

Wisconsin's endangered birds and mammals.

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Wisconsin's endangered birds and mammals

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Illustrations by ELVA HAMMERSTROM PAULSON

This 16-page supplement is the first in a three-part series called "LIFE TRACKS." It is intended to whet your appreciation of Wisconsin endangered species. James B. Hale, the director of the DNR's Office of Endangered and Nongame Species believes that "To care for life is to care for the least." This series expounds that philosophy and adds one more precept: "before we care we must be aware."

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Ten years ago the "snail darter" was anonymous. So were "endangered species." Nowadays they're front page. How come? Why should people be concerned about survival of wild forms of life? Mostly because we've found out that wildlife is a barometer of environmental health. Like the canary in the coal mine — if it dies, the miner knows he's in trouble.

Aldo Leopold gave a second reason. "The first principle of intelligent tinkering is to save all the parts." The cinchona plant for example, was once almost extinct. But it survived and became the golden source of quinine used to fight malaria. The lowly penicillin mould has saved millions of lives. Of the hundreds of thousands of plants on earth, less than 5% have been tested for medicinal value.

The so-called economically worthless species provide the ecological diversity that is necessary for environmental health and stability throughout the world.

The intent of endangered species legislation cannot be weighed on an individual species basis, but rather on consideration of worldwide loss. In Wisconsin, lawmakers said this: (sec. 29.415, Wis. Stats.)

"The legislature further finds that the activities of both individual persons and government agencies are tending to destroy the few remaining whole plant-animal communities in this state. Since these communities represent the only standard against which the effects of change can be measured, their preservation is of highest importance, and the legislature urges all persons and agencies to fully consider all decisions in this light."

An article in the *Detroit News* on September 26, 1978 said it another way:

"If scaled to its value in maintaining the chain of life on the planet, the human species might shrink to the dimensions of a snail darter or a furbish lousewort in comparison with the huge contribution made by some kinds of ocean plankton, microscopic all right, but nevertheless supplying the greatest share of earth's food energy. And it is the chain of life itself, or rather the vast, interlocking network where all species interact in ways still mysterious to us, that should give us pause."



LAWS AND ADMINISTRATION

The first Endangered Species Act passed the National Congress in 1969. In 1972, Wisconsin enacted a law of its own and was the first state to apply for a cooperative agreement with the US Fish and Wildlife Service. Approved in 1976, there are now 22 states enrolled in cooperative programs which receive federal funds for endangered species management and research.

In 1978 Wisconsin recognized endangered status for plants as well as animals and also set up a threatened list. There are now 58 endangered and 44 threatened species in the state:

	Endangered	Threatened
MAMMALS	3	0
BIRDS	8	5
REPTILES	6	2
AMPHIBIANS	0	4
FISH	7	10
MOLLUSKS	1	0
PLANTS	33	23

Under its cooperative agreement, Wisconsin also provides legal protection, management and research for an additional 694 species on US Foreign and Domestic Lists.

If plants or animals are in jeopardy of becoming extirpated from Wisconsin they qualify as state endangered species. Those in jeopardy of becoming endangered are placed on the threatened list. To be considered:

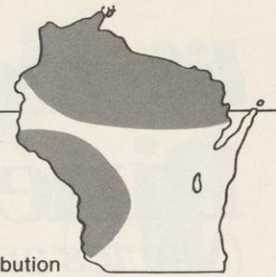
1. the species must be native to Wisconsin,
2. its past population must be on record,
3. the present population must be known and show evidence of decline in Wisconsin, and
4. there must be an existing threat to those remaining.

Lists are only a beginning. There will be protection and habitat management. The goal is to enable endangered species to survive in the wild without special consideration.

life tracks

Canada lynx

(*Lynx canadensis*)



Former distribution

Three big cats were native to Wisconsin. The lynx is the mid-sized one. It was known to French trappers as "le chat." Half as big as a cougar and slightly larger than a bobcat, the Canada lynx stretches out more than three feet from head to tail. It weighs 30 pounds and anyone who has ever owned a domestic cat can imagine the inherent ferocity. The lynx is one of the most strictly carnivorous mammals in Wisconsin. It often preys on red fox, rabbit, grouse, squirrel and occasionally on deer. But the snowshoe hare is by far the staple—normally 75% of the diet and up to 90% when plentiful. The porcupine is its toughest quarry. Unlike fisher, lynx are highly susceptible to injury from quills.

After a late spring molt the lynx appears brownish but in autumn the brown coat becomes underfur. Long, gray guard hairs then grow out to give a grizzled, buffy cast.

The Canada lynx is long-legged and with its toes spread, the large, cushiony paws act like snowshoes. It can track swiftly across deep drifts to pounce on a hare or prey on a snowbound deer.

Its close relative, the bobcat, is a lookalike but there are ways to tell them apart. The lynx has longer ear tufts that seem to burn at the ends like black flame and its short tail looks singed and has a solid, black ring at the tip. The bobcat's tail is longer with uneven black mottling.

Another distinction is habitat. Bobcats don't have snowshoe paws

and are more abundant in deciduous forests where snow is lighter. Lynx live in coniferous, boreal forests farther north than any cat. Although never common in Wisconsin they were probably found throughout the state in swampy, mature forests until 100 years ago. About then radical lumbering and extensive agriculture did away with prime habitat. Lynx trappers also cut them back.

The abundance of lynx has always been extremely dependent on the snowshoe hare. Canadian snowshoes drop to bitter lows about every 10 years and lynx mortality following such a decline may go as high as 40%. In 1972 lynx migrated to Wisconsin and Minnesota from Canada in a search for food. Unfortunately not all survived. Several carcasses were found that year in Wisconsin.

The Canada lynx is endangered in Wisconsin. It has been protected here since 1957 when hunting and trapping were closed and bounties removed. But every now and then a lynx will wander into a trap or be mistaken for a bobcat and shot.

Nationwide the Canada lynx is classified as "unique." This is for species that require local protection or for those whose past and present status are not well enough known to determine their requirements. The lynx is unique for the latter reason. Its

solitary, secret nocturnal ways make it difficult to keep tabs on.

During the day it hides in rotting logs or rock crevices. At night the lynx crouches on boulders and trees overlooking animal runs and waits to ambush its prey. Its powerful back legs are built for pouncing and fast starts but not endurance. A lynx can jump 15 feet in the air from a stand but maintain its 12-mile-an-hour top speed for only a few minutes. A good swimmer, it can span the full width of a wide river if need be.

Among woodsmen the Canada lynx is renowned for its cat curiosity. There are tales of people being tracked in the wilderness for miles with no apparent threat of attack. Ancient Greeks and Romans attributed superior intelligence and eyesight to the lynx. Its keen senses are also fabled in German folklore and mythology.

Today few people know the lynx, so our regard for it is put to the test.

Will it survive or not? The question is still unanswered.



life tracks

Pine marten

(*Martes americana*)

General distribution



The pine marten is an alert, long-bodied member of the weasel family. It has thick, brown fur, shoebutton eyes and a straight, bushy tail that nearly matches its body in length. The pine marten doesn't give a fierce impression. It resembles a round-eared, small house cat and looks rather like a mischievous character in a Saturday morning cartoon. But martens are ambitious hunters and take on animals their own size and larger.

They move with a curious, excitable energy, investigating everything, crossing and criss-crossing their tracks. Usually other animals leave them alone but there are records of infrequent harassment by red fox, lynx, fisher, eagles and horned owls. Martens live solitary lifestyles in downed logs and tree stump holes. They come out mostly at night.

If you see one you can count yourself lucky. There are not many left. A rare predator in the US they are also disappearing in Canada. Their other common name, "American sable," tells some of the story.

The tawny-brown fur is thick and warm and martens are unsuspicious and easily trapped. Pelts from the Lake Superior region rated second only to those from Canada's far north and martens were eagerly trapped for fur trade. But there was a steady decline in success and Wisconsin finally closed the season in 1921. Although this finally ended 400 years of marten trapping around Lake Superior, it came too late. Intensive logging, fire and agriculture had wrecked the range. The last Wisconsin pine marten was taken in Douglas County in 1925.

After loss of this chief predator, red squirrels and northern flying

squirrels became somewhat pesty and undoubtedly the marten's other major prey—various mice, snowshoe hare and grouse—all increased until nature could re-adjust. Hindsight says we should have known enough to trap fewer martens. We should have recognized the animal's low reproductive rate. They live only six years in the wild and don't even begin to bear young until they are three. The annual litter consists of two to four kits. Or we could blame those who cleared the mature northern forests.

But hindsight may not be all in vain. Today we know enough about marten ecology to try reintroduction. In 1953, five were placed on Stockton Island in Lake Superior's Apostle Island chain. A few years later, five more were released there and an observation in 1972 indicates a small population has survived.

There was a more elaborate restocking in 1975 and '76 when 124 martens were released in the Nicolet National Forest in northeast Wisconsin. A disproportionate number were male and the addition of more females is planned. It's too early to tell how they fared.

Similar programs in Michigan produced disappointing results and there have been other discouraging reports. But in spite of these, wildlife managers are optimistic that if we heed the lessons of the past, the pine marten is one state endangered species that can have a second chance in Wisconsin.



life tracks

Timber wolf

(*Canis lupus lycaon*)



Originally wolves roamed the U.S. from coast to coast and border to border. But as the country settled, more and more wolf habitat was turned to crop and rangeland. Large prey like deer, moose and beaver grew scarce and the wolf came into conflict with people and their livestock. Today these elusive canids are near extinction in the continental U.S.

