

Iowa
CONSERVATIONIST

May 1992

Department of Natural Resources



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MAY 1992

VOLUME 51, NO. 1

Iowa CONSERVATIONIST

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Iowa Conservationist (ISSN 0021-0471) is published monthly by the Iowa Department of Natural Resources, Wallace State Office Building, Des Moines, Iowa 50319-0034. Second class postage paid in Des Moines, Iowa, and additional mailing offices. **Subscription rates: \$6 for one year or \$12 for three years.** Include mailing label for renewals and address changes. **POSTMASTER:** Send changes to the *Iowa Conservationist*, Department of Natural Resources, Wallace State Office Building, Des Moines, Iowa 50319-0034.

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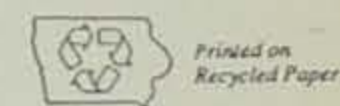
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Wild Architects

by Laura Spess Jackson

If you have ever been amazed by the ability of birds to fly, think of their diverse ability to design and create.

Throughout Iowa's history, there has been documented evidence of 188 different bird species breeding in the state. Nearly 150 of these species regularly breed in the state. Each wild architect designs its nest to match its favorite hangouts, food and lifestyle. The wild architects also use a variety of construction schedules and natural or artificial materials to build their homes.

Laying eggs while snow is falling on your back does not sound rational or safe. Yet the great horned owl lays its eggs by mid-February and its population is thriving. The courtship begins earlier in the winter and is signified by the owl's nighttime "hoot." The pair nests in a tree cavity or uses a stick nest originally built by a red-tailed hawk, crow or heron. Occasionally it uses a quirel's nest or a cavity in a cliff. The pair adds little, if any, additional nesting material to the nest.

The one to three eggs hatch about a month after laying. By the time the youngsters' appetites become truly voracious, there is an increase in young, vulnerable animals being born

to other birds and mammals. By the time the young start flying on their own a month and a half or so after hatching, young prey species abound, giving the young owls their best chance of securing food and surviving.

Conversely, our state bird, the American goldfinch, bides its time and waits until July or August before

nesting. Nests with young have even been documented in late September. The goldfinch is primarily a seed-eater. Its favorite seeds are "fluffy" dandelion, thistle, aster, goldenrod, milkweed and cattail seeds which do not ripen until late summer.

The goldfinch weaves its nest from plant fibers and lines the tightly woven cup with downy seeds of its favorite foods. The nests are in open areas with scattered trees, usually placed in a small shrub, tree or even a thistle plant. The male sometimes feeds the female while she incubates the four to six eggs. Once the young hatch, they are fed a diet of seeds which are partly digested by the adults then regurgitated for the young. The young leave the nest when a bountiful supply of grass, flower and weed seeds are available.

The biggest nests in the state are built by bald eagles. In fact, eagles build the largest nest of any single pair of birds. Eagles build their nests from sticks which can be several feet long. The nest is located in a sturdy fork near the crown of a large tree and is lined with moss, grass, leaves and feathers. The pair returns to the site each year and adds more sticks to



Bruce A. Morrison



▲ **Eagle nests are the largest nests built by any single pair of birds. Constructed from sticks which can be several feet long, the eagle pair returns each year and adds more sticks to the nest. One of the largest nests found in the U.S. measured seven feet across by 12 feet deep and weighed two tons.**

the nest. One of the largest nests documented in the United States reached a size of seven feet across by 12 feet deep and weighed two tons.

From the late 1800s until 1976 there were no bald eagles nesting in Iowa. From a single nest in 1977, the nesting population has since grown. In 1991 there were 11 nesting attempts, eight of which were successful. A record high of 18 young were produced in 1991.

About the smallest nest built in Iowa is made by the ruby-throated hummingbird. Although hummingbirds nest throughout the state, they are most common in the northeast where larger timber tracts are present. The hummingbird attaches its nest to a small twig or branch by using the silk of a spider's web or silk from tent caterpillars. The nest is made of downy plant materials and fibers. The outside of the nest is lined with moss, bud scales or

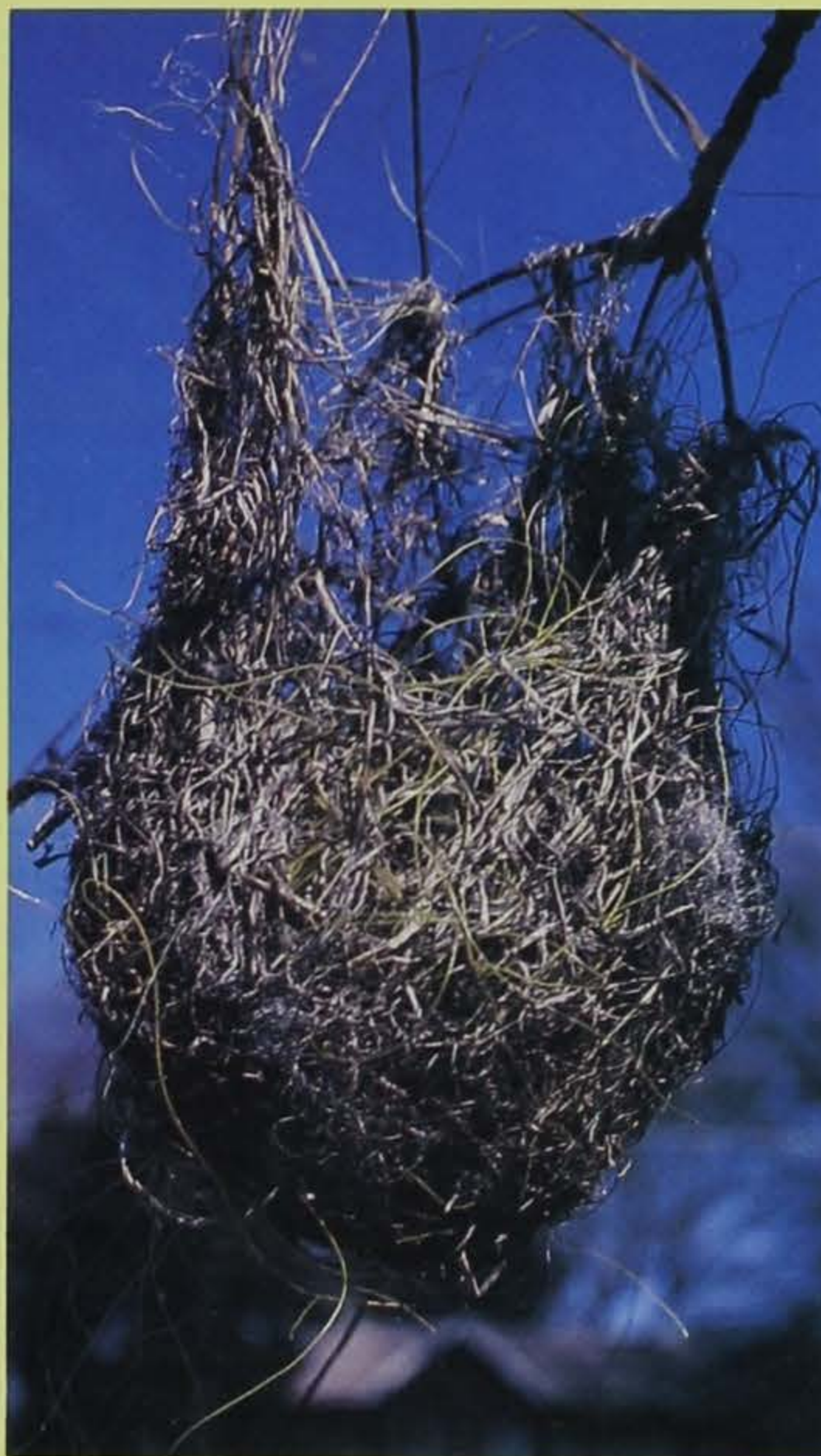
lichens which makes the nest look like a mere knot on the limb. Once completed, the nest is only about the size of a walnut. The female not only builds the nest and lays the eggs, but she also has sole responsibility for raising the two young.

Northern orioles weave an elaborate nest. The hanging pouch-like nest is woven from plant fibers, hair, yarn and string. It takes the female four to eight days to construct the nest. The opening is at the top of the pouch. The nest is usually located in a maple, elm or other tall tree.

During the springtime, orioles readily accept offerings of nest materials. Cut strips of cloth or cotton string into pieces six to eight inches long. Hang the strips from a shrub or branch for the orioles to use. Hair clippings from pets are also attractive. Clippings can be placed in a mesh onion bag and attached to the limb of a tree or simply



Ron Johnson



Lowell Washburn

◀ Northern orioles weave an elaborate nest of plant fibers, hair, yarn and string, taking four to eight days to construct the nest.

▼ The smallest nest built in Iowa is made by the ruby-throated hummingbird. Once completed, the nest is only about the size of a walnut. The hummingbird attaches its nest to a small twig or branch by using the silk of a spider's web or silk from tent caterpillars.

colled and placed in a shrub. Orioles, chickadees and other birds will use the hair.

In addition to creating nests from plant materials, birds also use a variety of other construction techniques. Woodpeckers use their hard, chisel-shaped bill to peck and drill homes into tree trunks, limbs and stumps. Depending on the hardness of the wood, it can take a woodpecker one to three weeks to drill a nest cavity. The cavities tunnel downward six to 18 inches, then have an enlarged chamber where the eggs are laid.

To withstand the tremendous force it takes to drill a hole, woodpeckers have a thick skull with a space between the tough membrane which encases the brain and the brain itself. The woodpeckers' strong neck muscles provide the force necessary for chipping wood and help to absorb the shock of drilling. Woodpeckers also have feathers over

their nostrils to help keep sawdust out of their "noses."

Holes created by woodpeckers are important to a variety of other birds which nest in cavities, but do not have the ability to drill their own holes. These "secondary" cavity nesters range from bluebirds, chickadees and kestrels to wood ducks.

Belted kingfishers also excavate their home. However, instead of drilling wood, kingfishers burrow into the side of a dirt bank. Kingfishers dig with their bill and push dirt out of the tunnel with their feet. They dig a horizontal tunnel three to six feet into the bank, then make an enlarged egg chamber. It takes the birds two to three weeks to excavate their new home. Because kingfishers feed on fish, frogs and other wetland animals, the nests are



Ron Johnson

normally dug into the side of a stream bank. The kingfisher uses the same nest site in successive years.

Instead of digging dirt, cliff swallows carry dabs of mud or clay in their mouth to build their nests. The swallows plaster the mud on the side of a cliff, wall or under a bridge to begin



Lowell Washburn

their home. Between 900 and 1,200 pellets of mud are used to create the gourd-shaped nest which is about seven inches long and six inches wide at the base. Both sexes build the nest which is completed in one or two weeks.

