked a wide range of people what they knew. And it was rare indeed when someone understood the whole parsnip story. Many thought the burns arise from an immune response, like poison ivy. They do not. A manager at a state park always warns his employees to be careful around wild parsnip — he was familiar with the burns —

but he didn't know that sunlight triggered the reaction. And the general public? The same park manager told of seeing a little girl one sunny summer day with a wreath of fresh parsnip flowers in her hair, which is a little like playing with fire.

In a manner similar to people, animals can get parsnip burns if they have lightly pigmented skin covered with little hair so both plant juices and sunlight reach the skin.

How an old flame sings new admirers

Wild parsnip is an eye-catching, non-native weed that hails originally from Europe and Asia. There are varieties grown for their edible roots, but whether the

wild type came to America as a garden vegetable or in the cuffs of some immigrant's pants, no one knows. Dried specimens at the University of Wisconsin-Madison herbarium date back to 1894 in southeast Wisconsin, and a specimen was collected on Madeline Island at the northern tip of the state in 1896.

Although not a native plant, wild parsnip has likely become “naturalized” in all of Wisconsin's 72 counties and is here to stay. Wild parsnip grows in large patches or as scattered plants along roadsides, in abandoned fields,

on pastures, on restored prairies, and in disturbed open areas. And, according to observers around the state, its range has been expanding rapidly in recent decades.

The fact that wild parsnip is spreading is one more reason people are coming into more frequent contact with it. Another reason is it is one of the chief targets for weed removal in prairie restorations. Unlike benign weeds, wild parsnip can take over an area, outcompeting native plants. The ecological impact of this invader puts it high on the hit list of land managers.

There are chemicals in wild parsnip

In its first year (*below right*) wild parsnip leaves grow in rosettes low to the ground on a carrot-like taproot. The second year the plant grows two to five feet tall and develops a yellowish umbrella-like flower that looks a bit like Queen Anne's lace.



called psoralens (precisely, furocoumarins) that cause what dermatologists call "phyto-photo-dermatitis." That means an inflammation (itis) of the skin (derm) induced by a plant (phyto) with the help of sunlight (photo). When absorbed by skin, furocoumarins are energized by ultraviolet light (present during sunny *and* cloudy days) causing them to bind with nuclear DNA and cell membranes. This process destroys cells and skin tissue, though the reaction takes time to produce visible damage.

Botanical basics

Life history Wild parsnip typically lives for two years. The first year, as a spindly rosette of leaves, it keeps fairly low to the ground while the plant's carrot-like taproot develops. It may live two or more years this way until conditions are right for flowering. The second year, a hollow, grooved flower stalk rises 2–5 feet high, first holding clusters of yellow flowers and later dozens of flat, oval seeds.

Leaves Pinnately compound, with a main stem and 5 to 15 leaflets.

Flowers Yellow, in flat-topped umbrella-like clusters at the top of the plant.

Season Wild parsnip rosettes are among the first plants to become green in spring, and its flowers turn a prominent yellow in mid-summer. After flowering and going to seed, plants die and turn brown in fall, but first year rosettes remain green until frost.

Habitat Roadsides, abandoned fields, unmowed pastures, edges of woods, prairie restorations.

The chemical in wild parsnip may be a defense mechanism, just as celery plants will produce higher levels of furocoumarins when they are under attack from pink-rot fungus.

In mild cases, affected skin reddens and feels sunburned. In more severe cases, the skin reddens first, then blisters rise — some are impressively large — and for a while the area feels like it has been scalded. Places where skin is most sensitive (arms, legs, torso, face, neck) are most vulnerable. Moisture from perspiration speeds the absorption of the psoralens.

Blisters appear a day or two after sun exposure. Soon after, blisters rupture and the skin begins to heal. One of wild parsnip's "signature" effects is a dark red or brownish discoloration of the skin in the area where the burn occurred. This hyper-pigmentation can persist in the skin for as long as two years.

Parsnip burns often appear as streaks and long spots. These reveal where a juicy leaf or stem dragged across the skin before exposure to the sun. Because of its surface resemblance to the effects of poison ivy, and because wild parsnip is so rarely accurately identified, it nearly always is diagnosed and treated as poison ivy. If you note the six clin-

Wear long pants when clearing brush. This person wore shorts on a sunny day and was badly "burned" by wild parsnip.



ical differences (see sidebar), however, you can readily tell them apart.

Treating a parsnip burn

If you get a parsnip burn, relieving the symptoms comes first. The affected area can be covered with a cool, wet cloth. If blisters are present, try to keep them from rupturing for as long as possible. The skin of a blister is “nature’s bandage,” as one doctor put it, and it keeps the skin below protected, moist and clean while healing occurs. When blisters pop, try to leave the skin “bandage” in place. To avoid infection, keep the area clean and apply an antibiotic cream.

Adding Domeboro powder to cool cloth compresses can help dry weeping blisters. Some doctors recommend a topical or systemic cortisone-steroid for



(clockwise from upper left) Symptoms of wild parsnip burns take time to develop following exposure to plant juices and sunlight. Redness was noticeable two days after exposure. Blisters developed three days after exposure. Eleven days after exposure the site was healing. A darkish skin discoloration can persist for up to two years. (background) Dense, roadside patches of wild parsnip are attractive, but show how the plant invades and dominates open areas.