Wolves now roam only about 5% of their original range. In the lower 48 states, Minnesota has the sole substantial population. An estimated 1,200 live there in 31,000 square miles of northern forest. About one-tenth of this is primary wolf range. A few remnant populations remain in Upper Michigan. The Isle Royale pack of about 40 wolves is best known. Moose, the major prey on this Lake Superior island, are held in check by the wolves, while the number of wolves is limited by their food source, the moose.

In Canada and Alaska, they hold their own. Alaska supports about 25,000 and Canada has 17,000 to

25,000—a population about as large as it ever was. Canada still pays a bounty and permits trapping.

The eastern timber wolf was once found throughout Wisconsin, especially in forested areas. By 1955 they were rare in the state—down to less than 50 animals confined to the wildest parts of the north. By the time protection was given in 1957, the breeding population was virtually gone. Recent observations show some may have migrated back from Minnesota and Michigan.

The largest wild member of the dog family, wolves are silvery gray or brown as adults and measure 4½ to 6 feet from nose to tip of tail. They weigh 80 to 100 pounds. Built for far ranging travel, they have narrow chests and long legs.

Wolf intelligence and loyalty to others of its kind are remarkable. One male returned 17 nights to the place where his mate was trapped until he too was trapped. Another was observed apparently bringing food to a sick member of the pack.

Social structure of a wolf pack is sophisticated. Under the guidance of one dominant individual, usually a male, the pack of two to 12 works as a unit. Activities, from hunting to raising young, are done as a group. Even though only the dominant male and a chosen female mate, all pack members help dig the den and care for the five to seven sooty-gray pups.

Born in mid-May after a 63-day gestation period (the same as a domestic dog), the pups' slate-blue eyes open about 12 days after birth. They don't develop the wolf's characteristic slanted, yellow eyes for about two months.

Pack members begin teaching pups to hunt in mid-July. The awkward pups watch the adults and learn. On their own, pups can bring down small quarry like beaver and rabbits. By

September the young wolves are part of the pack stalking deer, elk and moose.

Wolves have been feared and hated by many since the Dark Ages when accounts of unprovoked attacks on people were prevalent across Europe. At that time a rabies epidemic was sweeping the continent and the wolves that did the terrorizing were sick. Wolf expert Dr. L. David Mech says he knows of no healthy wolf attacking a human.

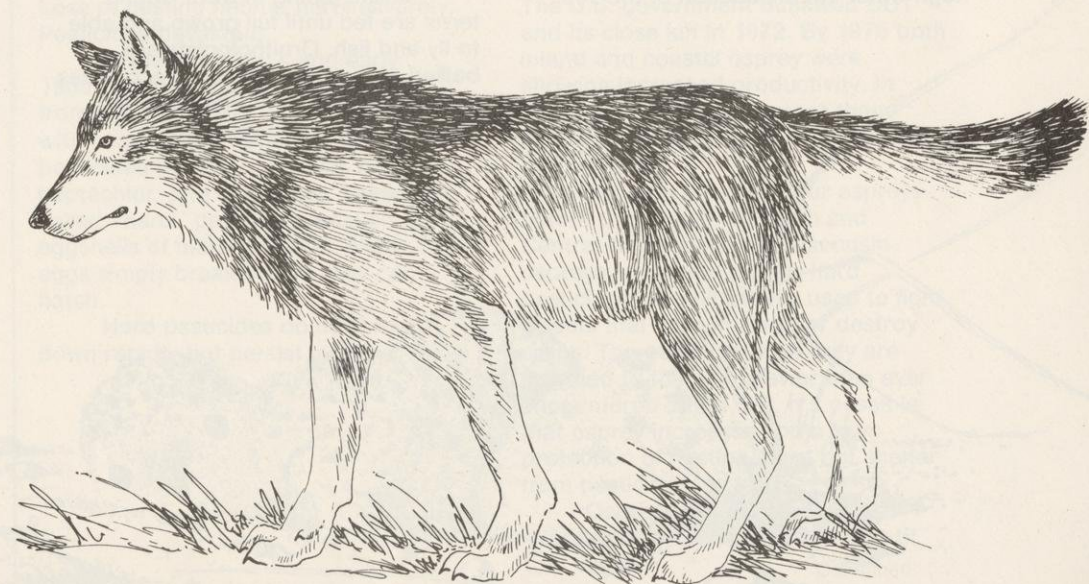
Nevertheless it became a handy villain in literature, folklore and song. There are, to name a few, "Little Red Riding Hood," "The Three Little Pigs," "Peter and the Wolf" and "Who's Afraid Of The Big Bad Wolf"; a person with poor table manners "wolves" down food and antisocial people are "lone wolves." All in all, a bad image! Not to say that the animal doesn't sometimes do damage—any time two large predators, like people and wolves, overlap there is bound to be competition for food. It may be

livestock or deer. But conflict should be dealt with on an individual basis—not by exterminating a whole wolf population.

The eastern timber wolf is listed as "endangered" in the lower 48 states except in Minnesota where it's "threatened." Timber wolves are also on Wisconsin's Endangered Species List.

Recovery plans for the wolf prescribe complete protection in large tracts of northern wilderness range. In bordering zones, direct conflict with livestock might occur. Here, regulated taking of wolves would be allowed as a means of control. Sacrifice of some at the edge of the range will help discourage clashes with people and allow the wolf to multiply undisturbed deep within the wilderness areas.

Part of the eastern timber wolf's comeback will have to rely on "people management" because much of its decline can be traced to human exploitation. Awareness programs aimed at informing citizens about program goals and the wolf's important ecological role, are a first step to reshaping human attitudes. In time, perhaps the wolf will no longer be an animal that people want to destroy. It will be one to marvel at and preserve.



ELVA HAMERSTROM Paulson

Common tern (*Sterna hirundo*)

It's ironic to list a bird named the "common tern" as one of the rarest in the state. But it's not yet the "uncommon tern" either, so there's hope.

The bird has a semi-cosmopolitan range and breeds in parts of North and South America, Europe, Asia and Africa. It winters in their warmer regions.

Tern populations have had a checkered history. During the millinery boom of the late 1800's, the bird was almost wiped out in the western world. Delicate plumes decorated hats and boas. Egg collectors also threatened. And on the East Coast, relentless collectors kept the birds laying like hens all summer. But by century's end, stringent laws restricted these activities. By the early 1940's, the common tern was once again living up to its name.

Since then however, North American numbers have nosedived. On the East Coast, only half the population of the 40's is present today. In New England a 1972 census counted a disappointing 9,000 pairs. Since 1960, along Lakes Superior, Michigan and Huron breeding pairs have decreased from 4,990 to 1,691. In Wisconsin, historically there had been 14 colonies with some of them containing up to 100 nests. Today only five are known—two on Green Bay and three along Lake Superior. In 1978, high water cut production of the 109

nests along Green Bay and there were no chicks hatched at all along Lake Superior.

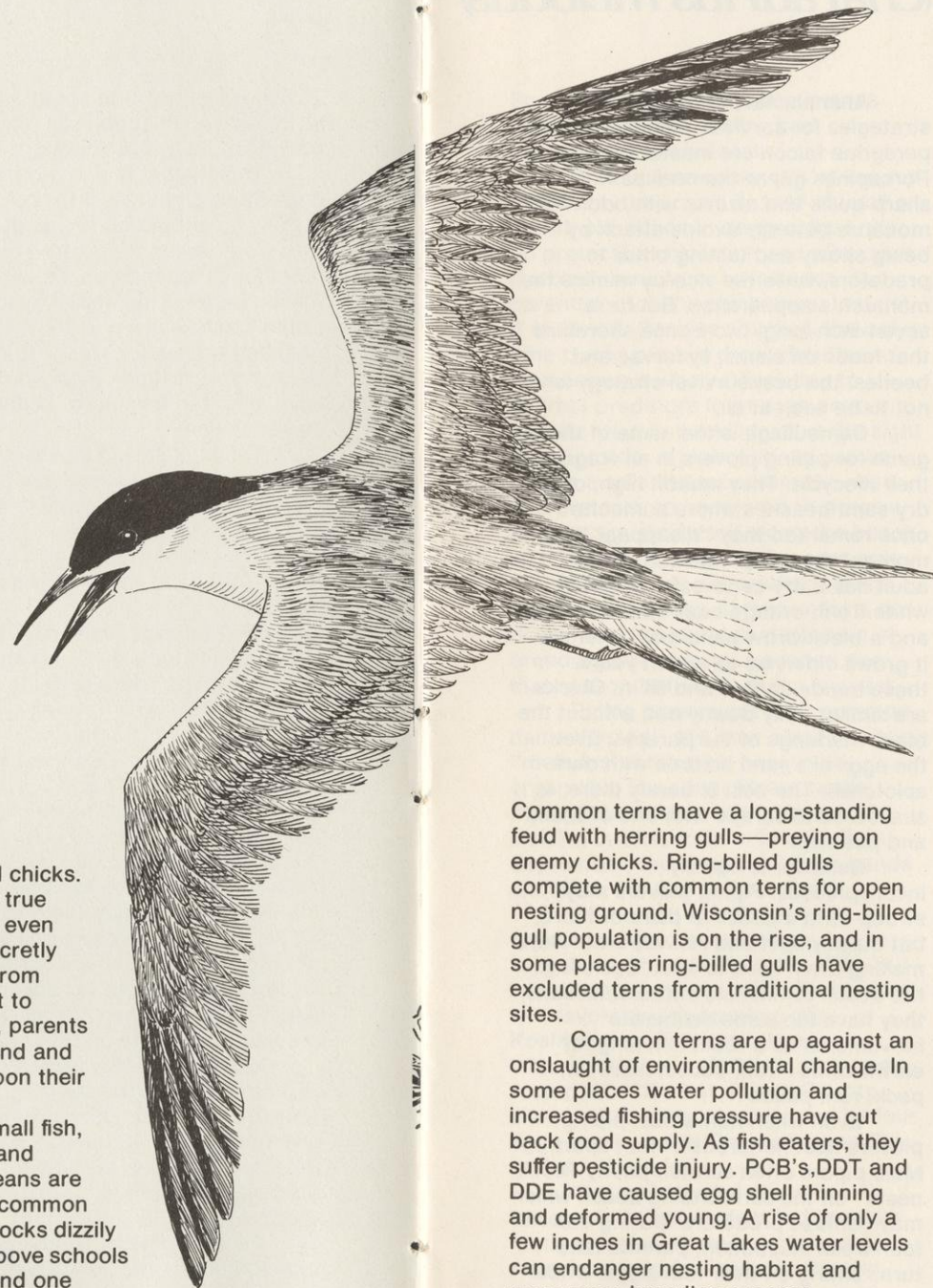
In summer plumage, as we see them in Wisconsin, the common tern is easily confused with Forster's tern, also endangered. The difference between them is subtle. Both have white, 14-inch bodies ending in deeply forked tails. Their gray, sharply angled wings span 2½ feet. Both have orange beaks with a black tip, and black skullcaps extending down the napes of their necks.