Cliff swallows nest in colonies, so numerous nests will be found in one area. The largest colony ever documented in Iowa contained 3,000 nests. Nest colonies can persist for more than 100 years.

Perhaps the most unusual nesting material used by a bird is saliva. Chimney swifts glue a shelf of twigs onto the side of a chimney, air shaft or silo wall by using their glutinous saliva, which hardens when dry. The swifts break off twigs from trees with their feet while in flight. They transfer the twigs to their mouths and carry them to the nest sites. Chimney swifts spend more time in flight than any other land bird. When they do land, they use

◀ Depending on the hardness of the wood, it can take a woodpecker one to three weeks to drill a nest cavity.



DNR Photo

▲ Between 900 and 1,200 pellets of mud are used to create the gourd-shaped nest used by cliff swallows. Because cliff swallows nest in colonies, numerous nests will be found in one area. The largest colony ever found in Iowa contained 3,000 nests.

their strong feet to cling to surfaces such as chimney walls. Usually only one pair nests in a chimney, but occasionally they will nest in colonies.

Chimney swifts historically nested on cliffs and in caves, however, they have adapted well to human structures. Their biggest threat during nesting now is from fumes instead of nest predators.

Another well-adapted urbanite is the nighthawk. Instead of any nesting material, nighthawks rely on the camouflage of the eggs and their own bodies to conceal the nest. The two cryptically colored eggs are grayish with brown and gray speckles. The eggs are laid on gravel-like surfaces. In urban areas, nighthawks frequently lay their eggs on flat gravel-surfaced roofs or patios. The nighthawks also sometimes make their nests on wood chip mulch around the bases of trees.

During incubation and raising young, the nighthawk uses its body to shade the young from sizzling in the summer heat. At dusk, the nighthawk is recognized while flying overhead by its white wingbars and nasal "preent" call.

Many other species such as robins, chipping sparrows, cardinals and barn swallows regularly share our yards with us. Each nest is designed and timed to meet a particular species' needs. Each nest is also vulnerable to predation and human intrusion. Be especially alert when the young birds fledge. During this time it is natural for the young to land on the ground. Adults will feed the young on the ground and encourage them to find cover. The adults may have to feed the young on the ground for several days until they fly well enough to gain some elevation and become independent. During this critical time, avoid removing young birds from the wild to "save" them. The adult birds are normally around and will take care of the young.

There is still much to be learned about the needs of Iowa's breeding birds. From 1985 to 1990, the Nongame Program, in cooperation with the Iowa Ornithologists' Union, conducted the first systematic survey

of Iowa's breeding birds. The data which is now being analyzed, gives the best information yet on the distribution of Iowa's breeding birds and the habitats they use. Eventually, each county will be provided a list of breeding birds in their area which will help bird watchers, nature photographers, naturalists, teachers and planners recognize and understand the diversity of their local bird life. By understanding the distribution and unique needs of Iowa's bird life, we hope to ensure that our children will also be able to marvel at our wild architects.

Your contributions to the Chickadee Checkoff help make surveys and educational publications on birds possible.

Laura Spess Jackson is a nongame biologist for the department at Boone.

▼ **Kestrels often find homes in cavities drilled by other birds, such as woodpeckers.**



Lowell Washburn



▲ **Nighthawks rely on the camouflage of the eggs and their own bodies to conceal the nest. The eggs are laid on gravel-like surfaces. In urban areas, nighthawks frequently lay their eggs on flat gravel-surfaced roofs or patios.**

It's Not Easy

Being Green

by Tammra K. Pavlicek

Lawn care is one of the most popular gardening activities in the country today. Lawns help to muffle noise, moderate temperature, reduce allergy-causing dust and pollen, control erosion, improve soil and purify water. And, a home's value can increase by as much as 15 percent if the yard is well taken care of.

Traditionally, lush green lawns have been the result of heavy doses of chemical fertilizers, weed killers and pesticides. But today, as it becomes increasingly important to be environmentally correct, homeowners -- as well as commercial lawn care companies -- are looking for alternative, natural ways to achieve the same results.

Reducing or eliminating chemicals doesn't mean having to settle for a second-rate lawn. But it does require looking at the lawn in a new light. Whether starting from scratch or improving the old lawn, it is possible to have a healthy -- and green -- lawn and still care for the environment.



Ken Formanek

The Soil. The first step to a healthy lawn is healthy soil -- without it, the grass won't stand a chance. The soil's type -- texture, structure and fertility -- will determine lawn care practices, including watering, fertilizing and the type of grass best suited for the lawn. The easiest way to determine the type of soil you have, although not the most accurate, is by hand. Dig up a shovelful of soil

from your lawn. Rub a small amount between your fingers. Sand feels gritty. Silt is powdery like talcum powder. Clay is hard when dry, slippery when wet and rubbery when moist. However, a more accurate way to determine soil type is by having a soil test done by a state university soil testing lab.

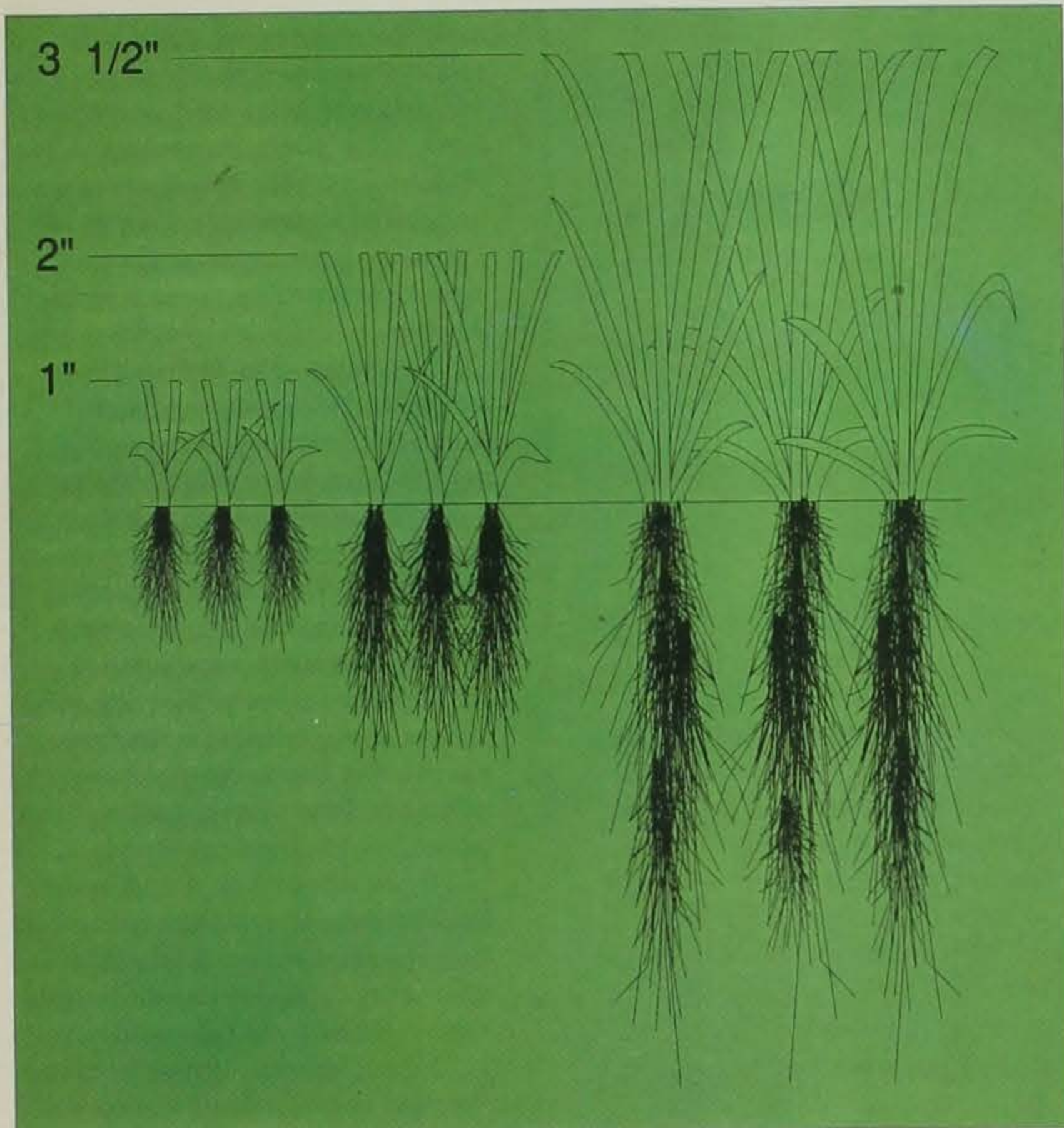
Once you have determined the soil's structure and texture, determine its acidity and fertility. The easiest and least expensive way is to send a soil sample to a state university testing lab.

The Grass. The next step to a healthy lawn is to determine the type of grass you have. While grasses may look the same and may even grow under the same general weather conditions, their cultural requirements can differ greatly. Proper fertilizing, watering and mowing depends on the type of grass. Most Iowa lawns are made up of Kentucky bluegrass, ryegrass or fescue.

How does grass grow? A grass manufactures its own food in its leaf

*Is it possible to have a green healthy lawn
without the use of chemical fertilizers and herbicides?*

Many homeowners are discovering that it is increasingly important to be environmentally correct and are finding alternative methods of lawn care.



◀ As a rule, mow no more than one-third of the grass blade so that a deeper root system (right) is encouraged. A lawn with an extensive network of roots needs less help finding food and water and can better crowd out weeds.

Mowing. Another basic fundamental of lawn care -- and, again one of the most misunderstood -- is mowing. Several factors need to be considered before deciding not only how often to mow but also *how* to mow.

Contrary to popular belief, keeping grass short does not mean you will have to mow less often. In fact, mowing short will encourage the grass to grow faster in order to replace lost leaf blades. If kept short for too long, however, the grass will weaken as it uses up its stored food supply. Then recovery from the short cutting will be slow. The weakened grass will be susceptible to insects, weeds, disease, and, it may die.

Mowing height depends on the variety of grass you have and environmental conditions (see table 1 at right). Keep in mind that each time you cut the grass, you are cutting off part of the grass' food supply -- remember the grass produces food in its leaf blades. As a rule, you should *never cut off more than one-third of the total height of the grass*, preferably less. So, if you are trying to maintain a grass height of two inches, allow the grass to grow to a height of three inches before mowing.

During the summer months, grass should be permitted to grow higher than during cooler months. Higher mowing heights provide shade, and the grass won't need as much cutting unless you water it often. And, longer blades mean longer roots. The deeper the roots, the greater the capability of finding nutrients (especially in poor soils) and of withstanding drought. Deep roots not only reach a deeper water supply, but store food during times when the top isn't growing.