Comparing the culprits: wild parsnip vs. poison ivy

	wild parsnip	poison ivy
HISTORY OF CONTACT	No previous exposure required. Everyone can be affected if sufficiently exposed.	Prior exposure and sensitization to poison ivy required. Only 50–85 percent of the population will ever develop an immune response to poison ivy (and to chemically related poison oak and poison sumac). It may take repeated exposures to develop sensitivity, though for many, one touch is enough.
TIME OF ONSET	First exposure — redness within 24 hours, blisters for several days. Subsequent exposures — same reaction as first exposure.	First sensitizing exposure readies the immune system to respond. Subsequent exposures — symptoms occur in several hours to 2 days. And because poison ivy’s reactive oil can last for months on clothing, pet fur and other surfaces, exposure can occur repeatedly.
LOCATION ON BODY	Limited to areas exposed to sun.	Can occur anywhere poison ivy’s reactive oil contacts the skin. It is often transferred by hands or clothing to areas “where the sun don’t shine.”
SYMPTOMS	Burning pain, which is short-lived.	Itching, which can last for weeks if untreated.
COURSE	No new redness or blisters over time. Condition confined to initial sites.	New lesions can appear over a week or more. Different skin areas react at different rates.
RESIDUAL “SIGNATURE” VISIBLE ON THE SKIN	Reddish or brownish pigmentation, noticeable for months or years.	None.

*Adapted from Sommer, Robert G. and Otis F. Jillson, 1967. “Phytophotodermatitis.” *New England Journal of Medicine* 276(26): 1484-6.

extreme discomfort. For serious cases with extensive blistering, consult a physician.

Avoiding exposure, of course, is the wisest tactic. By learning to recognize the plant in different seasons and in different stages of growth, you can steer clear of it, or protect yourself by wearing gloves, long pants and long-sleeve shirts. Some people pull up the wild parsnip in the evening, when exposure to sunlight is minimal. If you do get the plant juice on your skin, the sooner you thoroughly wash the area, the less you will be affected.

Tales from the field

In case you're wondering, I've learned about wild parsnip burns firsthand. Over a decade ago, and newly arrived to Wisconsin where wild parsnip is common, I didn't believe my naturalist-friend who told me that it could cause blisters. Regarding myself as more of a botanist than she, and having never heard of such a danger, I scoffed. While she looked on dubiously, I picked a leaf, crushed it in my fingers and rubbed it on the underside of my forearm.

As I'd expected, nothing happened all that day and I remember feeling a bit smug. By afternoon the next day, however, I was not feeling so confident. The area on my arm turned red and quite sore. A few hours later, a three-inch long blister bubbled up and swelled like a miniature balloon.

I learned my lesson, but that didn't stop me from experimenting further. Borrowing a term from prairie managers, I now conduct "controlled burns" on my arms most summers; using the resulting small blisters and spots for show-and-tell to educate others about wild parsnip.

Many friends and acquaintances have shared their experiences with parsnip burns. One person told of a small burn that appeared unexpectedly on his leg. He had been pulling wild parsnip from a prairie on a sunny day while

wearing protective clothing. It wasn't until the burn appeared that he noticed a small hole in his jeans, just large enough to admit plant juice and a bit of sunlight. One friend (see p. 22 photo) received a frighteningly bad case of parsnip burns. He had been clearing parsnip from a field with a scythe while wearing sandals and shorts. The resulting burns were so bad that his legs looked like they had been sprayed with acid.

In the literature about wild parsnip and other phototoxic plants, there is mention of a contemporary contributor to the problem: weed whackers or string trimmers. These machines can spray bits of pulverized leaf and stem over the exposed skin of their operators, resulting in bizarre speckled patterns of small blisters and redness. One dermatologist in Madison saw such a case last summer. And another family practitioner in southwest Wisconsin regularly treats high school students who are hired to cut weeds along roadsides, typically while shirtless, for parsnip burns.

Have you been burned?

Keep these three points in mind when you encounter wild parsnip:

1. Everyone can get it. Unlike poison ivy, you don't need to be sensitized by a prior exposure. Wild parsnip causes a

non-allergic dermatitis that can occur with the right combination of plant juice and sunlight.

2. You can touch and brush against the plant — carefully — without harm. Parsnip is only dangerous when the juice gets on skin from broken leaves or stems. Fair-skinned people, however, may be extra-sensitive to tiny amounts of juice.

3. Wild parsnip's "burn" is usually less irritating than poison ivy's "itch." Generally, wild parsnip causes a modest burning pain for a day or two, and then the worst is over. The itch and discomfort from poison ivy, in contrast, can drive people crazy for a long time.

Some unanswered questions remain. I did not test, nor did I find in the medical literature, how long skin remains sensitive to sunlight after being exposed to parsnip juice. And there are also other plants in Wisconsin — such as Queen Anne's lace or wild carrot (*Daucus carota*) and cow parsnip or hogweed (*Heracleum maximum* and *Heracleum mantegazzianum*) — that are reported to contain psoralens that cause phytophotodermatitis.

Are you interested in helping me discover more about the wild parsnip and other burning plants? I invite all interested readers to consider the two questions listed below. Send your responses to the e-mail address following the questions, and together we can add to what's already known about these fascinating species.

Question 1: Is wild parsnip found in your area, how abundant is it, and where is it commonly found?

Question 2: Do you have personal experience with parsnip burns (or burns from other plants)? Tell the tale.

E-mail your responses to: djeagan@facstaff.wisc.edu

I hope to hear from at least one person in every county in the state. An update on wild parsnip and other phototoxic plants, which will include your feedback, will appear in a future issue of *Wisconsin Natural Resources* magazine. □

David J. Eagan is a field botanist, naturalist and native plants gardener who works for the Institute for Environmental Studies at the University of Wisconsin-Madison.

For more information

1. Botanical Dermatology: Phytophotodermatitis
<http://rdrugge.nai.net:591/botanica/bot5.htm>
2. Wild Parsnip — Ecology and Control (Wisconsin DNR)
<http://www.dnr.state.wi.us/org/land/er/invasive/factsheets/parsnip.htm>
3. Wild Parsnip — Noxious Weeds of Ohio (with photos)
http://www.ag.ohio-state.edu/~ohioline/b866/b866_9.html
4. Wild Parsnip — Element Abstract for The Nature Conservancy
<http://tncweeds.ucdavis.edu/esadocs/documnts/pastsat.html>

A clarion bugle across Badgerland

There's a growing call to bring back elk to several areas of Wisconsin.