Field guides vary on how to tell them apart and unless both birds are present for comparison, features are hard to separate. Probably the most reliable indicator is voice. The common tern, which hardly ever keeps still, repeats a high-pitched "tee-arr-r-r-r." Early ornithologist Arthur C. Bent dubbed this call "the poetry of summer seas." By contrast, he characterized as "harsh, grating cries" the Forster's low-pitched, nasal "shee-e-e-e."

Common terns are gregarious and form large flocks. Like piping plovers, they nest on isolated sand beaches that are almost bare. A colony in early June is a crowded huddle of shallow sand scrapes filled with three to six variously patterned eggs; and 21 days later, chicks. Camouflaged to blend with their sand environment, the chicks have black beak and feet, not bright orange, like their parents.

Unlike piping plovers, young terns are fed until full grown and able to fly and fish. Ornithologists are baffled about how the adult recognizes its own offspring amid the darting, begging colony of seemingly

identical chicks. Same is true of eggs, even when secretly moved from one nest to another, parents calmly find and settle upon their own. Small fish, insects and crustaceans are food to common terns. Flocks dizzily hover above schools of fish and one after the other "like birds gone mad" dive for prey. Commercial fishermen know this spectacular sight means fish below.

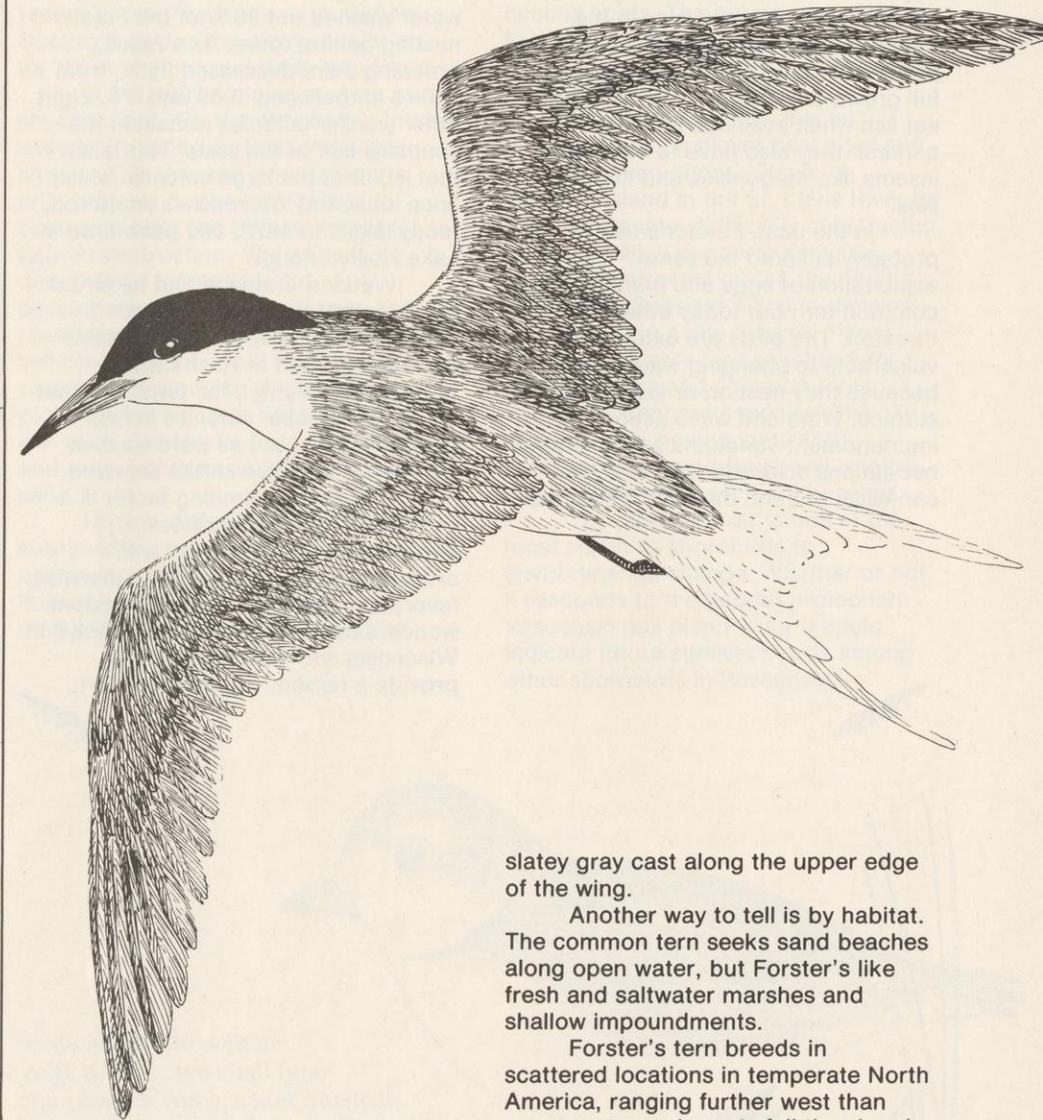


General breeding range



Forster's tern (*Sterna forsteri*)

General breeding range



Common terns have a long-standing feud with herring gulls—preying on enemy chicks. Ring-billed gulls compete with common terns for open nesting ground. Wisconsin's ring-billed gull population is on the rise, and in some places ring-billed gulls have excluded terns from traditional nesting sites.

Common terns are up against an onslaught of environmental change. In some places water pollution and increased fishing pressure have cut back food supply. As fish eaters, they suffer pesticide injury. PCB's, DDT and DDE have caused egg shell thinning and deformed young. A rise of only a few inches in Great Lakes water levels can endanger nesting habitat and mean poor breeding success.

But crowds, pets, shoreline development and off-road vehicles leave little room for a tern to bring young to fledging. To help, the city of Superior has reserved a portion of Barker's Island in the St. Louis River as a bird sanctuary. Through foresighted projects like this the common tern may someday again live up to its name in Wisconsin.

slatey gray cast along the upper edge of the wing.

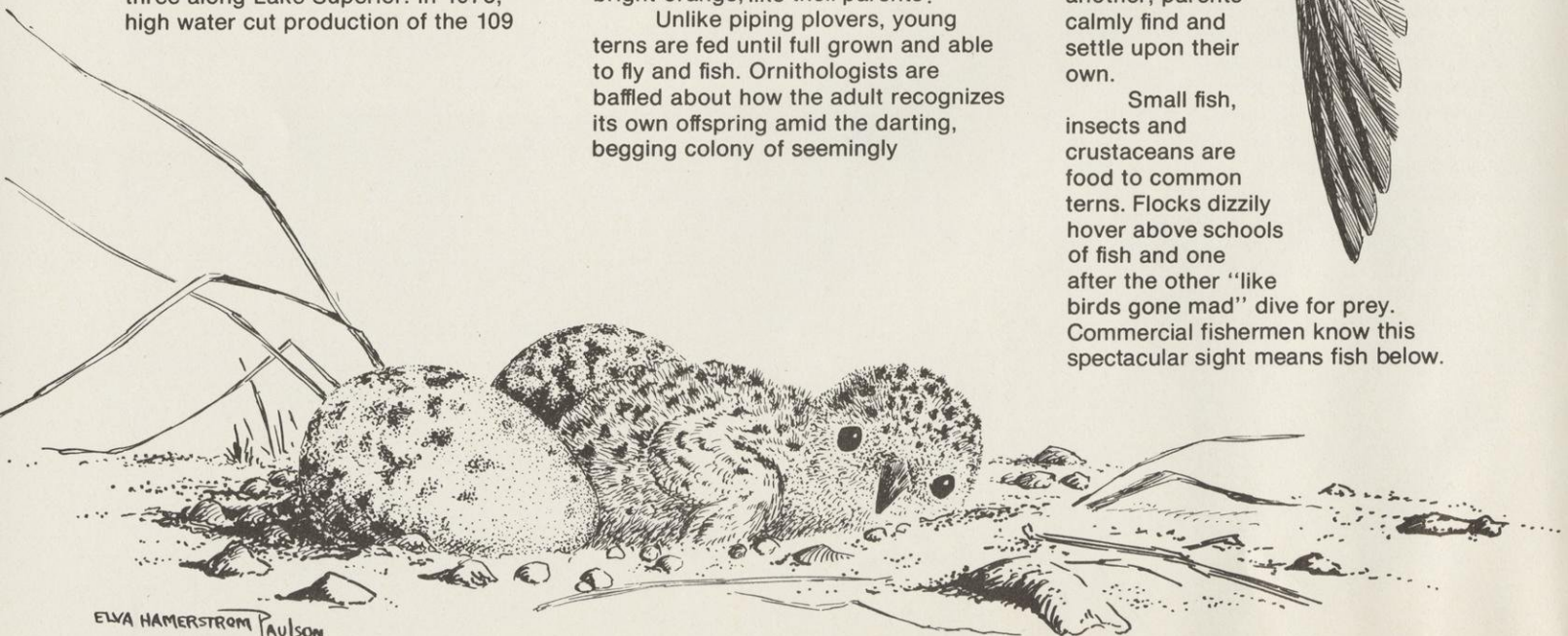
Another way to tell is by habitat. The common tern seeks sand beaches along open water, but Forster's like fresh and saltwater marshes and shallow impoundments.