Other important factors to consider for maintaining a healthy lawn are mowing in a straight line and frequently alternating the mowing pattern.

blades. This process is called *photosynthesis* -- the sun's energy helps the leaves turn carbon dioxide (from the air) into sugars (food). The grass roots take in raw materials and water that help make photosynthesis possible. If a lawn isn't cut too short and has plenty of leaf blade exposed to the sun, each grass plant will produce the cells and energy needed for more and taller leaf blades and deeper, stronger roots. Remember: longer blades mean longer roots, and a healthier lawn.

The thickness of a lawn also determines how healthy it is. A lawn should be so thick that it is impossible to see the soil beneath the grass. If soil can be seen, there is room for weeds to grow.

Thatch and Aeration. Thatch is made up of a matted layer of grass stems, roots, clippings and other plant debris. Contrary to popular belief, clippings are usually not the main in-

redient of thatch, because they typically begin breaking down within a week, providing nitrogen to the soil.

Most people think of thatch the same way they think of weeds. However, research shows that thatch can actually do some good for your lawn. When kept less than 1/2-inch thick, thatch can act as a mulch for the lawn, with all the benefits that mulch provides. However, thatch that is 1/2 inch or thicker can do more harm than good by preventing water and air from reaching the soil.

If thatch becomes 1/2 inch or thicker, you should use a good stiff rake to "dig" up the thatch. There is also commercial-sized dethatching equipment you can rent. Then you can rake it up the thatch and add it to your compost pile.

By aerating your lawn -- removing "plugs" of grass and soil once or twice a year, allowing the lawn and soil to "air" out -- the possibility of thatch is reduced.

<u>Species</u>	<u>Mowing height (in.)</u>	
	<u>Cool weather</u>	<u>High-temperature stress periods</u>
Kentucky bluegrass*	1.75-2.25	2.25-3.25
Perennial ryegrass	1.75-2.25	2.25-3.25
Creeping red fescue	1.50-2.00	2.00-3.00
Chewings fescue	1.50-2.00	2.00-3.00
Hard fescue	1.50-2.00	2.00-3.00
Tall fescue	2.25-3.00	2.50-3.50

Table 1.
Recommended mowing heights.

*In lawns where species are mixed, use the higher of the two recommendations.
Source: Iowa State University Extension Service

Grass tends to lean in one direction or another after cutting, so alternating the pattern encourages the grass to stand upright.

You can also try a mulching mower. These mowers chop up the grass clippings extremely fine so you can leave the clippings on your lawn.

Keep the mower blades sharp. The effect of a dull blade is easy to detect: the top surface of the lawn will look gray or white because the grass blades have been torn or ripped instead of sliced.

Grass clippings. Because grass clippings are almost 80 percent water, they are best left on the lawn, whether you use a mulching mower or not, provided the clippings are not too long. Short clippings will fall down into the turf and act as a natural fertilizer, providing up to one-half of the nitrogen necessary for a healthy lawn. Any long blades remaining on top of the grass should be removed, otherwise they will mat up on top of the lawn and choke out the grass. These clippings can be composted and used as fertilizer for other plants.

Watering. Although it is one of the basic fundamentals of lawn care, watering is also one of the most misunderstood.

Homeowners waste time and money trying to keep their lawns well-watered. A rule of thumb? Don't pamper your lawn. The more water the grass receives early on, the more it will need later, especially

during the hot summer months.

Grass will become dependent upon regular watering. The roots will not be encouraged to probe deep for moisture in the subsoil because the top layer of soil has plenty of water. So when hot, dry weather arrives, the roots aren't able to reach the moisture deep in the soil. Roots that sit closely to the top of the soil dry out quickly. The plants wilt, and unless they receive a lot of water quickly, they might die.

But if the lawn is not pampered, the grass will be prepared for dry weather. The roots will have driven deep into the soil, searching for water in the spring, so that the grass is prepared for all but the most severe droughts without any supplemental watering.

However, when a need arises to water the lawn, such as during a drought period, you should first know what type of soil you have. That will dictate how often and how much you should water. You can receive further assistance by contacting your county or state extension service.

Fertilizing. The more chemicals you use, the more you disturb the natural biological processes that convert organic matter into nutrients to keep the lawn going. Heavy use of chemical fertilizers increase the growth rate of the plant, but may also grow it to death. Nutrients are available immediately to the roots,

so the roots don't have to work to seek out nourishment.

Concentrate on meeting the needs of the plant, by starting first with the soil. With a well-structured soil, full of worms and other soil life, and where grass clippings are left to decompose, fertilizer needs will be minimal.

According to Mohamad Khan, area extension horticulturalist with Iowa State Extension Service, if you must fertilize, use a natural organic type. "Natural fertilizers will increase soil life, improve structure and provide nutrients. The minerals and nutrients in a living soil are quickly broken down and made available for the roots. A living soil is capable of producing a large part of a lawn's fertilizer needs on its own, especially if the clippings are recycled."

If you do fertilize, distribute the fertilizer over several applications. "Use one-third of your total annual fertilizer in the spring and the remaining two-thirds in the fall," said Khan.

Natural fertilizers come from plant and animal sources or from rock powders. These include bone meal, dehydrated manures, cottonseed meal, seaweed and fish products, and granite dust. Numerous natural products are available in pure and combined forms. Such materials break down slowly to provide long-term nutrition and steady, rather than excessive, growth.

Natural fertilizers have very few drawbacks. Although they usually take a while to break down -- especially when first introduced on a cold, dead, or half-dead soil -- gradual yet lasting changes benefit the lawn more in the long run. Although natural fertilizers have an odor, the odor is not long-lasting. And, most brands are deodorized, now. Watering after fertilizing will also help speed things up.

Synthetic chemical fertilizers act quickly. They can make a bad lawn look better faster than most natural fertilizers. But there are drawbacks to chemical fertilizers, especially when misapplied or applied for the

wrong reasons. Here are some of them:

- The nutrients are released too quickly, creating excessive topgrowth before the roots can catch up. Not only does this kind of growth weaken the grass, but it also means mowing more often.
- Much of a quickly released fertilizer tends to leach away, especially on sandy soils.
- Most quickly released chemical fertilizers can burn a lawn if it is not watered soon after fertilizing. Their high salt concentration literally sucks moisture from the grass plants.
- An over-abundance of chemicals in the soil will chase away earthworms. Earthworms ingest soil and decaying plant material and leave behind castings, which are extremely rich in nutrients. For most homeowners, the more earthworms the better.
- Stronger chemicals ruin soil structure.
- Many chemical fertilizers contain acids which in turn make the soil acidic. Liquid forms, especially, encourage shallow rooting and thatch formation.

Chemical fertilizers will improve a poor soil by adding nutrients to it, but they can ruin the structure and life of even the best soils. After continuous applications of chemical fertilizers, a lawn may get no nutrition at all from the soil. It can become totally dependent on synthetic nutrients.

Chemical lawn fertilizers are similar to agricultural fertilizers in the way they can affect the water supply. The quick-release nitrogen leaches through a porous soil very fast -- perhaps only half of it gets used by the grass, and some of the excess nitrogen can contaminate groundwater. Excessive nitrogen -- or nitrates -- and the chemical compounds it breaks into, have been shown to be toxic to people and animals. This is no longer just a concern for farming practices.

Weeds. Weeds are an especially challenging problem because nature intends the soil surface to be covered with plant growth. If grass isn't there, weeds will be.

Weeds become a problem in lawns

Two Ways To Beat Dandelions

- *Use long-handled clippers, a long-handled weed fork or a weed popper. Dig out four to five inches of the root. Small pieces of root left behind will result in new weeds. Pull them when they are blooming.* Dandelions are at their weakest when they're blooming and when food reserves in the roots are at their lowest. You will have better than an 80 percent chance that any remaining root pieces won't have enough strength to send up another stalk.
- *Another method is to use long-handled shears. Cut off all the leaves and as much of the stem as possible. Repeat five or six times a year. The root will keep sending up new growth until it runs out of steam. In one study, 92 percent of the dandelions were killed by this method.*

Tips for Maintaining a Healthy Lawn

- **Don't mow your lawn to death.** Never cut off more than one-third of the total height of the grass, preferably less.
- **Control water use.** Don't pamper your lawn. The more you water, the more dependent the lawn will become on receiving water on a regular basis.
- **Mulch or compost grass clippings.** Leave properly chopped clippings on the lawn instead of bagging them. The clippings provide valuable nitrogen to the soil, provide drought protection and avoid disposal problems. If you do remove them from your lawn, compost the clippings.
- **Use a slow-release fertilizer.** Slow-release, organic fertilizers (such as composted poultry manure) will nourish the lawn over a long period of time and provide the kind of uniform, MODERATE growth that helps to choke out weeds.

that are too thin and cut too short. Again, the best prevention is a thick, healthy lawn. Other conditions that weeds love include heavy use, soil compaction, improper fertilization, drought and mowing too closely, especially during the summer.

Weeds are symptoms that the lawn is in distress. A good thing about weeds is that, normally they do not like good growing conditions for grass. They are survivors that thrive under conditions that other plants shy away from. They'll grow in spots that grass cannot handle -- shady spots and areas that are too wet or too dry. Although, herbicides may kill the weeds, they do nothing to correct the problem. Unless the conditions are changed, the weeds will return, requiring more and more herbicides.

Chemical herbicides are poisons. In addition to killing weeds, they slow down the biological activity of

the soil. This weakens grass plants, fosters thatch and encourages diseases. If you can discover the reasons and eliminate them, the weeds suddenly become manageable.

Even under perfect conditions, there still may be a few weeds. These can be controlled by simply pulling them by hand ("See Two Ways To Beat Dandelions," above).

"You can change certain lawn conditions and improve your mowing, watering and fertilizing habits enough to make your lawn unacceptable to most weeds. Your lawn can reach the point at which chemical weed killers aren't needed," said Khan. "Remember, the first step to a chemical-free lawn, is proper lawn management. A healthy lawn can remain healthy by proper mowing and aeration."

For more information, check with your county or state extension service.



PART II
Environmental
Shopping

ENVIRONMENTAL CLAIMS AND THE SMART SHOPPER

Smart Shopping. It's not a new concept, just a new name given to the simple, time-and-money-saving, common sense fundamentals of being a wise decision-maker at the store. Also known as environmental shopping, smart shopping requires little time and frequently represents a cost-savings to both the shopper and to the environment.

You can be a "smart shopper," too, just by reading labels, asking questions and pausing to think about the things you buy.