James C. Bishop, Jr.



The elk herd's social structure varies by season. Cows and offspring band together in summer; males are solitary or form small bachelor herds. Elk rut in September and mate in early fall. The calves are born the following spring and stay with the cow through winter.

vation Commission brought in a train-car load of elk that had been starving in Yellowstone National Park. Only two elk from that first load survived and a second carload of 32 elk was shipped in 1917. These animals were placed in a 300-acre enclosure at Trout Lake some 10 miles north of Minocqua. Pneumonia killed half the group that first winter. According to accounts in a 1988 centennial edition of the Lakeland Times newspaper, the herd barely held on. By December 1928, only 19 bulls, 17 cows and nine calves survived. Sustaining a herd that was not growing appreciably was deemed too costly by the Conservation Commission, and in 1931 some of the animals were sent to parks and zoos or given to private individuals. The remaining 15 or so elk, were unpenned and set free. They soon drifted down to the Arbor Vitae and Woodruff area.

Newspaper reports note the elk became a bit of a nuisance — eating haystacks and garden produce, running through barbed wire fences and, during the rut, challenging humans. Art Oehmcke, a retired DNR District

On a quiet, wooded hillside south of Clam Lake in May 1998, elk cow number 26 gave birth to a calf, one of the first-born from the first herd of elk to roam Wisconsin in 109 years. The young calf was fawned over by its mother and watched equally closely by elk researchers and a host of supporters who hope to re-establish this extirpated species.

The last native elk in Wisconsin was

shot in 1866, ending the chance for locals to see any of the estimated 10 million elk that once roamed the United States from Mexico to Maine. Unregulated subsistence and market hunting dropped the elk population to 90,000 animals nationwide by the early 1900s. Conservation-minded hunters and other citizens became concerned and started efforts to protect elk and reintroduce them to their native range.

In Wisconsin, the first attempt occurred in 1913. The Wisconsin Conser-

HERBERT LANGE



JAMES H. SHUEY, RMEF

(above) Settlers prized elk meat and hunted them to extirpation in the 1880s in the Midwest. (top right) Dignitaries celebrated the introduction of an experimental elk herd in the Chequamegon National Forest near Clam Lake, Wis. in 1995. (below) Elk will live almost anywhere they can graze. The study areas are isolated from large communities and agricultural lands.