Forster's tern breeds in scattered locations in temperate North America, ranging further west than common terns. In early fall they head for wintering grounds in the Gulf States, and Central and South America.

Forster's and common terns look so much alike in summer plumage that even John James Audubon didn't recognize them as separate species. It took until 1858 for someone to finally tell them apart. In winter and juvenile plumage, differences are obvious. On Forster's the solid black cap on the head narrows to a patch along the sides of the neck. On the common tern this patch extends back around the nape. Immature common terns show a

Forster's arrive in Wisconsin in late April. By mid May, colonies begin nesting. The cup-like nests are built atop muskrat lodges or more often on floating mats of decaying sedge, reeds, grass and algae anchored by cattail rootstock. Some studies suggest that those on active muskrat lodges are most successful—but overall, mortality

Continued...



ELVA HAMERSTROM PAULSON

Forster's tern Cont'd.

is extremely high. Only a third or less of the eggs and chicks survive. There are usually three eggs that take 23 days to hatch. After a few days chicks can run and swim and hide in the marsh grass. They depend on the parents for food and protection until full grown and fledged. Forster's terns eat fish when available but to survive in a marsh they also have to eat many insects like dragonflies and caddisflies.

In the past, Forster's tern probably suffered the same exploitation of eggs and plumes as the common tern but today other factors threaten. The birds are extremely vulnerable to changing water level because they nest on or just above the surface. Wind and wave action, impoundment variations or the natural oscillations scientists call "seiches" can wash out and damage nests. The

Forster's stronghold in Wisconsin is Green Bay, where seiche activity can raise or lower water as much as four feet overnight. In the early '70s, high water washed out 80% of the Forster's nesting habitat there. As a result, breeding pairs decreased 95%, from 700 to 35 between 1969 and '78. Eight other smaller colonies remain in the southern half of the state. This is all that is left of the large colonies which once inhabited Wisconsin's scattered, reedy lakes. In 1872, 200 pairs bred in Lake Koshkonong.

Wetland drainage and lakefront development are also a menace. In 1978, harassed by people, 39 nests were abandoned at Rush Lake in Winnebago County. The terns then set up several smaller colonies in less favorable sites, but all were washed out. Fewer than five chicks survived.

Still another limiting factor is a shortage of nesting surfaces. Experiments are underway with artificial aquatic platforms at otherwise favorable nest sites. These have done wonders for cormorants and ospreys in Wisconsin and perhaps will also provide a remedy for Forster's tern.



Piping plover

(*Charadrius melodus*)

Animals have evolved many strategies for survival. The osprey and peregrine falcon are master predators. Porcupines guard themselves with sharp quills and skunks with odor. The monarch butterfly avoids attack by being showy and tasting bitter to predators, while the viceroy mimics the monarch's appearance. But for a seven-inch-long, two-ounce shorebird that feeds on clams, fly larvae and beetles, the best survival strategy is not to be seen at all.

Camouflage is the name of the game for piping plovers in all stages of their lifecycle. They inhabit high, outer, dry sand beaches where someone once remarked they "disappear the moment they stop (moving)." The adult has a dry-sand-colored back, white front, orange beak with black tip, and a black brow band and collar. As it grows older, up to eleven years, these bands darken and fill in. Chicks are similar, only downy and without the black markings of the parents. Even the eggs are sand colored with dark splotches. The nest is barely there, a shallow sand scrape with bits of shells and pebbles.

Behavior is equally inconspicuous. Piping plovers may swoop onto a beach in pairs or more, but quickly split and run separate ways making them hard to spot. Scanning the beach for insects and crustaceans, they have the same deliberate movements as a robin listening for earthworms—run, pause, head tilt, peck, run, pause . . .

Even when numerous, piping plovers nest hundreds of feet apart. Male pipers often scratch phony "cock nests" on the surrounding beach which may confuse predators. During the four-week incubation, parents take turns sitting on their four eggs. Once hatched, chicks stay in the nest just long enough to dry. Then they're off and running. They stay within 500 feet of the nest but don't return to it.

Scattering nests and young insures against predators finding and destroying the whole lot.

Although newborn chicks can run and swim, they can't fly until at least a month old. When in danger, they rely on protective coloration and play dead. If a chick runs from an intruder, its parents knock the chick down and get it to lie still. Besides courting, the only time piping plovers draw attention to themselves is when attempting to distract predators from eggs or young. Like its relative the killdeer, at the sight of an intruder a piping plover parent rushes a safe distance from the nest and pretends to be injured. It drags a wing and pushes itself along the beach with its feet. By looking like easy prey, it gradually leads the predator away from nest or young. If these efforts are in vain and the clutch is destroyed, a breeding pair may lay a second one that season but not in the same nest.

Piping plovers get their common name "piping" and their species name "melodus" from their two-noted, organ-like, low song. Pipers range throughout eastern North America, arriving in Wisconsin in late April. In September, they lose their dark bands and fly to the Gulf to overwinter.

Of the 380 species of birds resident in Wisconsin, the piping plover is probably the rarest. In the 1800's it nested sparingly along the Great Lakes and favorable inland lakes like Koshkonong. The last one on Wisconsin's Lake Michigan shore was recorded in 1948 at a Door County site. In 1978, only one nest and its four eggs was found at Chequamegon Bay on Lake Superior.

The endangered status in Wisconsin is self-evident but to make matters worse, there are also grim reports of very few nests in Ontario,

Michigan, Minnesota and Iowa. Atlantic coastal populations have also declined. Florida, a favorite wintering ground, reports very few hundred there in recent years. The National Audubon Society includes the piping plover on its "Blue List" of rare American Birds.

In the 1800's piping plovers were shot for food. On the east coast, there were both spring and autumn piper shoots. This lowered populations to critical levels by the turn of the century. Today the biggest threat is habitat destruction. Shoreline is in demand for recreation and development. Lake front homes and resorts, roaming pets, and off road vehicles take their toll. In 1974, researchers studying Wisconsin's piping plovers noted, "At the time of our visits, the tracks from motor bikes and other vehicles ran over all areas of sand."

Human disturbance has a more subtle effect, too. Gulls, crows, opossums and raccoons fill new habitats in disturbed beach environments. Prey species like the

General breeding range

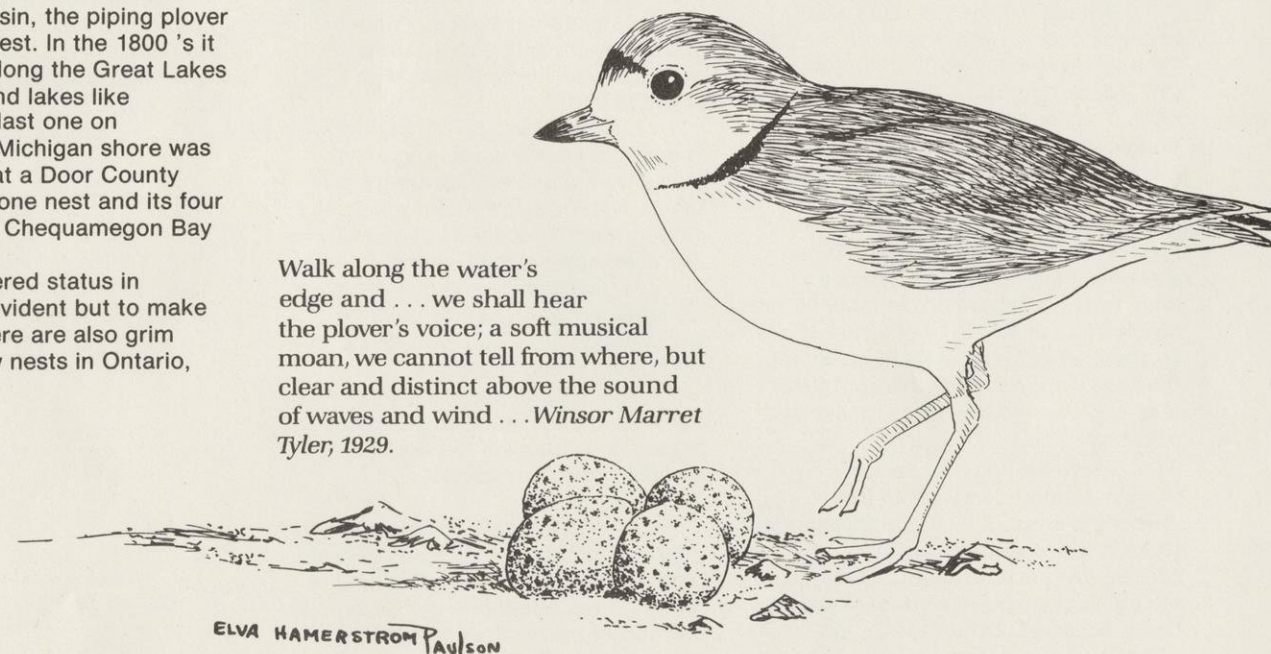


piping plover get hit hard. The ring-billed gull has become especially threatening on the Great Lakes by crowding pipers out of traditional nesting spots. The barren, dry sand flats plover nests require are changed by rising water level and emergence of grass and brush.