A 1991 survey of 1,000 Iowans, conducted by the "Iowa Natural Heritage Foundation and Central Surveys, Inc." suggests that the buying habits of Iowans are reflecting their environmental awareness.

Among other findings, this survey discovered that more than one-half of the participants said items are not adequately labeled to assist consumers in determining whether the product, or its packaging, is environmentally safe.

"Green" labels — or marketing claims by manufacturers that their products contain recycled materials or are environmentally friendly, natural, organic, degradable, renewable, ozone-friendly, reusable or just kinder and gentler to the earth — should be considered carefully, by you, the smart shopper. While a number of manufacturers use these pro-environment claims on their products and packaging, most are never required to produce evidence of those claims.

Environmental labeling is being taken seriously in this country; however, the main lesson learned from existing efforts in Canada, Japan and Germany is that it takes a long time to build a product labeling program. Governments sponsor these countries' programs, which are designed to call attention to products or packaging less damaging to the environment than competing products or packaging. The United States Environmental Protection Agency is focusing on standards for environmental marketing claims and has initiated a major research project related to eco-labeling, but don't expect any impact from research too soon.

In the absence of federal involvement, nonprofit labeling programs have developed. In terms of actually issuing environmental labels, both "Green Seal" and "Green Cross" (see page 15) are currently the most publicized efforts in this country, although the well-known "Good Housekeeping Institute" is also considering establishing a seal award program.

While we all want to do right by the environment, smart shoppers are informed shoppers, and know when to recognize misleading marketing claims. So, what do "green" labeling claims mean? Or more importantly, what don't they mean?

Article by Julie Kjolhede
Photo by Ron Johnson

A product labeled *recycled* means that the product, and/or its packaging (the distinction should be made on the package), contains some amount of recovered waste materials. A valid claim will provide information about the type of recovered waste material(s), such as post-consumer (waste generated by the product's final consumer), and the percent of recovered waste materials used in the product or package.

Smart Shoppers Tip: If the amount or type of recovered waste material content is missing from the product or package, contact the manufacturer's consumer information hotline number (usually listed on the product's label) and request verification of the claim. This is particularly important if the item is a frequent purchase.

Different from recycled, *recyclable* means that the product or its packaging has the *potential* to be recycled — but it doesn't mean that it will be recycled.

Smart Shoppers Tip: Is collection for recycling the product or its packaging available in or near your community? If not, look for items that are collected for recycling where you live.

Degradable means a product or packaging will break down into its component parts under certain, specific conditions. *Biodegradable* items break down when exposed to certain bacteria; when exposed to sunlight, *photo degradable* products and packaging break apart.

Smart Shoppers Tip: Buy degradable bags recommended by local, municipal yard waste composting programs, but be aware that in well-operated landfills, few, if any, items experience degradation.

Reusable is reusing the product again for the same purpose.

Smart Shoppers Tip: Look for products or packaging that can be reused, and when possible, recycled! Some examples of reusable products may be: shopping bags, returnable (and refundable) beverage containers, glass containers, steel cans, plastic tubs and both sides of writing and printing papers.

These terms, or "green" marketing claims, represent just a few of the number of phrases used by manufacturers to grab your attention and your wallet. Make sure they are not meaningless.

Smart Shoppers Tip: When in doubt, check it out. Be wary of any phrases, signal words or statements that do not go on to explain how or why the product or its packaging is good for the environment.

Just by exercising these few simple, Smart Shopper Tips, you'll be on your way to becoming an informed, earth-caring consumer. When you read labels, ask questions and pause to think about the things you buy, the difference you make is the most effective "green" claim of all.



▲ Be wary of "green" words or phrases that are unexplained. Also, note that not all labeling occurs on the product. In the case of Iowa's Household Hazardous Materials program, labels are placed on the shelf near the product.



PART II
Environmental
Shopping

Iowa's Household Hazardous Materials Shelf Labeling Program

Not all labels occur on products or packaging. Point-of-purchase labels are displayed on the shelf, next to product price labels. In the case of Iowa retailers' Household Hazardous Materials Shelf Labeling Program, key information about consumer choices and responsibilities in selecting household hazardous products is provided by the retailer *before* a product is purchased.

Wherever you shop in Iowa, retailers that sell household hazardous materials (paints, cleaners, solvents, car products, pesticides, insecticides and so on) are required by law to display this label directly on the shelf.

If you don't see this shelf label in the retail and supermarket stores you frequent, contact the store manager and request the store to assist shoppers in making wise choices by complying with Iowa's law. For more information about recognizing products listed as household hazardous materials, call 1-800-DNR-1025.



This label indicates to the consumer that the product must be used and disposed of carefully and safely.

One Iowa Community's Point-of-Purchase Program

BUY A BETTER ENVIRONMENT WHEN YOU SHOP

Products have been highlighted that satisfy at least one, but preferably two or all three of these categories.

<input type="checkbox"/> Least Packaging	This product's packaging will result in less waste than that of a similar product.
<input type="checkbox"/> Locally Recyclable	This product's container is acceptable at the Community Recycling Center.
<input type="checkbox"/> Recycled Packaging	This product's packaging is made of recycled paperboard, aluminum, glass or plastic.

This program is sponsored by the Grinnell 2000 Waste Reduction Project and the Iowa Department of Natural Resources.

The Grinnell 2000 Foundation Source Reduction Demonstration Project is a five-phase waste management initiative funded by the Iowa Department of Natural Resources. The project is designed to serve as a model for other Iowa communities, local grocery stores and grocery corporate headquarters.

The key to the program is to provide shoppers with quick, reliable, at-a-glance waste reduction and recycling information on products throughout the store. Shelf labels (such as the one shown above) indicate to shoppers whether a product is packaged in recycled materials such as paperboard, glass, plastic or aluminum; whether the product's packaging is acceptable at the community recycling center; and whether the product uses the least amount of packaging, thus reducing unnecessary waste at the landfill. A consumer handbook provides shoppers with practical and concise guidelines for practicing waste reduction and recycling.

For more information about waste reduction and recycling point-of-purchase labeling, call Grinnell 2000 Foundation, at 515/236-6311 or 1-800-DNR-1025.

"Green" Labeling Programs

"Green" labeling programs can help you make informed decisions in the market place ONLY if you know something about the standards used to judge products.

Employing different procedures, both "Green Seal" and "Green Cross" analyze products and consequently, award seals of approval to those products and packaging that meet a pre-determined set of environmental impact standards. It's important to note that both groups require manufacturers wishing to receive the seals to pay for all product and packaging testing.

"Green Cross" validates specific product claims, such as "this paper bag is constructed from 40 percent post-consumer material." Scientific Certification Systems, Inc., the parent firm of the Green Cross Certification Company, does not endorse products and so far, has focused on paper, plastic and wood products claiming to contain recycled materials, and soaps, detergents and cleansers marketed as biodegradable.

To receive the "Green Cross," manufacturers of recycled items must include the highest possible percentage of recycled content in their products. "Green Cross" also requires soaps and detergents to break down into carbon dioxide and water.

Rather than examine individual claims, "Green Seal" conducts a life-cycle or cradle-to-grave analysis to measure the full environmental impact of products from manufacture to disposal. Categories of consumer products, each with its own set of standards, have been developed and will continue to expand as the program matures.



The most familiar recycling symbol was originally established by the American Paper Institute. The message contained in the recycling symbol represents the three phases of recycling that must be in balance if recycling is to occur. In its three arrow design, the symbol represents *collection* of recyclable materials, *production* into new recycled products and packaging and *purchasing* the product or packaging made from the recycled materials.

**WHEN YOU READ LABELS,
ASK QUESTIONS AND
PAUSE TO THINK ABOUT
WHAT YOU BUY,
THE DIFFERENCE YOU MAKE
IS THE MOST EFFECTIVE
"GREEN" CLAIM OF ALL.**

Julie Kjolhede is a planner with the department's Waste Management Division in Des Moines.

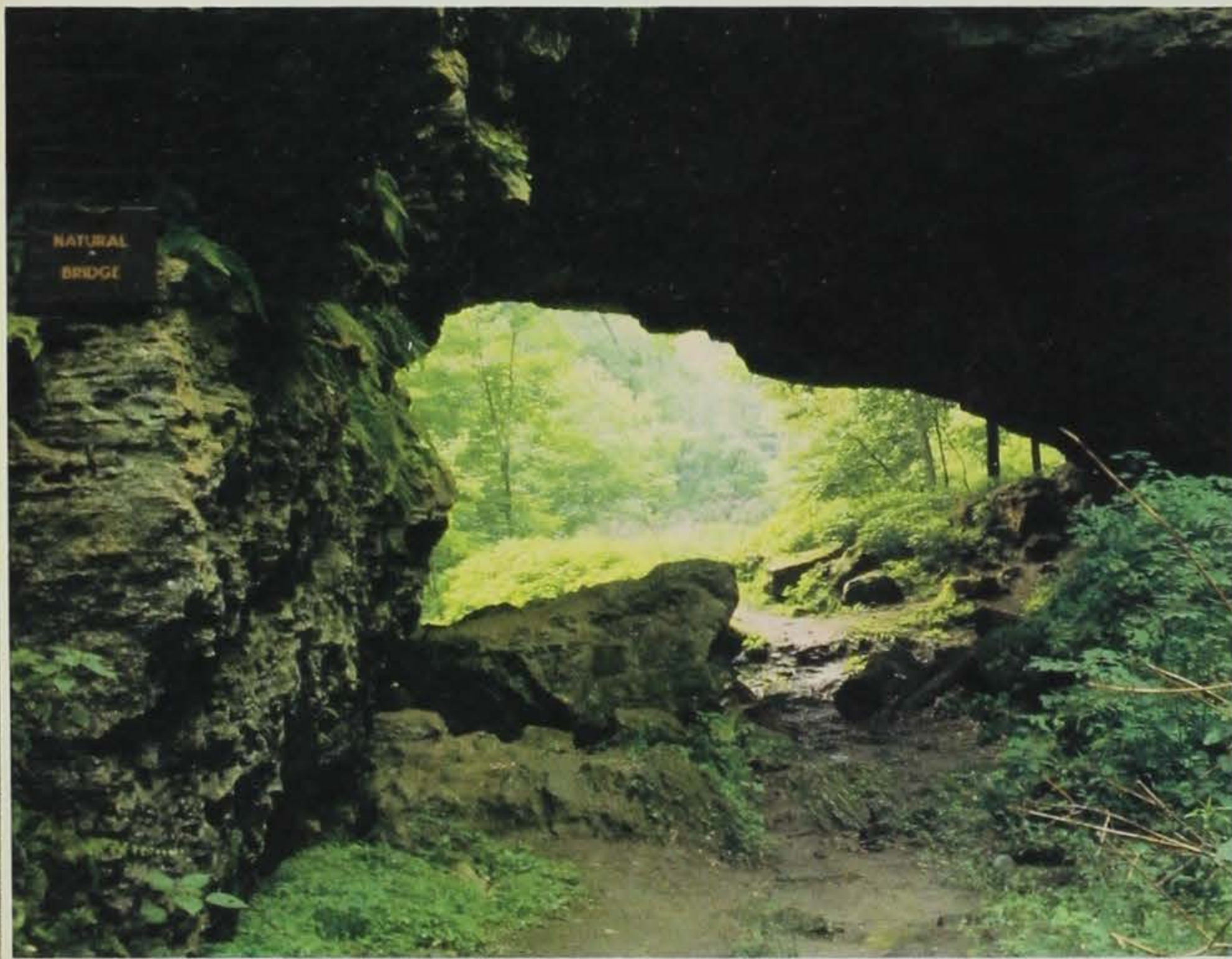
by Jim Scheffler

Have You Heard...?