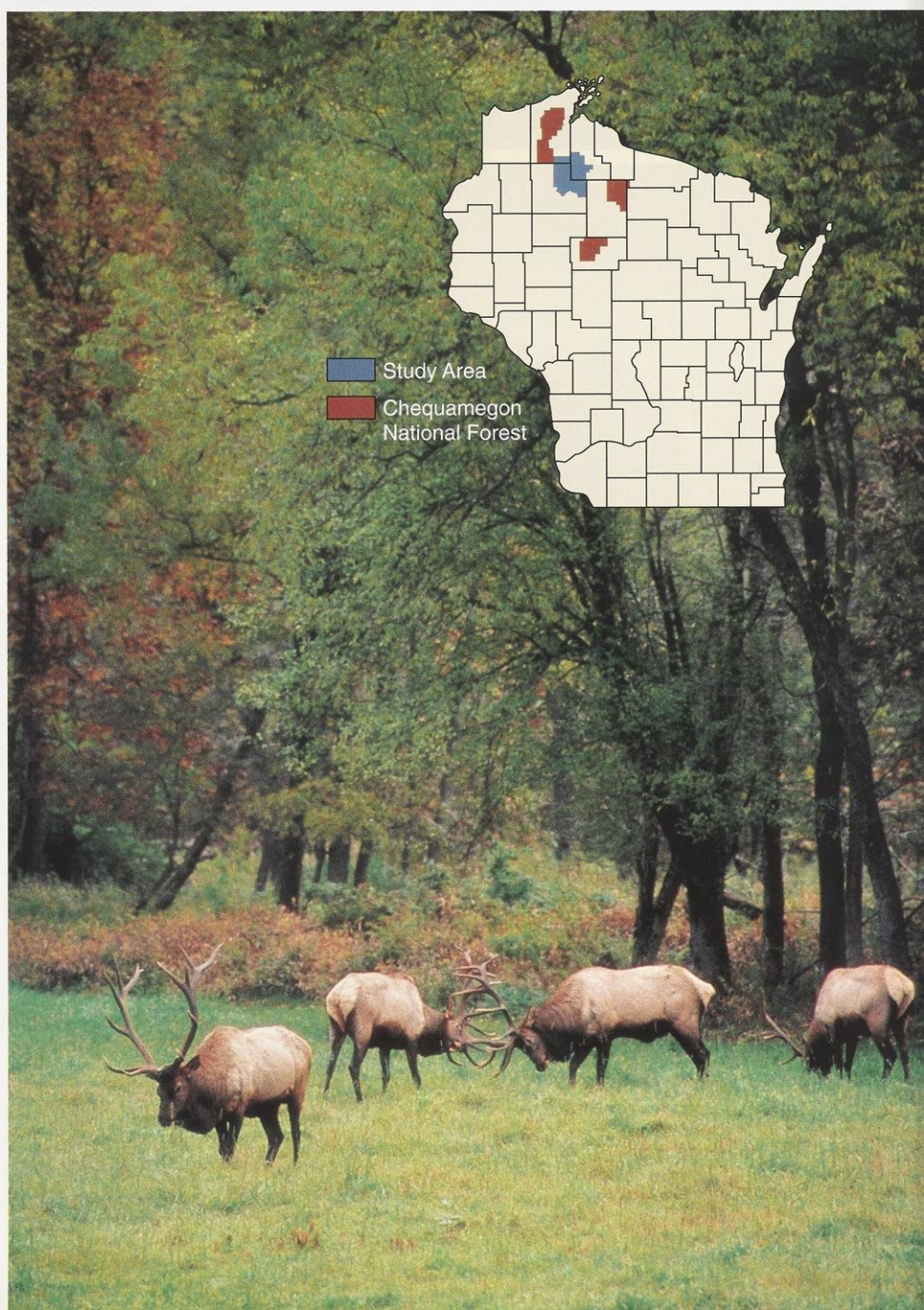


ROCKY MOUNTAIN ELK FOUNDATION

director was then supervisor at Woodruff. He remembered the phone call he received from a distressed woman that a bull elk had her husband cornered and corralled in a barn. Oehmcke went to the farm with a shotgun, fired two shots in the air and the bull ran off.

One by one, the released elk were shot as nuisances or mistaken for deer. One of the last, a 600-pound bull, was shot south of the village of Sayner during the 1943 deer season. When contacted, Oehmcke sent two men out with a Caterpillar tractor to drag the animal out of the woods. They loaded it on a truck, took it to the Woodruff Ranger Station and hung it in a tree.

"In those days we'd sell poached deer by the pound to anyone who wanted the meat," Oehmcke said, "When two Illinois men saw the elk, they wanted to buy it and we sold it to them." With ropes and pulleys the men managed to lay the elk on their car roof, which promptly collapsed! Oehmcke later received a news clip from the Harvard, Illinois newspaper in which the two Illinois men claimed they were



charged by a big bull elk in northern Wisconsin and had to shoot it to save their lives.

Little was said about bringing back elk again until 1989 when legislative bills directed the Department of Natural Resources to study the prospect of reintroducing moose, caribou and elk into Wisconsin. An assessment a year later concluded that of the three species, elk had the greatest potential to survive here.

DNR staff were directed to find a suitable area to test elk reintroduction.

The forested expanses and rolling hills of the Bayfield peninsula seemed like an ideal spot. Lake Superior winds moderated the year-round temperatures and the area was sparsely populated. In 1991, DNR wildlife biologists designed and published a management plan, but some area farmers, snowmobilers and deer hunters took issue with the proposed project. Lacking public support, the Natural Resources Board chose not to pursue placing a herd in the Bayfield area.

Project proponents persisted and formed a Wisconsin Elk Study Committee (WESCO) of wildlife biologists, area citizens and elk fans. They explored alternative sites and determined that a relatively remote area on the Chequamegon National Forest near Clam Lake offered both suitable habitat for elk and less conflict with neighboring farms.

Centered in the chosen 315 square miles of prime elk range is a U.S. Navy communications system called Project ELF (Extremely Low Frequency). The Navy cleared an X-shaped swath 100 feet wide and 37 miles long to array and deploy two huge underground antennas that are used to send signals to submerged U.S. submarines worldwide. The cleared area traverses uplands, lowlands, and a wide variety of cover types. The cleared region would provide closely clipped grasses and other ground forage for grazing elk.

Surrounding the primary range is 404 square miles of additional hardwoods and conifer swamps. About 85 percent of this forested rangeland is publicly-owned. The vast property contains hundreds of wildlife openings and aspen clearcuts that are ideally suited to elk.

Once the reintroduction area was selected, elk proponents went to work. With elk information in hand, Martin Hanson of Mellen and other WESCO members made 32 presentations to local civic, conservation, government and industrial groups. They got favorable responses from 25 groups, neutral reactions from four groups and negative responses from only three groups. Strong political support was also garnered from the Town of Clam Lake and the Ashland County boards.

"We knew from the start that we'd need strong support locally," Hanson said, "and that a county vote was the turning point in getting the project going."

Given a suitable site for elk and public backing, WESCO submitted a proposal to conduct a four-year study, which was approved by the Department of Natural Resources in June 1994.

Next step? Find some elk! Disease transmission, herd health, shipping logistics, costs, and quarantine time were all considered. The study committee considered elk from South Dakota, Wyoming, Colorado, Montana, Idaho, Utah, Manitoba, Michigan, and a 6,000-acre elk

ranch in Wisconsin. Eventually Michigan DNR Director Rollie Harmes offered Wisconsin DNR Secretary George Meyer 25 elk from their herd. This relatively nearby site had similar habitat to the Wisconsin site, was on the same latitude and the herd was disease-free.

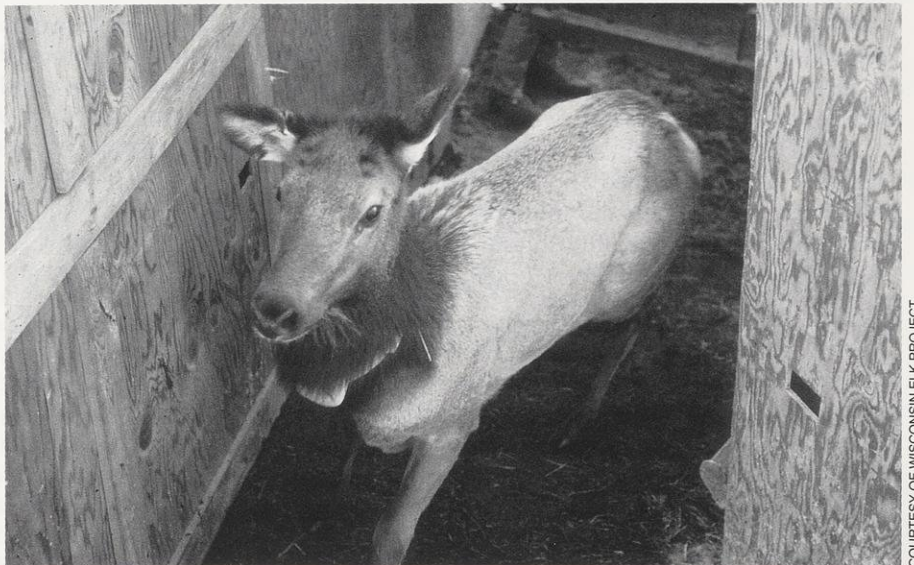
Elk were trapped, penned and quarantined for 90 days. The herd was tested for six diseases, dusted for external parasites, treated for internal parasites and collared with battery and solar-powered transmitters. On May 3, 1995, a day after the quarantine ended, Gov. Tommy G. Thompson opened the trailer gate releasing the transported elk to a two-acre holding area that gave the elk two weeks to adjust to their new surroundings. Then the gates were opened and the elk moved out.