DNR keeps a close eye on traditional piping plover nest sites and records observations. One is at Barker's Island in the St. Louis River in Douglas County. Artificially constructed of dredge-fill, it supported several piping plover nests during the 1960's. The City of Superior plans to develop the island into a city marina. Plans include a 14-acre bird sanctuary for piping plovers and common terns, another endangered species. The city will fence out people, pets and vehicles. Grass and brush will also be cleared from the sanctuary beaches.

The piping plover is one of the most sensitive shorebirds to environmental change. Whether or not it responds to the habitat protection Wisconsin has planned for it could indicate future survival trends among other shorebirds in Wisconsin.

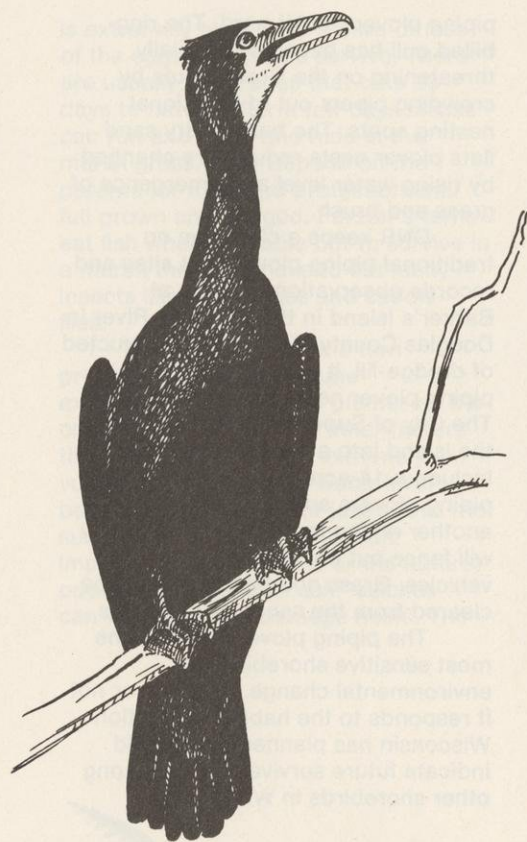
Walk along the water's edge and . . . we shall hear the plover's voice; a soft musical moan, we cannot tell from where, but clear and distinct above the sound of waves and wind . . . Winsor Marret Tyler, 1929.



ELVA HAMERSTROM PAULSON

Double-crested cormorant

(*Phalacrocorax auritus auritus*)



What's orange and blue and black all over? If you answered "shag," "water-turkey," "Fountain-City goose" or "crow duck" you're right. They're all nicknames for the double-crested cormorant whose black, four-pound body resembles a jumble of birds. However, a small, orange throat pouch reveals it's really a close relative of the pelican. Other distinguishing features: nostrils on its long, hooked bill are not functional; the inside of its mouth is bright blue; it has two feathery crests on its head; all four toes are webbed (only the front three toes are webbed on swans, geese and ducks).

There are four subspecies. Double-crested cormorants from Wisconsin seasonally range throughout eastern North America with concentrations on Canada's prairies. In spring, flocks from the south and Gulf Coast breed in northern U.S. and Canada.

Until recently cormorants existed in huge numbers. In Wisconsin a spring flock of 2,000 was reported in Adams County in 1947. In the fall of 1949 more than 5,000 migrated through La Crosse County. In 1891 a single Minnesota flock stretched four miles and was 1½ miles wide.

With these populations nobody foresaw that by the 1970's the double-crested cormorant would be endangered in Wisconsin.

Where did they all go? By now it's a too familiar, sad story: Pesticides like DDT are stored in fatty tissue of fish—cormorants eat fish—pesticides build up in cormorants—and the end is broken eggs instead of healthy chicks. Although DDT has now been banned it may take years for our waters to recover.

Cormorants are famed as fishers. One of the best diving birds, they can go down 120 feet and stay under water 80 seconds. In the Far East they have been leashed and used to help people catch fish ever since 600 A.D. This prowess has caused them trouble. In some times and places commercial and sport fishermen have wanted them wiped out as competition. It's a mistaken view. Repeated studies show cormorants actually benefit the industry by eating sculpin, cunner, eels, suckers, bullheads, carp and other species that compete with valuable catches.

Nevertheless, spring cormorant shoots were once a sporting event throughout much of mid-America. In the early 1900's the young were used as dog food. Thousands of chicks were barreled and shipped. Some colonies lost practically all nestlings every year. As recently as the 1960's colonies were found with all the young shot and nests tipped into the water.

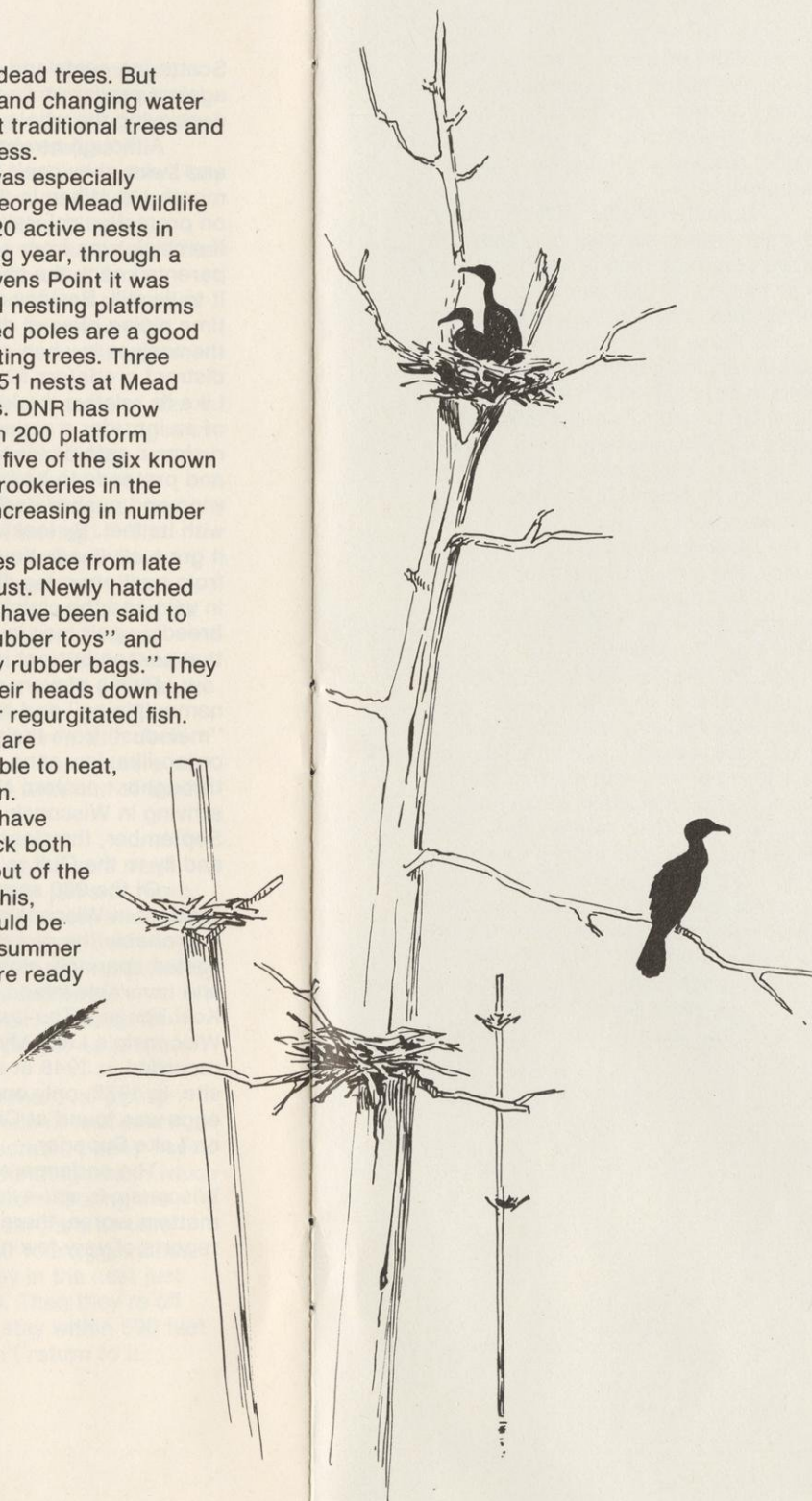
This kind of pressure hurt even more when nesting sites became scarce. In Wisconsin the double-crested cormorant almost disappeared.