Is it possible you've never heard of one of the most unique parks in Iowa, or, for that matter, in the Midwest -- Maquoketa Caves State Park? Imagine a beautiful valley with steep limestone bluffs, a stream, and 13 caves ranging in size from 30 feet to the main cave, which is more than 800 feet long. The park's limestone natural bridge, covered with lichens and mosses, is a spectacular complement to the cave system. Other interesting formations include appropriately named "Balanced Rock" and "Fat Man's Misery." Mix in a history going back thousands of years and you have a truly unique place to recreate. As a "bonus," Maquoketa Caves is located in scenic northeast Iowa's Jackson County, not far from the beautiful Mississippi River.

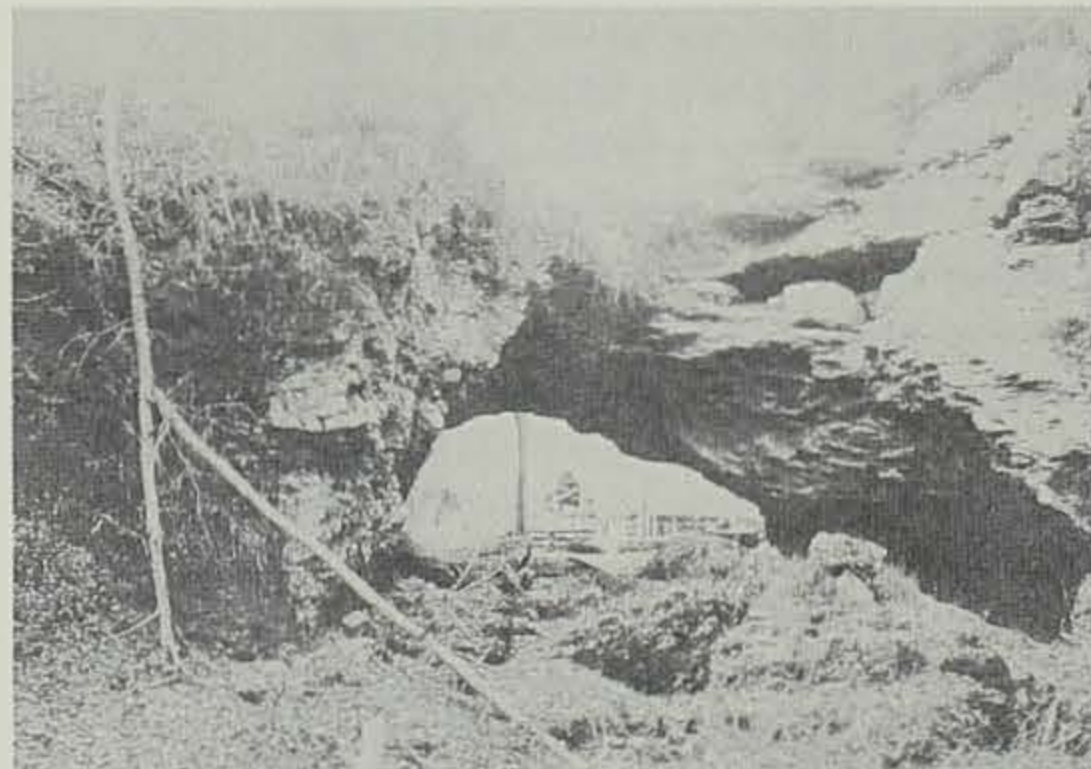
The Sac, Fox and Sioux Indians lived in the Maquoketa region of Iowa hundreds of years ago. Local legend says they held councils in Dance Hall Cave which was also known as Horse Thief Cave. The caves were first "discovered" by Joshua Bear and David Scott, two early settlers of Jackson County. On a hunting trip in the early 1830s, they found the Dance Hall Cave entrance. The caves area soon became a popular place. Some dates and initials on the cave walls date to 1835! Reverend William Salter explored the underground passages of the caves in 1844 and described the natural bridge. By the mid-1860s, the area had become a popular eastern Iowa destination for parties, picnics and exploring. They became known as "Burt's Caves" and also "Morehead Caves" after Mr. J.B. "Burt" Morehead, landowner of the area. A dance floor was built north of the natural bridge in 1868 and later a pavilion was added. Dances were held there until the 1920s.

During the early part of the 20th century, the movement to form a state park system was growing in Iowa. The Morehead Caves area was an early recommendation for state park designation because of its unique geological features and great natural beauty. The caves were described in the landmark 1919 Report of the State Board of Conservation, which recommended the ac-



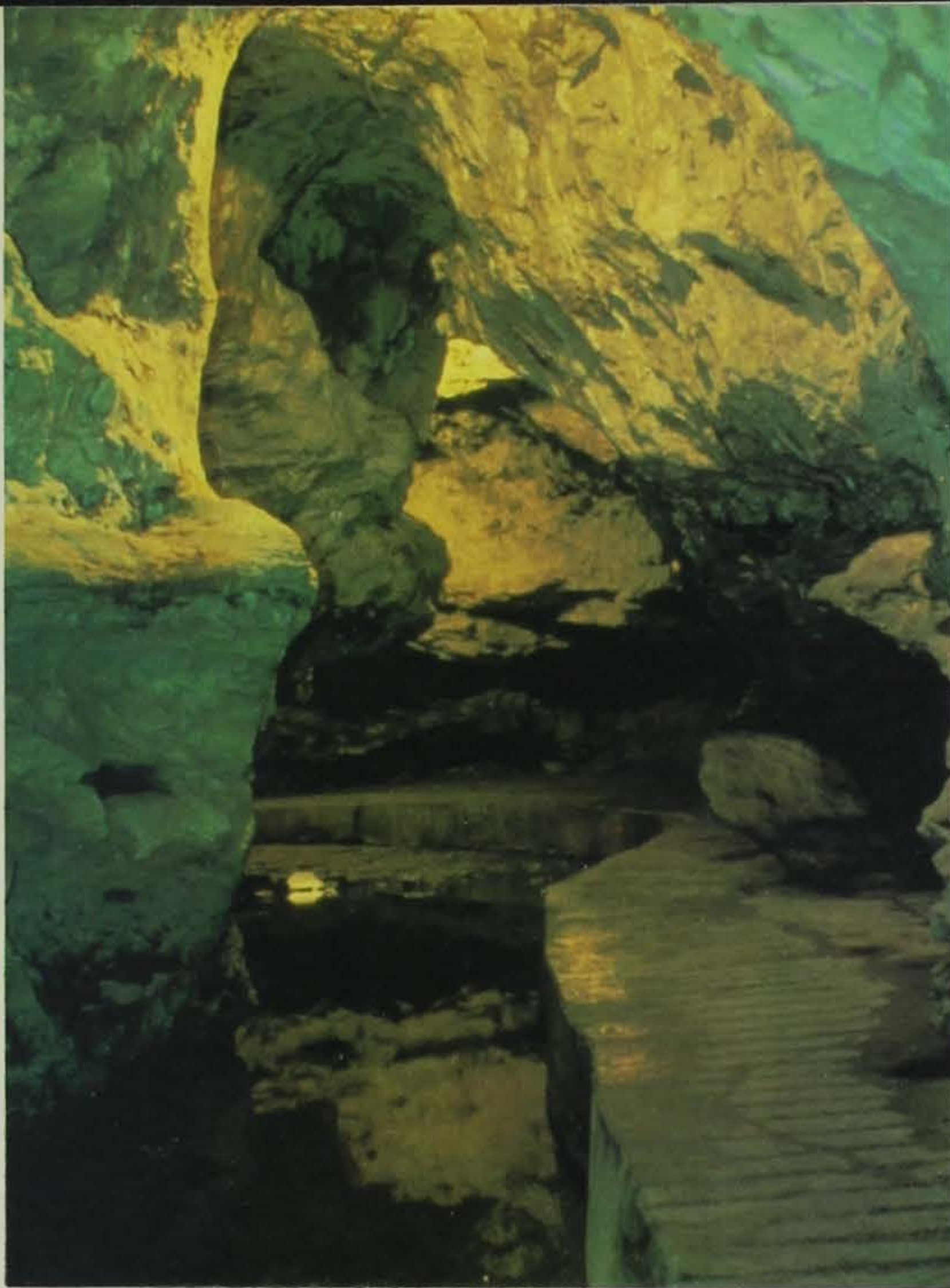
Ken Formanek

▲ Described as early as 1844, Maquoketa Caves' natural limestone bridge is probably the most prominent feature of the park. ►



DNR Photo

Dance Pavilion then under Natural Bridge, Burt's Cave, 1925



DNR Photo

◀ **Walkways and a lighting system were added to Dance Hall Cave in the 1930s by Civilian Conservation Corps workers.**

also worked in the park building trails, shelters, picnic areas, clearing the caves of debris, and constructing walkways and a lighting system in the main cave. Assistance was given by laborers from the Iowa Men's Reformatory at Anamosa. After the CCC left Maquoketa in 1937, the park development program at the caves was taken over by employees of the Work Progress Administration (WPA). Some of the important work the WPA accomplished included construction of a picnic shelter and lodge-concession building, the stone entry gates, rest rooms, a picnic "circle" with fireplaces near the cave entrance, and the completion of the creek channeling effort started by the CCC.

The beginning of World War II put a halt to the work accomplished by the CCC and WPA. It was not until the early 1950s that park improvements began again. These centered on cleaning up from the 1939 flood which had destroyed much of the creek channeling and cave cleaning efforts. A later flood in 1981 also did a great deal of damage to the walkway and lighting system. Cooperative efforts of the U.S. Soil Conservation Service and the DNR have since resulted in construction of several ponds upstream of the park. These should do much to minimize the chances of future flood "disasters."