For the last four years, researchers have tracked elk, studied their daily health and survival, kept records of herd reproduction and assessed if elk are compatible with surrounding resources and people. The study, under-

(right) The 37 miles of mown grasses along the Navy's Project ELF corridor make ideal grazing grounds for elk. The route adjoins forests, wetlands, bogs and uplands.
(below) The 25 elk imported from Michigan were trapped, transported, penned, quarantined and tested to provide a healthy herd and reduce the chance of disease transmission.



COURTESY OF WISCONSIN ELK PROJECT



COURTESY OF WISCONSIN ELK PROJECT



COURTESY OF WISCONSIN ELK PROJECT

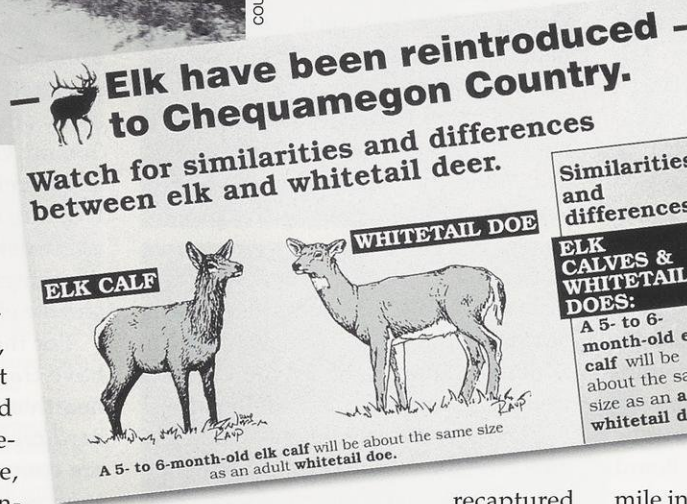
Elk sighting is a tourism attraction near Clam Lake and deer hunters in the area learn to distinguish elk from whitetails.

written by the Rocky Mountain Elk Foundation (RMEF), was designed and carried out by Dr. Ray Anderson, a retired UW-Stevens Point wildlife researcher. The money to move, release and track the herd included \$100,000 from RMEF, \$50,000 in state funds, \$50,000 from the Navy and funds from the U.S. Forest Service, private donors and businesses. Private donors in Wisconsin were led by Bernie Lemon, a dedicated elk fan from New Berlin, who started the first RMEF state chapter here in 1987. Currently 19 RMEF chapters and almost 4,000 members across the state support the elk project.

"I'm just proud to be part of all this," Lemon said. "I look forward to the day when my grandchildren can view elk footprints in the sands of northern Wisconsin or see one of these magnificent animals grazing on a hillside."

For the first three years of the study, each elk was radio-tagged and monitored daily by antennas mounted on three vehicles. During the fourth year, adult elk were monitored every other day, but calves were checked daily.

A day after their initial release, the elk formed small groups and moved away from the pen area. Some moved seven to nine miles that first day. One group headed north across Highway 77, while a number of the bulls and a few of the cows took off on solo adventures.



recaptured and returned to the original release site where she has remained.

Three elk died early in the study from stresses of capture, transport and quarantine. Another was shot during the 1995 deer season.

The rest are doing fine and the herd has grown steadily. With 25 calves, the Wisconsin herd has at least 50 animals. Anderson said calf survival has been excellent with few losses to winter stress, though two elk calves were killed by bears.

The north has a large bear population and "we knew bears could prey on young elk much as they do on deer fawns," Anderson explained. The big difference between deer and elk, the researcher said, is that elk cows try to protect their young while deer flee. Flight allows deer to protect themselves so they can reproduce again. Elk are big enough to discourage most predators and elk calves are very mobile within three to five days. Elk can elude bears whereas deer fawns are vulnerable for about 12 days.

In studying elk calf survival, researchers captured and radio-collared 18 bear and two wolves. Elk calf survival is encouraging considering that

predators annually take about 23 percent of the deer fawn crop in Wisconsin, Anderson noted.

The elk also survived two severe winters during 1995-1996 and 1996-1997. Elk pellet studies, browse surveys and urine analysis found the animals were eating well and remaining healthy despite 30 plus inches of snow and record low temperatures in the Clam Lake area. The long-legged elk plowed through deep snow and pawed through it to get to food. Winter elk pellets had a mix of grass and woody browse.

"Elk and deer inhabited the same area yet remained apart and we've found they can co-exist quite nicely," Anderson said. He related similar Michigan experiences where 35 deer per square mile inhabit an area that supports about 1,200 elk.

Researchers are also studying how elk are affected by logging, snowmobiling, and hound hunting for bear. Few effects have been noted.