In their heyday, colonies of 1,500 breeding pairs were common. Great blue herons and black-crowned night herons often bunked in too, using old cormorant nests. Nests are made of grass, twigs, reeds and seaweed on rock ledges and trees above water. In Wisconsin, colonies are most often

built on snags or dead trees. But freezing, thawing and changing water level can wash out traditional trees and leave birds homeless.

This trend was especially apparent at the George Mead Wildlife Area. It had only 20 active nests in 1973. The following year, through a study by UW-Stevens Point it was learned that wood nesting platforms attached to treated poles are a good substitute for nesting trees. Three years later, 31 of 51 nests at Mead were on platforms. DNR has now erected more than 200 platform structures amidst five of the six known active cormorant rookeries in the state. Nests are increasing in number each year.

Nesting takes place from late April to early August. Newly hatched cormorant chicks have been said to look like black "rubber toys" and "animated, greasy rubber bags." They feed by stuffing their heads down the parent's throat for regurgitated fish. The naked chicks are extremely vulnerable to heat, cold and predation. If startled, adults have been known to kick both eggs and chicks out of the nest. Because of this, rookery visits should be delayed until late summer when the young are ready to fledge.



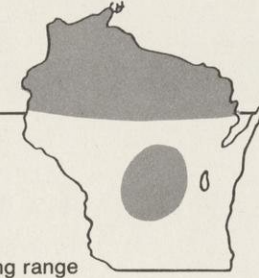
General breeding range



Osprey

(*Pandion haliaetus*)

General breeding range



The osprey is found everywhere except on the arctic continents. It is brown and white and locked into a fish diet by evolution. Often called "fish hawk," it even comes equipped with little spikes on the bottom of its feet to hold slippery prey. The name osprey is from an old French word that means bonebreaker. Like most predatory birds these days, it is the victim of a science-fiction-like pesticide wipeout. Loss of nesting habitat hurts severely. Pesticides devastate.

In the late 1950's and early 1960's ospreys began to disappear from the east coast. This coincided with heavy use of organochloride pesticides like DDT, dieldrin, endrin, heptachlor, and chlordane. These so-called "hard" pesticides weaken the eggshells of many predator birds. The eggs simply break before they can hatch.

Hard pesticides do not break down rapidly but persist in the

environment at low, toxic levels. They build up at each link in the food chain from plant to herbivore to carnivore. Thus, a predator like the osprey—a secondary carnivore that eats other carnivores—poisons itself as it feeds. The requiem is written not in numbers of adults killed, but in empty nests, thin-shelled eggs that never hatch and inability of birds to reproduce.

Wisconsin banned DDT in 1970. The U.S. government outlawed DDT and its close kin in 1972. By 1975 both inland and coastal osprey were showing increased productivity. In Wisconsin, production more than doubled—from a low of 54 in 1973 to 129 by 1978.

But let's not count our ospreys before they hatch. In South and Central America where Wisconsin ospreys spend the winter, hard pesticides are still heavily used to fight insects that carry malaria or destroy crops. The pesticide dose they are exposed to there is heavier than ever encountered in the U.S. It's possible that osprey increases come from protection of nesting sites, not shelter from pesticides.

Ospreys live on fish. Their migrations follow the upriver runs of

Continued. . .

Osprey Cont'd .

alewives and herring. Suckers, perch, and carp are common freshwater prey. Because of this, ospreys nest near lakes and streams—in Wisconsin along waterways in the northern third of the state. Although some birds build almost at water level, more often they choose the highest point on the landscape—lone dead trees and even windmills, utility poles and fire towers.

From the vantage of an apex nest the osprey can easily scout waters below for prey. But wind speeds pick up over bodies of water and the 200 pound nests are often wind thrown. Forestry practices that glean dead trees along with timber can rob ospreys of nesting sites. Lake-front homes, resorts and motorboats are also disruptive. One of Wisconsin's best osprey colonies on the Rainbow Flowage in Oneida County had 25 nests in 1951. By 1977 only one remained.

When an osprey nest structure is destroyed, DNR wildlife managers

build a replacement. Three-foot diameter wooden platforms are bolted to utility poles and erected nearby.

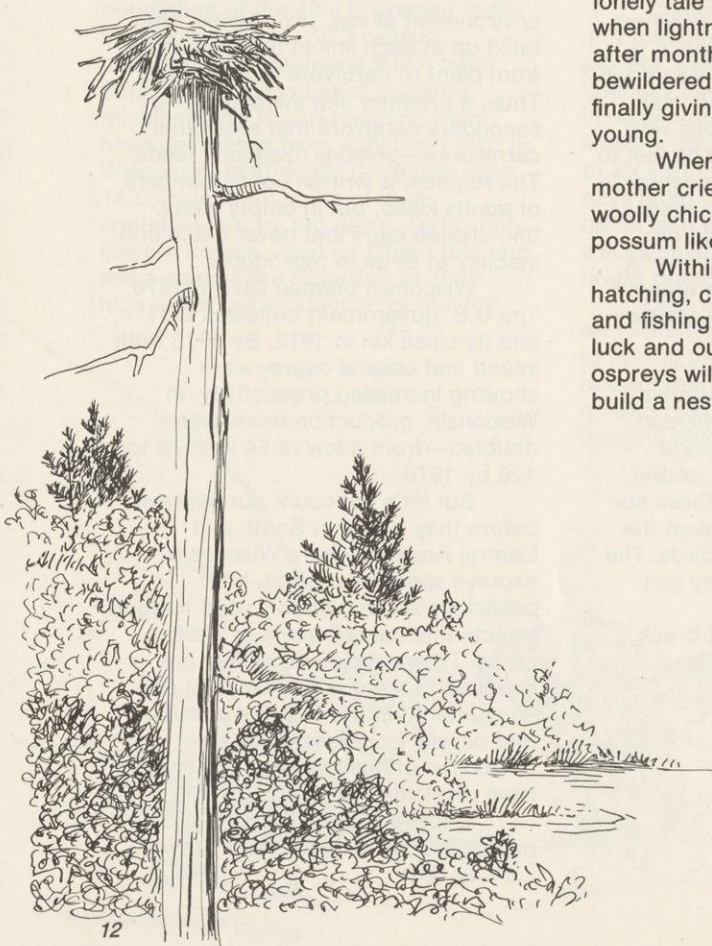
In 1977 when a tornado-like downburst smashed through prime nesting habitat in northwestern Wisconsin these artificial structures came to the rescue and in 1978, 19 of Wisconsin's 126 active osprey nests were built on artificial platforms. The best news is that platform nests show even higher success rates than those built on natural structures.

Nearly all osprey chicks that hatch in Wisconsin return to mate when they are two years old. But they don't actually breed until the third year. Ospreys are known for their wild, aerial courtship displays. Often several mating pairs will join together in tail-spinning chases. This can be quite a sight considering that ospreys may reach two feet long and have five-foot wingspans.

When the female is on the nest the male stands guard nearby. One lonely tale is told of a female killed when lightning struck the nest. Month after month for two summers the bewildered male stood watch before finally giving up on his lost mate and young.

When danger threatens, the mother cries out a warning and the woolly chicks go limp. They can play possum like this for hours.

Within two months after hatching, chicks are off alone, flying and fishing without their parents. With luck and our protection, the young ospreys will return in a few years to build a nest of their own.



Peregrine falcon

(*Falco peregrinus*)

In the business of ecology the peregrine falcon, or duck hawk, was once a tycoon. As a species, it had security—in distribution, habitat, niche, diet, adaptations, and back-up supplies.

Until the middle of this century, the peregrine was cosmopolitan. The word peregrine means wanderer and it was found everywhere except Antarctica, New Zealand and Iceland (good move for a species that wants to out-last local ecological change!) And to doubly ensure chances for survival it occupied many different plant-climate communities or biomes. In its heyday the peregrine was found in all North American biomes except grasslands.

Used for hunting since ancient times, the female or "falcon" weighs about two pounds and is 20 inches long while the male or "tiercel" is about a third smaller. Tiercel means third. Peregrines hunt from great heights above open fields and riverbeds. Efficient predators, they pack their weight into a streamlined body and armed with a stout, notched beak and piercing talons can hurl through the sky at speeds up to 200 miles per hour. The impact alone will kill ducks and pigeons. "Bullet hawk" is a nickname for the peregrine. After the divebombing stoop, when the prey is hit and stunned, the peregrine swoops back around to catch it in mid-air, a true "Red Baron" of birds. Indeed the curved, dark cheekbands

and yellow eye-rings mimic the helmet and goggles of early pilots. As an ace flyer the bird also covers record distances. Many sailors told of peregrines boarding ship 800 miles out to sea.

Besides ducks and pigeons other prey include ruffed grouse, flickers, blue jays, kingfishers, nighthawks, robins, sparrows, green herons, black ducks, mallards and teal, to name a few. A wide ranging diet like this can also pad chances for survival and population growth.

Peregrines have a long association with people. Nomads of central Asia launched the sport of falconry with them 3,000 years ago. Then came egg collectors. Lucky for the peregrine, it lays a second clutch if the first is disturbed. Pigeon fanciers were the next threat. They killed peregrines wholesale during World War II but even this had little impact. There was a large population and the bird was used to living with human disturbance. Some peregrines even give up their cliff nests for a skyscraper. Usually they seek the isolation of towering cliff ledges where they dig out shallow grooves and lay four russet and white eggs. The most famous city-dwelling peregrine, the "Sun Life Falcon," nested for 16 seasons on Montreal's Sun Life Building. From this urban eyrie, it reared 21 young.