Maquoketa Caves State Park has had a rich history. In recognition of its place as one of the first Iowa State Parks and also one with significant CCC and WPA development, Maquoketa Caves has been nominated for inclusion in the National Register of Historic Places.

During the 60s and 70s, the park more than doubled in size with the purchase of 154 acres. Prairie plantings were initiated in the early 80s on the west side of the park and now provide an attractive complement to the rugged timber and limestone of the cave area.

quisition of a number of Iowa's most significant natural areas for state park purposes. Morehead Caves was one of these. The Maquoketa community also felt strongly about a state park. In 1919, the Fine Arts Club of Maquoketa wrote to the State Board of Conservation requesting the development of Morehead Caves as a state park. In 1921, the Maquoketa Chapter of the Iowa Federation of Women's Clubs secured an option on some of the land and the state bought 17 acres including the natural bridge and most of the caves system. Maquoketa Caves was thus one of the first areas purchased for use as an Iowa State Park. The Board of Conservation made its first official visit to the caves in 1924 at a gala event which drew some 5,000 people to the new park area. For some years, little was done to provide other recreation

facilities at the caves, although a park custodian was appointed in 1926. In 1931, the Board of Conservation acquired an additional 68 acres and also requested \$2,000 from the local community to help construct improvements. A park road was completed in 1931 and in the following year the custodian's residence was built and the area was formally dedicated as Maquoketa Caves State Park.

During the "Great Depression," little money was available for state park improvements. However, the "New Deal" programs of the Roosevelt Administration resulted in a great effort at Maquoketa Caves State Park. Two Civilian Conservation Corps (CCC) camps were based in the Maquoketa area during the 1930s. Although most of the Maquoketa CCC effort was devoted to soil conservation, CCC men

Over the years, public use of the park gradually increased. However, facility development and improvement did not keep pace. By the 70s, it was evident that a new look had to be taken at the park. Accordingly, a master plan effort was started in 1979; however, the plan was placed "on hold" due to the flood damage to the caves as well as increasing budgetary problems of the early 1980s. The planning effort finally resumed in 1990 and was completed in 1991.

The emphasis of the park redevelopment is on providing first-class facilities. For example, a new campground is being developed in a unique pine plantation setting. A number of "walk-in" campsites will also be available for a different type of camping experience. The campground will feature modern shower and rest room facilities as well as electrical hook-ups. This will be a far



DNR photo

▲ **Maquoketa Caves is one of Iowa's oldest state parks. For more than a century, the natural area in Jackson County has been a popular gathering spot for picnickers, campers and other outdoor enthusiasts.**

cry from the old cramped campground with only primitive sanitary facilities and no electricity. The main picnic area has been expanded in size and will have a modern rest room facility and new shelter. The original park facilities will not be ignored during the redevelopment effort. The old lodge-concession building will be remodeled and will feature a modern rest room facility -- a first for the cave entry area! The beautiful picnic "circle," originally constructed by the WPA, will be renovated. A major effort will take place on trails within the park to make them not only safer and more enjoyable, but also to make them integral parts of the natural resource management and outdoor education programs in the park.

Finally, a new park visitor center will be developed. It will be housed in the former "Sagers Museum" building

constructed in the 1950s by the late Paul Sagers. Sagers, a local jack-of-all-trades, quarried the stone for the building himself. Over the years, he assembled a wide-ranging collection of items from both the Jackson County area and the world. Included in his collection is a large array of native American artifacts. These have been cataloged by the Office of the State Archeologist and will be featured prominently in the exhibit area of the visitor center.

The exhibits will tell the story of the caves, dating back to the time of glaciers, through early native American settlement to the present. Many of the Sager's items from the original museum are now on display at the Jackson County Historical Museum in Maquoketa.

Maquoketa Caves State Park is truly an area worthy of the major redevelopment efforts taking place there. If things go according to plan, renovation should be completed by 1994. In the meantime, the park is available for picnicking, hiking and exploring. Why not "check it out?"

Jim Scheffler is an executive assistant for the department's recreation programs bureau in Des Moines.

WARDEN'S DIARY

CHUCK HUMESTON

"IT WON'T BE EASY"

As I write this, last week I attended the graduation ceremonies for the 126th Basic Class for the Iowa Law Enforcement Academy.

126th? How time goes by! I was in the 51st Basic Class. That was . . . well, a few years ago. I looked at the officers on the stage. Did the academy lower the minimum age for attendance? These are all kids! "Perhaps you're getting older," another officer suggested. "No way," I thought. Still, did we really look that young?

We had three new conservation officers graduating that day.

What a great day! I remember. You're ready to go out and take on the world. Right! Suddenly I felt the recurring symptoms. You don't notice it at first. It sneaks upon you slowly and insidiously. Then one day you notice it's hold on you. The disease? Cynicism -- questioning the value of living and the sincerity of people.

I looked at those new officers, and remembered when I was just like them. Sworn in, badge pinned on, ready to go out and evangelize the world to conservation. I was ready to stop all poaching and ready to help everyone in need. My flag was flying high -- so high. But, over the years the flag lowers until not even the flagpole remains anymore. Reality soon replaces naivete as you feel outnumbered in a fight too difficult to win.

The first symptom is what the job does to you personally. You find yourself harder of heart as you try to switch your emotions on and off to cope with some of the things you have to deal with. Things like someone in your face commenting on your heritage, your mother, physical characteristics or anything else designed to offend you, all because you were

trying to do your job. You find yourself trying to soothe your anger by telling yourself, "it really doesn't matter." But sometimes it does matter. It's not a job where you come home and immediately forget everything and proceed to a normal family life.

The disease progresses when you lose that first case. Something is thrown out on a technicality or the defendant tells a story so different from what you saw, you wonder if you had even been at the same incident. "It really doesn't matter you tell yourself. So what?"

You think you will save the environment. Who could possibly argue with that? Well, you find to your amazement not everyone shares your concern, and even those who share your concern bicker amongst

words, "I don't care anymore."

To you three who graduated, don't give in. Remember three things. They are the preventative medicine for the disease.

First, how a society respects its natural resources reflects the basic moral character of that society. Be not like them! It comes down to much more than dollar signs. It comes down to our future. This isn't a job where you can walk away and see your accomplishments. But don't forget you do make a difference!

Second, our legal system may have flaws, but the rights of the accused are paramount. By virtue of being called, "Officer," you are sworn to hold those rights in high regard. You may lose some . . . but you will win, too.

Finally, I'll pass on a little advice

**You think you will save the environment.
Who could possibly argue with that?
Well, you find to your amazement not everyone shares your concern, and even those who share your concern bicker amongst each other.**

each other. You hear, "That's just a swamp, drain it, it's not good for anything." You find society, many times, uses dollar signs as the standard. "Cut it down, it's in the way." You see marshes drained as conservation groups argue with each other. You see habitat disappear as anti-hunters argue with hunters. You arrest someone for taking an over-limit, and the next day see timberland gone before the vanguard of "development." "It really doesn't matter," the disease speaks. "You're one person, nobody cares, there's nothing you can do."

You've finally succumbed to the disease when you utter those terrible

given me by a family friend who was once the assistant chief of the Iowa Highway Patrol. It's the best advice I ever had. "It isn't always easy to work with people," he said, "And it's sometimes hard to see where they are coming from. But don't ever stop caring about them."

So, when you see the bulldozers move in somewhere, and you try to tell yourself, "It really doesn't matter," inside if you can still feel that spark of anger and determination, then you'll know the disease doesn't have you yet. If we don't care, who will? It really is a "thin green line," and it won't be easy, but it will be worth it.

CONSERVATION UPDATE

May Is American Wetlands Month

This May is the second annual celebration of American Wetlands Month. The program's intent is to increase public awareness and appreciation of the value and functions of wetlands, to encourage local involvement in wetland protection and management and to enjoy wetlands. May 20 is designated as Wetlands Work Day to focus attention on appreciation of wetlands that are near where we live.

Wetlands are recognized as some of the most unique and important natural areas on Earth. Wetlands occur in every state in the nation and most people have a wetland located near them. Despite their many values, wetlands have long been misunderstood and have suffered great destruction and abuse. Despite a variety of federal, state and local regulatory and non-regulatory programs, wetlands are one of our most rapidly disappearing habitats.

It is estimated that we lose 350,000 to 500,000 acres of wetlands each year. A broad understanding and appreciation of the



Bruce A. Morrison

More than half the wetlands in the contiguous United States have been destroyed and the country continues to lose 350,000 to 500,000 acres each year.

many varied values and functions of wetlands can help to slow or stop this loss.

Some of the most important wetland functions are flood control, fish and wildlife habitat, food chain support, boating, water purification, aquifer recharge, commercial fisheries, hunting and trapping and other recreation. Wetlands have also played a significant part in the quality of life in different regions as well as in the fine arts and literature of certain areas.

The EPA has two information packets on ways local organizations, business groups and individuals can take part in celebrating American Wetlands Month. One of

the packets is targeted toward the educational setting such as grades K-12 and scouting or other youth groups.

For copies of either packet contact Carl Bauer, ENRV/WETS, Environmental Protection Agency, 726 Minnesota Ave., Kansas City, KS 66202, or call 913/551-7569.

The EPA also has a toll-free Wetlands Protection Hotline for questions on the values and functions of wetlands and options for their protection. The hotline also acts as the central point of contact for the Wetlands Division within the EPA's Office of Wetlands, Oceans and Watersheds (OWOW) providing a wide range of

information and publications on wetlands protection efforts involving the EPA and other public and private programs.

In addition, the hotline uses an extensive contact list to provide referrals to callers for other information when necessary. The hotline operates Monday through Friday from 9 a.m. to 5:30 p.m., Eastern Standard Time. The toll-free number is 1-800-832-7828.

Here are some interesting facts about wetlands:

- 80 percent of America's breeding bird population relies upon wetlands.
- Seasonally flooded wetlands are the only viable habitat for many amphibians.

- Continued loss of wetlands has contributed to severe declines in waterfowl populations (black ducks by 60 percent, pintails by 63 percent and mallards by 40 percent).

- The waterfowl industry for the Mississippi Flyway alone is worth \$58 million a year.

- Storm damage costs the nation about \$1 billion annually. However, wetlands can buffer storm surges.

- Sediment removal rates of 80 to 90 percent are common in floodplain wetlands.

- Denitrification studies have shown a 70 to 90 percent nitrogen removal rate by wetlands.

- Studies in the Midwest have shown that flood flows were reduced by 80 percent in basins with wetlands, as opposed to those without wetlands.

Iowa's Agriculture-Energy-Environmental Initiative Receives EPA Administrator Award

As Iowa farmers take to the fields this spring for their annual crop production work, hopes are high that they will continue to improve the same progressive environmental record that recently earned them national acclaim.