Interactions with people, particularly hunters also take time. An Elk Awareness Program before each deer season posts warning signs on the periphery of the elk study area. Researchers and volunteers visit every deer hunting camp in and around the site to distribute brochures on how to distinguish elk from deer. Only one elk has been shot in four years.

When elk began crossing Highway 77, "Elk Crossing" signs were erected on a two-mile stretch of the road west of Clam Lake. Thus far only one minor collision was reported which didn't damage the car nor injure the elk calf.

The village of Clam Lake has embraced the newcomers. There's a large sign in the heart of town and elk photos by local residents line the walls of area businesses. Residents receive research progress reports and more elk-seeking tourists visit the area.

Anderson said local acceptance is good, but elk tend to get conditioned to people and autos. "Elk can become al-

most tame," he said, "especially if people feed the animals, which is undesirable."

He is also watching for crop damage. In their current range, the elk are having little effect on agriculture. However, if the herd expands, elk foraging on agricultural and private forest crops, will need to be addressed. Anderson believes elk will be accepted in Wisconsin and crop depredation can be managed to minimize problems, as it is in Michigan.

At their current growth rate, Anderson projects a state population of 500 to 600 animals in 11 years. More animals could also be brought in to boost the herd.

"We have the habitat," he said, "and elk are extremely adaptable." He noted large areas of public lands with little agriculture in northeastern Wisconsin and open prairie lands in western portions of the state. He noted the work of Jon Gilbert, a wildlife biologist for the Great Lakes Indian Fish and Wildlife Commission who is mapping potential elk habitat using computer mapping techniques. Other researchers have done thesis projects on the elk's winter food habits, site preparation for elk release locations and habitat use throughout the year.

Bill Mytton, DNR big game ecologist, said the elk study will be completed this summer and findings will be compiled for public review by September. Thereafter, DNR will hold several open houses statewide to gather public comments on the future of elk in Wisconsin. "We would hope that those interested in elk and those who think they may be affected by a wild elk herd would come to express their opinions and concerns," Mytton said. Strategies to address those concerns will be incorporated in the state's future elk management plans. A public comment period will draw to a close in December 1999. Once informa-

tion is analyzed, the DNR Secretary and Natural Resources Board will decide whether and where elk populations will be established across Wisconsin's varied landscape.

Our final elk plan will identify potential range limits, population size and management strategies," Mytton said.

Just before elk were released at the Clam Lake site, the spiritual leader of the Lac Court Oreilles band of the Chippewa Nation conducted a pipe ceremony to cleanse, sanctify and celebrate the return of this extirpated species to Wisconsin soil. Elders from most of the six Ojibway tribes in Wisconsin participated.

The Chippewa Nation once hunted widely for elk and revered it for providing food, clothing, tools and other benefits. In the pipe ceremony, the elders asked Earth Mother to accept back one of its lost children, to embrace elk for once again taking a rightful place in Wisconsin's grasslands and forests. □

James C. Bishop, Jr. of Spooner is DNR's regional public affairs manager for northern Wisconsin.



JOHN BOETTCHER COURTESY OF RMF

Readers Write

AVOIDING TIMBER RIP-OFFS

I read with great interest "Stumped by a sale" (October 1998). My wife and I hired a logging company in the spring of 1997 to harvest timber on land we own. The company was referred to us by neighbors who had been pleased with the harvest on their land. We were overjoyed to receive a verbal estimate of \$20,000-\$25,000 for the timber they were going to harvest.

Problems began the first day when they dropped a tree over some power lines knocking out power to many area residents. Their work was sporadic and we

were never really notified when they finished sometime in the fall. I had asked to be present each time they scaled logs prior to hauling them, but was never contacted. Now there is a dispute over how much timber was harvested. This is difficult to establish with the trees gone and I wasn't present during the scaling.

To date we have received a check for \$4,000 and they claim they owe us \$6,000 more. Fortunately, we have a written contract, but it hasn't helped in receiving payments. We have since discovered that this same company owes many other landowners money too. We are in the process

of taking them to court.

What is extremely surprising is the number of other people in the area who also had timber stolen by the same company. The company is still in business and is continuing to mislead other landowners. From your October article I realize this is a larger scale problem in our state. Surely the DNR or the State Legislature can do something to prevent other landowners from suffering through an ordeal like this. Wisconsin licenses taverns, teachers, barbers and others. Has the state considered a logging license which could be revoked when a logging company uses poor busi-

ness ethics? I know this might hurt honest logging operations who are doing a fair job, but those people are being hurt now by companies that care little about the resource or the people involved.

*Dave Stutzman
Tomah*

*DNR Private Forestry Specialist
Paul Pingrey responds:*

Yours is an unfortunate, regrettable experience of a logger who mistreated you and your land. Here are some steps that can prevent most timber sale problems:

1. Write a forestry plan ex-

plaining why a harvest is needed, methods you want used to select which trees will be removed, and follow-up actions. DNR foresters, private consulting foresters and industrial foresters can help you. A good plan considers how the harvest will affect wildlife, soil, erosion and other factors.

2. Let a forester mark the trees to be harvested. Sometimes they mark individual trees, other times they mark the borders of discrete harvest areas. In either case, the forester can give you an accurate estimate of the volume of timber to be removed before ANY trees are cut. You can adjust the proposal. Those volume estimates and a map should become part of a timber sale prospectus describing what is for sale, how it should be cut and other terms to protect your interests. We recommend that landowners write their own contracts as they protect you better than the contracts written by loggers. Guess whose rights those contracts protect! DNR can provide sample contracts for your review.

3. Ask loggers to bid on your harvest based on your prospectus. Don't sell to the first person who comes to the door with cash. You may not know the value of your timber, but loggers competing fairly for your contract will know it. Loggers who must compete for your bid will offer the most they can for the quality and quantity of timber you are selling.