By every measure the peregrine was in the ecological winner's circle. If it had been a horse, people would have bet on it. But in the late 1940's the peregrine took a nosedive and couldn't pull out. Local explanations—drought, falconers, egg collectors, raccoons—couldn't explain why peregrines were disappearing around the world. By early 1960 they were gone from the east and only a few dozen remained in the west. In Wisconsin, the last breeding peregrines were reported in 1962.

Then came a breakthrough. Almost by accident, a photo was taken of a falcon breaking eggs as she incubated them. The perceptive photographer compared the broken shells to those from old collections. In 1946 alone shell thickness dropped 20%. It was the time of the post-war boom in use of DDT. The

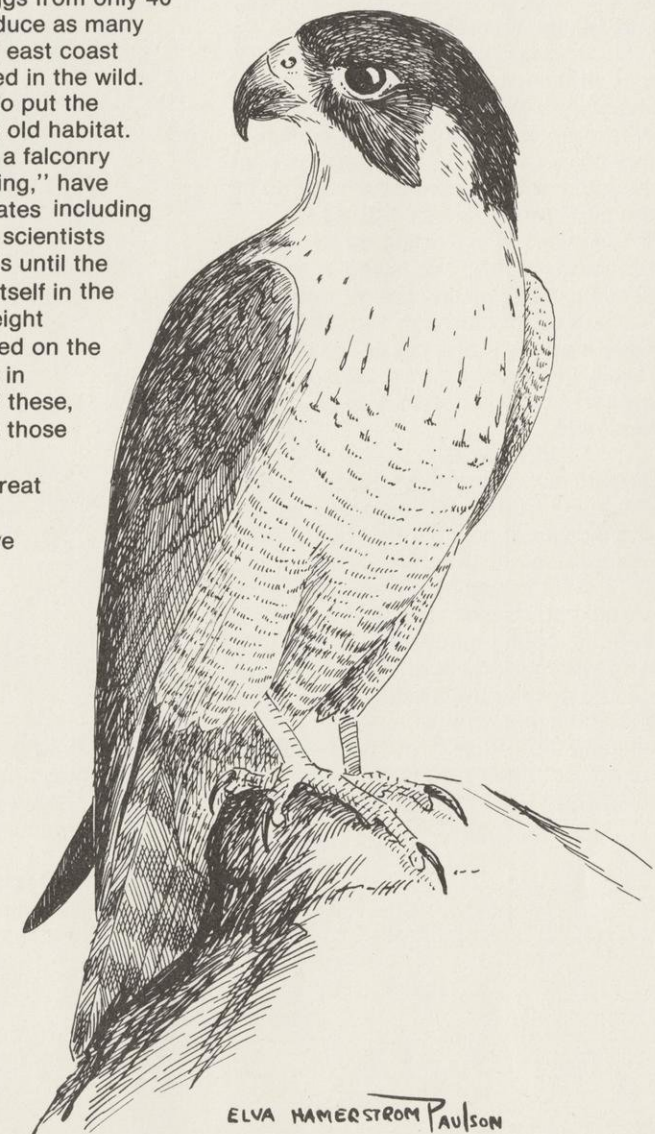
more DDT residue in a female, the thinner her shells. The more broken eggs, the fewer chicks to grow. This was the first link of pesticides to species decline. Since then, the story has become all too familiar for birds like eagles, ospreys and herons.

Fortunately the story doesn't end there. Since 1972, the year DDT was banned in the United States, Cornell University researchers have been breeding peregrines in captivity. By swiping the first clutch of eggs adult peregrines can be prompted to lay a second and even a third clutch. Incubated artificially, eggs from only 40 breeding pairs can produce as many offspring as the original east coast population had produced in the wild.

The next trick is to put the young ones back in the old habitat. Gradual releases using a falconry technique called "hacking," have been tried in several states including Wisconsin. In hacking, scientists provide food and roosts until the bird learns to support itself in the wild. In 1976 and '77, eight peregrines were released on the Mississippi River bluffs in southern Wisconsin. Of these, only two took and even those birds are now missing. Others were eaten by great horned owls or lost. Releases elsewhere have

been more encouraging. Thanks to the Cornell program in 1979 the first peregrine pair in 16 years bred on the east coast. Unfortunately, the eggs were infertile, but future ones may not be. Researchers predict it will take at least 15 years of successful restocking before the peregrine falcon can regain ecological prosperity.

Migrant observations



life tracks

Bald eagle

(*Haliaeetus leucocephalus*)

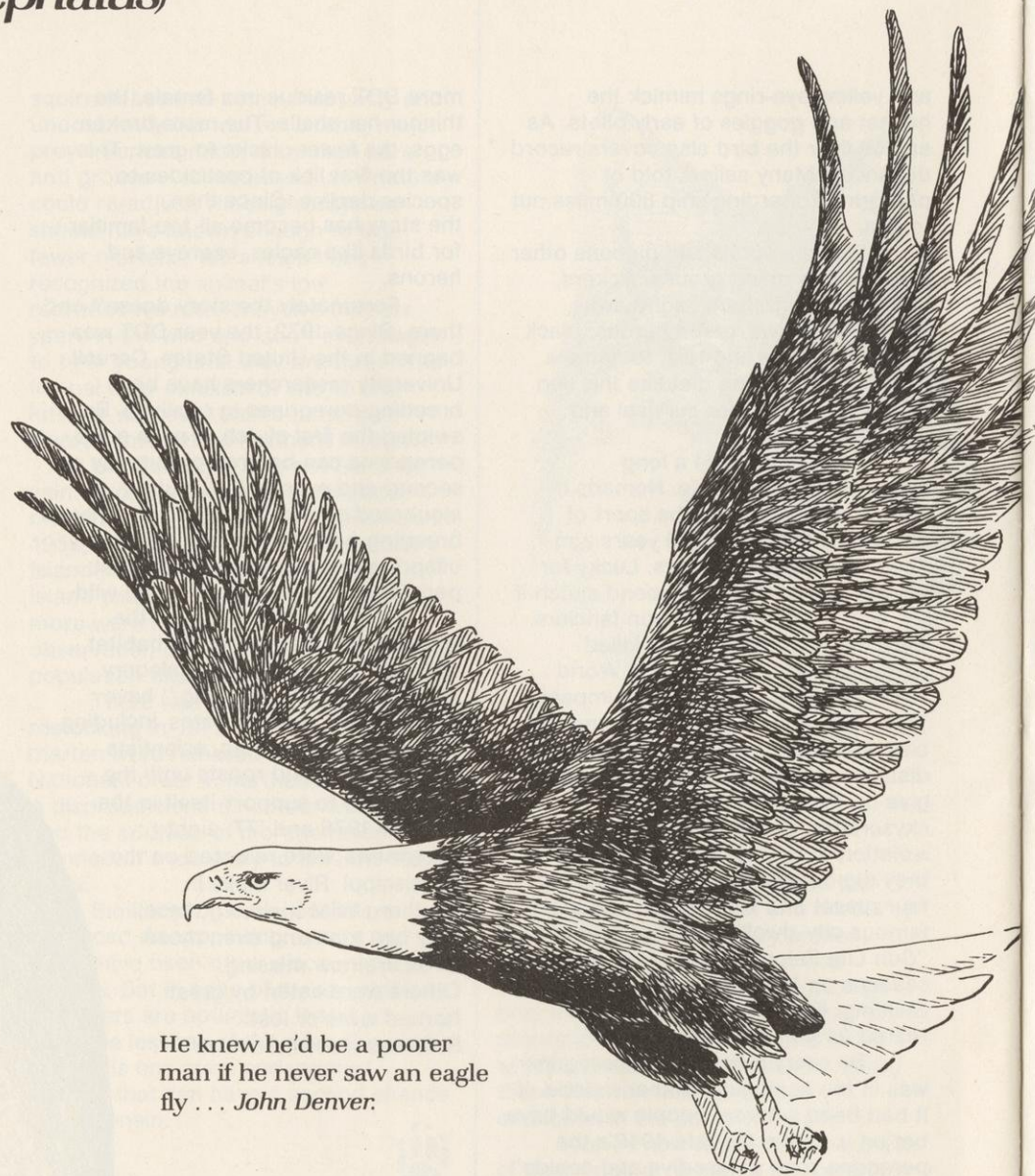
The bald eagle was adopted as our national emblem in 1782. By 1976, our Bicentennial, its existence was "endangered" in 43 states and "threatened" in five. Loss of habitat, pesticides and shooting caused the decline.

Before human settlement, bald eagles nested along waterways throughout Wisconsin. But logging, agriculture and summer resorts drove the birds from traditional nesting haunts. What's left is the territory around inland lakes and rivers in the northern third of the state and some places on the Great Lakes. However, Great Lakes birds are "iffy," and have had nesting failures in recent years.

In Wisconsin fish is the staple food in the eagle's diet and the inland lakes are relatively uncontaminated. When eagles feed repeatedly on fish that collect toxicants, the poisons add up until harmful amounts are stored in the body fat. In times of stress when these reserves are called on for breeding, nesting and laying eggs, accumulated poisons are released into the bird's bloodstream. Thin-shelled eggs that crack and break are the result. Embryos may not develop properly, or fertilization may be blocked.

Dieldrin, PCB's, DDT and its derivatives, and possibly heavy metals cause the trouble. These persistent chemicals are now banned but their residues still reverberate.