Iowa's Agriculture-Energy-Environmental Initiative recently earned one of 17 of the prestigious EPA Administrator Awards which recognizes excellence in work toward a cleaner environment. The Iowa entry was selected from 840 programs submitted to the EPA, nationwide. A group of agencies in Iowa put the initiative together about five years ago to speed up farmer adoption of management practices that reduce

environmental impacts, enhance energy efficiency, and improve profitability. The early results have been impressive.

"Iowa farmers have reduced the amount of nitrogen fertilizer on corn nearly 20 percent since 1985 with no decline in yield. That means a greater profit for them, in addition to improving environmental conditions," explained George Hallberg, environmental geologist with the Iowa Department of Natural Resources and the coordinator of the Ag-Energy management initiative. "Remarkably, this has happened even though nitrogen prices have generally declined," continued Hallberg. "Most other cornbelt states have either increased or maintained their higher use rates of nitrogen."

Statewide figures show Iowa farmers have reduced total nitrogen use by more than 650,000 tons since 1985. Not only has this reduced environmental loading but has saved the equivalent of more than 300 million gallons of diesel fuel in energy used to produce the nitrogen. That, in turn, has saved Iowa producers nearly \$200 million.

Hallberg points to aggressive information marketing and the team effort by many agencies as

the key to success of the programs.

"A large and varied network of on-farm demonstrations was coupled with intensive efforts to get the information to farmers. Every county had projects and there was great cooperation among the agencies to get the word out," he explained.

Attention is also being focused on other fertilizers, pesticides, animal wastes and soil erosion.

Agencies in addition to the DNR that are involved in the initiative include Iowa State University Extension Service and College of Agriculture, Iowa Department of Agriculture and Land Stewardship, the U.S. Soil Conservation Service, the U.S. Agricultural Stabilization and Conservation Service, and the Leopold Center for Sustainable Agriculture.

Only 17 programs received awards nationwide; Iowa had two of them. In addition to the Ag-Energy Initiative, the Osage Municipal Utility is receiving an award for its Demand-Side Energy Management Project. William K. Reilly, EPA administrator announced the national winners at Earth Day festivities in Washington. The award plaques will be presented at ceremonies in Washington, D.C., May 13.

Celebrate Iowa's Free Fishing Days

Iowa Free Fishing Days for 1992 are June 5, 6 and 7. During these days Iowa residents may fish and possess fish without a license. In addition, a trout stamp is not required to possess trout during free fishing days. All other fishing regulations must be obeyed.

TAKE A FRIEND FISHING



Upcoming NRC, EPC and Preserves Board Meetings

The dates and locations have been set for the following meetings of the Natural Resource Commission, Environmental Protection Commission and the Preserves Advisory Board of the Iowa Department of Natural Resources.

Agendas for these meetings are set approximately 10 days prior to the scheduled date of the meeting.

For additional information, contact the Iowa Department of Natural Resources, Wallace State Office Building, Des Moines, Iowa 50319-0034.

Natural Resource Commission:

--June 4, Okoboji
--July 2, Clinton

Environmental Protection Commission:

--June 15, Des Moines
--July 20, Des Moines
--August 17, Des Moines

State Preserves Advisory Board:

-- June 9, Mahaska County

New Video Proves Cooperation Is A Big Deal In Northeast Iowa

Do you need help improving the quality of water in your part of the state? There is a new 20-minute video available to show you where to start. *People Making A Difference: The Big Spring Basin Demonstration Project*, describes the personal efforts of the people in northeast Iowa and demonstrates how they made a difference.

The video takes a tour through the problems and successes associated with water quality in the Big Spring Basin area. Government experts and farmers talk about how they have

worked together to improve farming practices and groundwater quality in the basin.

"We wanted to get the word out that something can be done to improve water quality," explained George Hallberg, environmental geologist of the DNR. "The Big Spring Basin area is the perfect place to work with farmers to show how efficient farm management can result in improved water quality. Farmers are finding that these improvements are more profitable as well."

The video was produced by Iowa State University Extension Service and the Iowa Department of Natural Resources, with grant

support from the U.S. Environmental Protection Agency.

To view the video call the DNR at 515/281-5145 or visit DNR district offices, ISU area extension offices, or the SCS and extension offices of counties in northeast Iowa. Copies of the video are available for purchase through the Media Resources Center at Iowa State University. Call 515/294-1540 for prices and information about obtaining a copy.

Complementary copies of the Big Spring video have also been sent to public libraries and high school libraries in northeast Iowa for teachers, students and the general public.



Conservation officer Tom Campbell received the Governor's Award Of Valor on April 14 from Governor Branstad. Campbell received the the award for two life-threatening river rescues. The award is only given to officers who distinguish themselves by performances of heroic acts in excess of demands of their duties.

Where are Iowa's Fishing Hotspots?

Call
(515)281-5145
for a Weekly
Statewide
Fishing Report

(The report is updated each Wednesday morning)

CLASSROOM CORNER

Take Out The Garbage

by Don Sievers, education specialist, Springbrook Conservation Education Center

A new set of educational materials are being introduced to Iowa educators. The materials, *Iowa's Clean SWEEP*, (Solid Waste Environmental Education Project) were developed to focus on three environmental Rs: *Reduce, Reuse* and *Recycle*. Activities accentuate a "hands on" approach to teaching students about finite resources, increased pressures applied to these resources by growing populations, and about making wise choices to insure the Earth's well being.

Activities are designed for K-12 students, but will be a valuable asset to all educators. Teachers, as well as 4-H, church and scout leaders will find the materials very beneficial. An exciting component is the "My Little Bit" section of each activity that challenges students to make individual choices and to take action towards making a difference in the quality of their environment.

For more information about workshops featuring *Iowa's Clean SWEEP* contact Duane Toomsen, Iowa Department of Education, Bureau of Instruction and Curriculum, Des Moines, Iowa 50319-0146, phone 515/281-3146. The following activity is modified from one of the activities included in the materials.

Age: Grade: 7-9

Objectives:

1. The learner will be able to list the materials discarded into the waste stream, and
2. Develop a plan to recycle some of these materials.

Materials: Silhouette of garbage can, markers, 11 different colors of construction paper.

Background:

Activity in Brief: Using a large visual of a garbage can and the percentages of wastes in the waste stream, learners will categorize their garbage and discuss recycling efforts.

Subjects: Social studies, language arts, art, home economics, environmental problems; *Time:* One class; *Group size:* Any; *Skills:* Inferring, analyzing, critical thinking, identifying, predicting, listing, graphing; *Vocabulary:* garbage, organic, waste stream; *Concept:* The waste stream is made up of many kinds of wastes.

Procedure: Before the lesson, prepare a large "garbage can" visual and chart as follows:

- Using a large piece of poster board or oak tag, cut out the silhouette of a garbage can and decorate accordingly.
- Using a different color (11 total) of construction paper for each, cut out sections of a pie chart according to the percentages of each waste category (see page 24).
- Label each section with the waste percentages.

- On back of each graph piece put the category of the garbage.

- Place all 11 pieces of the pie chart face down on the table with only the category showing.

1. Begin with a discussion of garbage and where it comes from. Ask participants what they would find in a garbage can at their local city park. Have participants make a list. Mention the new "Bring Your Own Bag" (BYOB_{ag}) carry-in-carry-out trash program now in effect in state park day-use areas (such as picnic areas). Point out that without preplanning people would have to carry out all that they carry into the park, including all that was on the park trash can list they had just made.

2. Make a classroom list of garbage items. Rank the items from most to least according to how frequently they were mentioned. Discuss why that particular order was selected and why the number one item was so popular. For instance, why is there so much paper waste?

3. Display the instructor-made "garbage can" and announce that you will discuss what the average garbage can in Iowa contains. Have participants select the piece of the pie chart corresponding to their number one choice and read the percentage. Continue this until all of their choices are selected. Discuss everyone's items that fall into this category. If there are any pieces left, discuss the idea that these things also go into the garbage.

4. Now, introduce recycling and what Iowa is doing. Specifically, what your community recycles and how it is accomplished. (Instructor will need to check county or city solid waste authority for information or assign participant(s) to this task.)

Take each piece of the pie chart out for each recyclable and discuss how much landfill space is saved. Go over the list "Ten Ways To Reduce . . . Solid Waste, That Is" (see page 24).

5. Discussion questions:

- Why is it important to save landfill space?
- How does recycling affect our natural resources?
- Why is it difficult to recycle?
- What can we do to help recycle?
- How can we make it easier for others to recycle?

My Little Bit:

Plan a picnic lunch to be eaten in a BYOB_{ag} area of a state park. Discuss how using reuseable dishes, utensils, napkins and table cloths as well as buying bulk snack items instead of single-serving packages can reduce waste (see BYOB_{ag}, page 28).

Compare the "park trash can list" with the list of items that would be thrown into the waste stream when your

TEN WAYS TO REDUCE

. . . *Solid Waste, That Is*

1. Buy products that will last. Read and evaluate the warranty.
2. Buy products in recyclable, returnable or refillable containers.
3. Don't buy items that are disposable such as pens, razors, etc.
4. Don't buy excessively packaged items.
5. Buy in large quantities whenever possible as these use less packaging per ounce. Toothpaste is a good example. (Hazardous chemicals are an exception -- buy only what you need of these.)
6. Cooperate in recycling projects by separating cans, bottles, newspapers, etc.
7. Buy products packaged in recycled materials.
8. Use less paper. Don't use paper plates, write on both sides of the paper, use scratch paper for notes.
9. Reuse products. Find another use for items. If you really don't need an item, take it to a garage sale, exchange it or donate it to charity.
10. Pass on the good news. Influence others to reduce.

BYOB_{ag} picnic is finished. Point out that recycling and waste reduction can continue in everyone's lives outside the home as well as in. Encourage the students to make their friends and families aware of reducing waste and the new BYOB_{ag} program.

Learners decorate a brown paper bag with a slogan, a picture, part of the pie chart "saved," etc. to take home for recycling aluminum cans. Learners bring in all their aluminum cans and return them to a store. Use the money to fund another earth-healthy activity.

Make a sign about recycling and saving valuable resources. Choose a slogan which will make people want to recycle. Have the group choose the best two or three ideas, make them into posters and post them in a local park.

Extension:

Participants may design and create bags/bins for classroom use throughout the school or building for recycling.