4. One term of the contract will cover method of payment. Some landowners choose a lump sum 100 percent payment before the work starts. "Scaled" sales, where logs are measured in each load offer payments as loads are shipped or delivered to mills. The risks are greater with such sales and should only be used with reputable loggers. The risks are also reduced if a scaled sale is supervised by a private forester.

To keep control of all parts of your sale, DNR recommends landowners get professional assistance. DNR foresters only prepare plans and set up small sales

as their workloads allow. To help you find quality assistance from private and industrial foresters, we offer a *Directory of Cooperating Foresters*. These foresters agree to abide by sound forestry standards set by the DNR. They offer services the DNR foresters can't legally provide. Your consultant can direct you to trustworthy buyers, prepare contracts and supervise the cutting. They charge a small fee for their services that usually pay their way.

Both state and private groups support sound forestry practices in other ways. A fact sheet, "Cutting Standing Timber" is available from the Dept. of Agriculture, Trade and Consumer Protection. You can also check with DATCP at 1-800-422-7128 to see if complaints have been filed about a logger.

The DNR is working with state legislators on a proposal to strengthen timber theft and timber trespass laws. The timber industry is also trying to weed poor quality loggers on its own. The Sustainable Forest Initiative is an industry-sponsored certification program designed to protect woodlands through logger training. Many paper mills will only buy from SFI certified loggers.

Landowners have a personal responsibility to protect themselves in any business dealings, and selling timber is no exception. Licensing loggers may be a complementary idea, but can't take the place of proper precautions.

TAX SHIFTS

I found your February article "Good value, just compensation" quite enlightening as I was aware of some of the land programs, but it was never explained as well. Unfortunately, the way the article is portrayed it is assumed that someone or some entity is reaping free money from the State of Wisconsin to offset losses in property tax revenue for land removed from the tax rolls when purchased by the State. Essentially what is really happen-

ing is tax shifting, as all state taxpayers are covering the costs of these payments to various local governments by the State. Taxes are also increased to cover administrative costs.

I am not opposed to these programs, but we must be careful to limit them and not assume that somewhere, some place, there is a free lunch. Always remember that "There ain't no free lunch." Never has been, never will be.

James A. Derbique
Green Bay

THE WAY TO DIKE 17

When I saw the directions to Dike 17 Wildlife Area in eastern Jackson County ("Winged sand dancers," February 1999), I knew something was wrong. The property is 13 miles west of the Wood County line, not three miles.

In the 1930s I helped create that dike, and I wouldn't want anyone looking for it in the wrong spot 10 miles away.

Stan DeBoer
former DNR District Director
Oshkosh

A HOME LINK

I guess once a Wisconsin resident, always a Wisconsinite. I think this is the best natural resources magazine I have ever read. I was born and raised in Wisconsin and moved to Montana last May to work for the

Forest Service. Your magazine keeps me smiling and in touch with such a great state. It will always be home to me.

Sean Meister
Darby, Mont.

WHY THE LIGHTS?

In your story on the northern lights ("Celestial shimmer," February 1999) the fact that electrons and protons have a magnetic moment ("act like magnets") does not explain why the electrons spiral around the earth's magnetic field lines to make the Aurora. These "magnets" are far too weak to account for the deflections that give rise to the Aurora action.

The Aurora occurs because electrons carry an electrical charge and when that charge enters the magnetic field it experiences a force perpendicular to both the velocity of the electron and the direction of the magnetic field. This double perpendicularity means the electrons will spiral around the lines of the earth's magnetic field and bounce back and forth between the polar regions coming close enough to the earth's surface to make an Aurora.

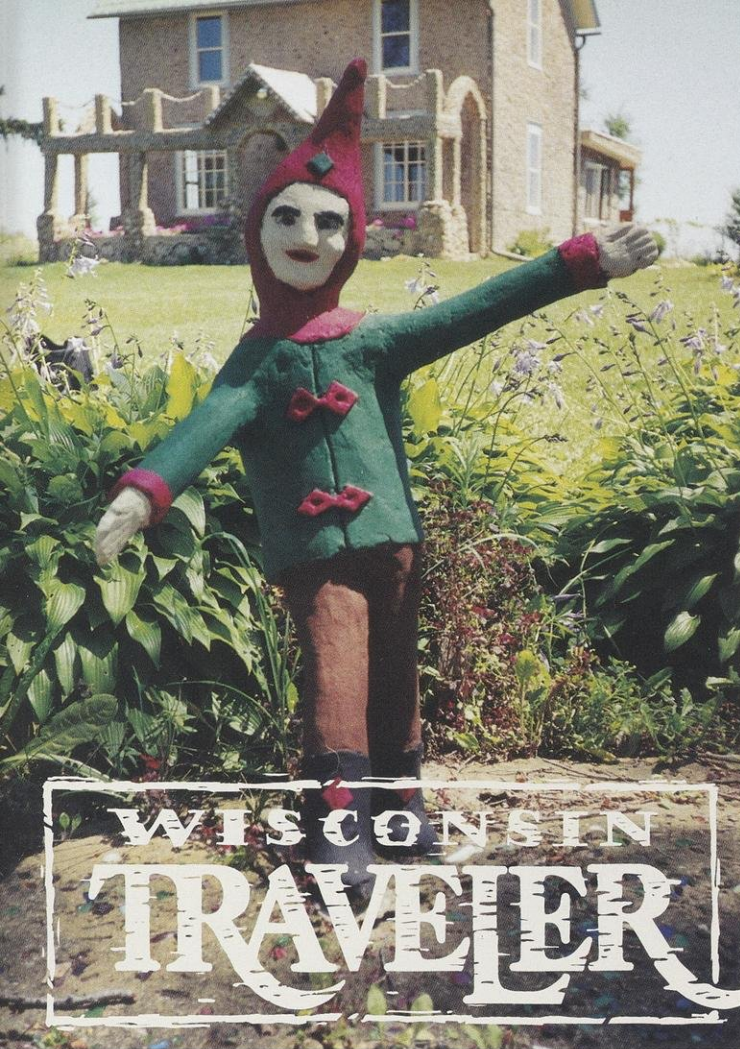
C.H. Blanchard, Professor
emeritus
Dept. of Physics
University of Wisconsin-Madison



GOOSE UPDATE

"Managing Canada Geese in Urban Environments" is a new 42-page guide to legal ways of persuading problem goose flocks to go elsewhere. The text compares management techniques, including quitting feeding programs, habitat modification, hazing, scare techniques, chemical repellents, reproductive controls and removal.