A lot of eagles die of old age and associated causes. For those that don't, shooting takes the heaviest toll. It accounts for 50% of the annual deaths despite the threat of a \$5,000 fine and a year in prison. Often mistaken for other birds, bald eagles do not don their distinctive white heads and tails until age four. Until



He knew he'd be a poorer man if he never saw an eagle fly ... John Denver.

then, they resemble big, brown hawks (which may not be legally shot either!). Some people deliberately kill eagles because they hate all birds of prey.

Bald eagles mate for life, which may be as long as 50 years! They breed early in Wisconsin and around

February begin their cartwheeling acts of courtship. Typically, they nest in tall pines or high on rock cliffs. It takes about a week for a mating pair to shape hundreds of boughs into a suitable "eyrie." This is no small task. One record eagle nest weighed two tons! Usually they return to the same

nest year after year and in Wisconsin several nesting territories have been occupied for 40 or 50 years. One eyrie in Sawyer County has been used since 1918—more than 60 years. Occasionally a nesting pair will have two or more nests and rotate between them in different years. When the weight of the nest finally breaks a tree, the nest is abandoned. Windstorm and lightning also take a certain toll of nest trees.

Nesting eagles should be left alone. If disturbed they may give it up for the season. Hiking, snowmobiling and other recreational activities need to be well away from any nest tree.

If all goes well, one to three chalky-white eggs are laid by early April and hatch about 35 days later. From then on there's not a moment's rest. Eaglets grow from three inches to 36 inches in 12 weeks and it means hauling a lot of food!

The bald eagle has been on Wisconsin's endangered list since 1972 but the federal list carries it as only "threatened" here. "Threatened" means in trouble but not as bad as "endangered." The federal classification came after several successful breeding seasons slowed the long-time eagle nose dive in Wisconsin.

Wisconsin's population now appears to be holding its own. In 1978 we had 140 active nests in our northern forests. These sites must be closely watched if populations are to remain stable or to grow. A National Wildlife Federation census taken in January, 1979 tallied 9,836 eagles in the lower 48 states. Of these, perhaps half were year around residents. In all there were about 1,200 breeding pairs.

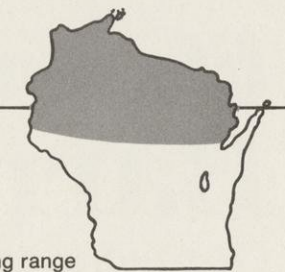
Today the Endangered Species Act and the Bald Eagle Protection Act of 1940 ensure protection of all bald eagles within the continental United States.

In Wisconsin, DNR and the U.S. Forest Service have adopted

management practices to help slow loss of nesting habitat and identify replacement sites for disturbed nests. Timber cutting, road construction and other disruptive activities are prohibited within 10 chains (660 feet) of a nest tree between March 1 and August 1. Three to five large trees are saved for roosting and nesting within this zone. Some smaller trees are also

saved to take over as the old ones die off. These practices will ensure a long-range supply of nest trees. Land-owners whose private properties contain eagle nests are being asked to provide similar protection.

This management, accompanied by strict pesticide control and obedience to protective laws will help save the bald eagle from extirpation. It's a threefold program and it's the least we can do.



General breeding range



ELVA HAMERSTROM PAULSON ©1979

Barn owl

(*Tyto alba*)



Former breeding range

Because of its white, heart-shaped face disc, the barn owl is known as the monkey-faced or sweetheart owl. Its pale breast and gold wings and back are sprinkled with black poppyseed speckles. Weight is about a pound, and the wings span more than 3½ feet.

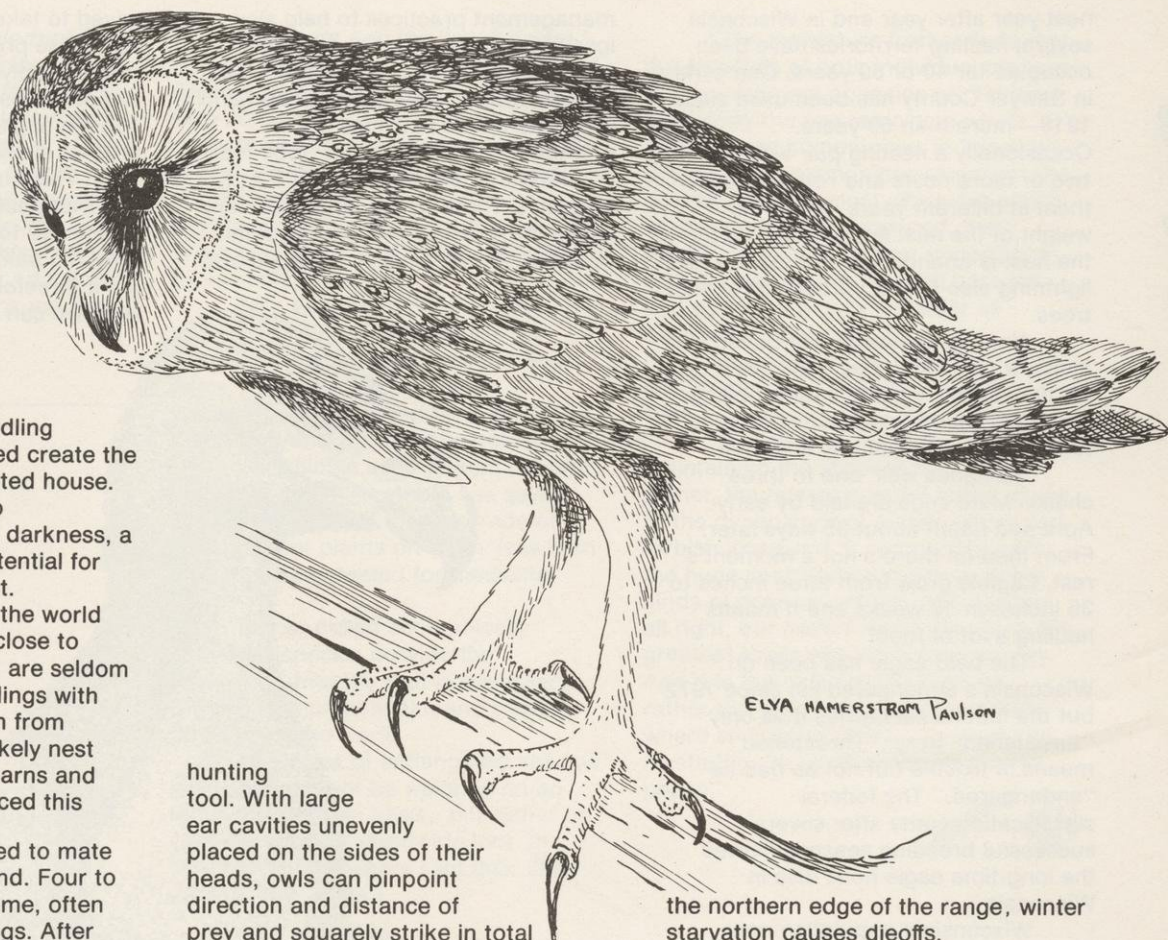
A nighttime creature with a spook-white mask, a soundless, moth-like flutter and a blood-curdling scream, the barn owl helped create the ancient legend of the haunted house. Medieval artists chose it to characterize the powers of darkness, a reputation with built in potential for the endangered species list.

Barn owls are found the world over. They commonly live close to people but, active at night, are seldom seen. Neglected rural buildings with easy access and protection from weather and daylight are likely nest spots. But modern metal barns and glass-lined silos have reduced this habitat.

Barn owls are believed to mate for life and breed year round. Four to 12 eggs are laid one at a time, often skipping a day between eggs. After about a month, the eggs hatch in the same staggered order in which they were laid. Owlets in a single nest may vary in age and size by as much as 18 days. The last to hatch is often so small and weak it is trampled and cannibalized by nestmates. A staggered clutch lengthens nursery time. Hungry nestlings keep parents hunting all night for 10 weeks before fledging and for another month after that.

Historically, barn owls have been shot or poisoned in defense of poultry and songbirds. Actually 90% of their diet is made up of small mammals harmful to crops. Called the "living mousetrap," one barn owl is said to be worth a dozen cats. Voles, shrews and rats are also food. Barn owls eat hardly any birds—only one or two percent of their total diet.

Owls are famous for penetrating eyes, but hearing is their most valuable



hunting tool. With large ear cavities unevenly placed on the sides of their heads, owls can pinpoint direction and distance of prey and squarely strike in total darkness. Barn owls are said to hear the patter of a mouse running on hard-packed earth at 30 yards or more.

They devour food head-first and whole. Bones, fur, feathers and other undigestibles are regurgitated as compact pellets about 1½ inches long. Two or three are cast each day and contain remains of three to six small prey. They reveal exactly what the bird's been eating, which is about 1½ times its weight daily.

Despite this ravenous appetite, barn owls store the least fat of any owl. When prey are hidden beneath snow this means trouble. In Wisconsin, at

the northern edge of the range, winter starvation causes dieoffs.

Barn owls were once established residents of southern Wisconsin but between 1973 and 1977 only nine nests were reported. In 1978, no nests at all were verified by DNR even though a \$25 reward was offered. This downward trend exists throughout the Great Lakes Region, but not in southwestern United States.

Hopefully, listing the barn owl as endangered will brighten its future in Wisconsin. The list gives full protection and steps-up chances for management studies. It may also help Wisconsin residents to know the bird and start it on the road to recovery.

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