"The guide provides would-be goose managers with the information they need to address a very complex urban wildlife problem," says UW-Extension Wildlife Ecologist Scott Craven. Copies can be ordered for \$10, publication #1471B243 from Cornell University Media and Technology Services Resource Center, 7 Cornell Business and Technology Park, Ithaca, NY 14850 or call (607) 255-2090. A companion video, "Suburban Goose Management: Searching for a Balance" is also available for \$24.95.



A milkman's masterpieces

While his neighbors dreamt of butterfat percentage and price supports, dairyman Nick Engelbert had visions of an entirely different kind. In Engelbert's dreams, lions roared across the African savanna and monkeys leapt from vine to vine. Fierce vikings plied the North Atlantic swells. And Snow White took company with five (not seven) dwarfs.

Beginning in the 1930s and continuing over a period of 30 years, the immigrant from the Austro-Hungarian Empire crafted his visions in concrete, glass and stone and planted them in the gardens surrounding his farm in the Iowa County community of **Hollandale**. Although the folk sculptor died in 1962, his work

lives on and continues to delight all those who experience its whimsical charm.

At **Grandview**, as the Engelbert home is called for its fine vistas of neighboring fields, The Kohler Foundation has restored the sculpture garden and created a museum about the life of the man that many still remember as the easygoing local milkman. More than 260 volunteers from the Blanchardville-Hollandale area played some role in helping to make Grandview, now run by the Pecatonica Educational and Charitable Foundation, an attraction that would do honor to Engelbert and encourage visitors to tour the area. The house and garden are a mile west of Hollandale on Highway 39.

Grandview's rescue began

seven years ago, when the property was purchased by the Kohler Foundation. The organization seeks out properties with "self-taught art" like Engelbert's, buys the site, restores the art, finds a non-profit group and gifts these improved parcels to local organizations that will run and maintain the property.

Restoring the rundown house and its crumbling sculptures would prove to be a labor of love and time. After Engelbert's death, the next owner of the property did nothing to care for the sculptures, and the three decades of neglect were painfully evident. Polish art specialists from Chicago were brought in by Kohler to stabilize the sculptures' wooden-and-wire mesh armatures. Some pieces could not be salvaged, so copies were made. It took nearly three years to complete the work.

The Pecatonica Educational and Charitable Foundation assumed responsibility for Grandview in 1998. Volunteers replanted the gardens and worked in the house as guides. A class of local 6th graders inspired by Engelbert's art wrote the museum's brochure. Grandview is open from May

1 to November 1. You can see many of the sculptures from the road, but the museum is well worth a visit. It contains copies of some Engelbert paintings — a hobby that this prolific artist did not take up until he was 70 years old.

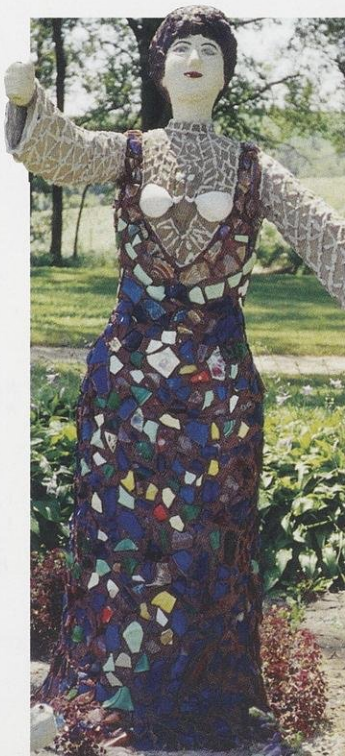
For more information, and to book a museum tour, call the



PHOTOS COURTESY OF PECATONICA EDUCATIONAL CHARITABLE FOUNDATION

Pecatonica Educational and Charitable Foundation at (608) 967-2140. Take an electronic tour of the site at http://members.tripod.com/PEC_Grandview/index.html.

To make a pleasant day trip, combine a visit and picnic a Grandview with a stop at Yellowstone Lake State Park or Governor Dodge State Park. The Military Ridge State Trail, open to hiking and biking, is also in the vicinity. □



Snow White, a dwarf and the Monkey Tree are among the fanciful sculptures that greet you on a visit to Grandview west of Hollandale.

Wisconsin, naturally

MOONLIGHT BAY BEDROCK BEACH STATE NATURAL AREA

Notable: This site along Door County's east coast protects a unique ecosystem of plant and animal communities, geological features, and rare plant species, all dependent on the dynamic wind, water and weather of Lake Michigan. The dolomite bedrock beach is periodically covered or exposed depending on the lake's water level. Hugging the shoreline is a boreal forest of white cedar, paper birch, balsam fir, and spruce.

How to get there: From the junction of Highways 57 and Q north of Bailey's Harbor, go northeast on Q 3.5 miles to Cana Island Rd, then south one mile to Bues Point Rd. Park SE of the intersection and walk west into the natural area. Yellow and black State Natural Area signs mark the site. Wisconsin Atlas: page 81, grid D8.



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