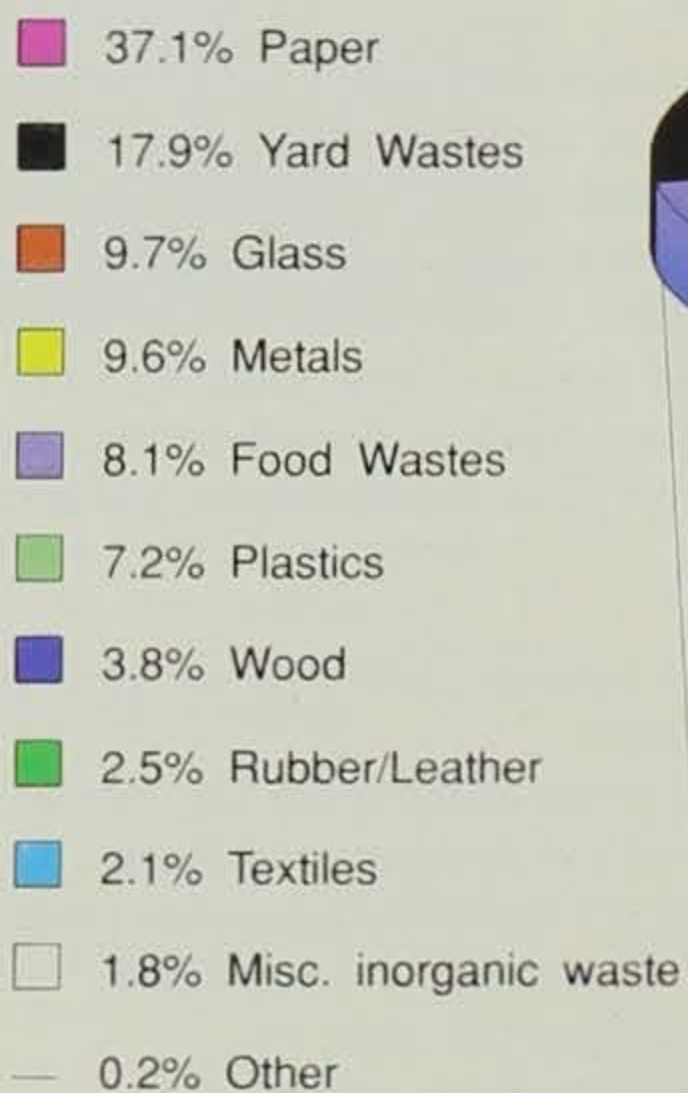
Possible guest speakers -- county board of supervisors and area solid waste commission.

Evaluation:

Discuss what was learned. Were discussion questions answered? Evaluate the effectiveness of the sign.

Resource Materials:

The following resource materials are available from the DNR central office, Wallace State Office Building, Des Moines, Iowa 50319-0034, phone 515/281-5145: Brochures -- *Office Wastepaper Recycling, Waste Management in Iowa: Preparing for the Future*; Booklets -- *Breaking the Waste Habit, What You Should Know About Recycling, Put Waste in Its Place* and *Recycle: Be Part of the Solution, NOT part of the Problem: A How-To Recycling Guide*.



SHOWERS OF SAVINGS

A Hamilton County environmental educator launches a water-saving project that could save the county -- and its residents -- at least \$180,000 in one year.

Article by Patricia S. Cale
Photos by Ken Formanek



Residents of Hamilton County will get more than a refreshing shower every day because of a project

launched by county environmental education coordinator Jean Eells. Their new low-flow showerheads will also save them between \$60 and \$120 per year.

The "Showers of Savings" project is providing the \$2.25 showerheads to almost half the households in the county, thanks to donations from businesses, service clubs and city and county government.

"We had three funding sources," according to Eells. "We asked businesses to buy showerheads for their employees, as a way of helping make their paychecks stretch." Eells and her volunteers also approached service clubs to either make donations or buy showerheads for their members. And city councils were encouraged to buy enough showerheads for the households in their areas.

"Our first order is for 3,000 showerheads. That will serve almost half of the 6,800 households in Hamilton County. If everyone uses the showerheads, we could generate a minimum of \$180,000 in savings for the county in one year," said Eells.

The "Showers of Savings" project is designed to draw people's attention to energy and the environment, and the best way to do that is through their pocketbooks, she said.



Almost Like Getting a Raise

Tom McLaughlin, owner of Thompson's Pharmacy in Webster City, bought showerheads for the seven households represented by his employees. "With the savings they'll get in water and the energy to heat water, giving them the showerheads is almost like giving staff a raise," he said.

The Webster City Hy-Vee store also bought showerheads to give to full-time employees. According to manager Steve "Duke" Dukeshier, buying the showerheads fit in well with Hy-Vee's other environmental efforts. The Webster City Hy-Vee helped launch a milk jug recycling project and also recycles plastic bags. "Of course, it makes it easy to protect the environment if it's going to save you money," Dukeshier said.

Saving county residents money on water and energy costs is good for business throughout the area, said Dukeshier. "When people



The Webster City Hy-Vee Food Store bought showerheads to give to all full-time employees. Jean Eells, Hamilton County environmental education coordinator (right), discusses the "Showers of Savings" program with store managers Steve Abbott (left) and Steve Dukeshier (center).



Hamilton County residents can expect to save \$60 to \$120 per year in energy and water costs with the new showerheads. Here, Tom McLaughlin, owner of Thompson's Pharmacy in Webster City, replaces his old showerhead. McLaughlin purchased showerheads for the seven households represented by his employees.

have more money to spend, it filters through the local economy. Hy-Vee benefits because we get our share eventually," he said.

Service Clubs and Cities Came Through

The service clubs in Hamilton County also came through with donations and help distributing the showerheads, according to Eells. "The Blairsburg Lions Club was the real star. It's a real small community, but they were able to give \$500 toward the project," she said. "One of the men in the club said, 'I have four [kids], and by the time they get done showering there isn't any water left for me! Now even I can take a shower!'"

Some cities bought showerheads for the whole community. "At a minimum, I asked them to buy for their employees, like a business," said Eells. Webster City bought the low-flow showerheads for their parks and recreation facilities as well.

"The city of Ellsworth enthusiastically bought even more showerheads than they have households in the town. They generously offered to provide showerheads even for people out in the surrounding areas.

They'll distribute them through city hall," she said.

Showerheads Became Class Projects

Schools in Hamilton County also got into the act. Dennie Webb, a teacher at Sunset Heights Elementary in Webster City, bought showerheads for each of his students out of his own pocket. He and Eells used the showerhead project to teach the fourth graders how to graph, showing the difference in how fast an old showerhead flowed versus the new one. "Then the students had to develop a way to use their graphs to teach an adult why they should use a low-flow showerhead," said Eells.

Three ninth-grade students at the Webster City High School also used the showerheads as a class project. Lisa Miller, Kirsten Canter and Jana Peterson, students in Sharon Johnston's earth science class, timed how fast a showerhead in the girls' locker room filled a bucket. Then they replaced it with a low-flow model and did a second timing.

"It only took 10 seconds to fill the bucket with the old showerhead, and 50 seconds with the new one. The new showerhead is five times more efficient



Ninth-grade students at Webster City High School used the showerheads as a class project. In the top photo, Kirsten Canter and Lisa Miller timed how fast a standard showerhead in the girls' locker room filled a bucket. In the bottom photo, Kirsten and Lisa timed how long it took a low-flow showerhead to fill a bucket. The results? The low-flow model was five times more efficient than the standard model, taking 50 seconds to fill the bucket as compared to 10 seconds for the standard model.

than the old one," said Miller. The students took their results to the school superintendent, and the old showerheads were replaced.

Beyond Traditional Outdoor Issues

How did a county conservation board environmental educator get involved in distributing showerheads? According to Eells, "This is the essence of environmental education. I'm reaching out to all county residents, not just those that are already interested in the outdoors." Installing a showerhead is a simple, accessible action that anyone can do, she said, and it helps people see the connection between the environment and their lives.

Environmental educators have to expand their focus from traditional

"The "Showers of Savings" project is designed to draw people's attention to energy and the environment, and the best way to do that is through their pocketbooks."

**--Jean Eells,
environmental educator**

outdoor issues. "The constituency for those issues is shrinking. But everyone in the county sends garbage to the landfill, buys electricity, has needs for clean air and needs to understand their relationships with the environment," said Eells.

The showerhead project also is a great way to build relationships between environmental interests and business, Eells said. "It helps that our county economic development agency is right next door."

Continuing a Showers of Savings

Once the showerheads ordered through the project are distributed, Eells wants to see that they continue to be available through a retail outlet in the area. "I don't want to compete with retail, I want the retail to benefit. So when I tell people to go into 'so and so' business to pick up their showerhead, I can tell them to pick up their water heater blanket and their caulk and weatherstripping at the same time," she said.

Patricia S. Cale is an information specialist for the department's energy bureau in Des Moines.

Reprint from the *Iowa Energy Bulletin*, March/April 1992, Volume 17, Number 2.

BYOB Bag

Article and photos by Kathryn A. Stangl

With the start of warmer weather more Iowa residents will become aware of the new Bring Your Own Bag (BYOB_{ag}) carry-in-carry-out trash program in Iowa's state parks. There are two key parts to the program 1) bringing your own trash bag to remove your wastes after your visit to a picnic area, and 2) reducing your waste by using reusable items. Here are some ideas that will help eliminate or at least reduce the bag of trash you have to carry out.

This is a terrific time to create your own set of picnic items and store them so they are always on hand. Just as the cold weather "emergency" kit is a staple for traveling in Iowa in the winter months a BYOB_{ag} picnic set can be an essential kit for the frequent picnicker to keep on hand.

You can purchase "picnic sets" in hampers, calico-lined wicker baskets, soft-sided tote bags and even high-tech, picnic-gear-equipped backpacks. Keeping in mind the waste reduction theme, the best idea is to reuse existing items to make a picnic set. Many options are available to create a family picnic set ready for new adventures and new memories to be created.

Here are some items to include in a basic set: plates, cups or unbreakable glasses, bowls, cutlery (forks, knives, spoons, serving spoons), sturdy containers for bulk snack items, a Thermos or insulated jug for hot or cold beverages and containers to hold food items (sandwiches for example). You may also want cloth napkins, a table cloth or ground cloth (a blanket works great for either), salt and pepper shakers and containers for condiments such as ketchup and mustard, and of course, a container to hold all of your picnic ware together.



◀ Start the tradition of BYOB_{ag} and using reusables when children are young. The BYOB_{ag} sets shown were created from thrift shop bargains and are ready for new memories to be made.

Now, brainstorm and become really creative on what items you need and where you can find them. Start by looking in your own home. It is surprising just what many of our attics, basements and garages store. You may have many items you need for your picnic kit already in your household waiting to be reused. Digging out these "treasures" can also be a chance to pass on a few personal or family memories. Along with the valuable family history take the time to tell the younger members of your group about the time before all the "disposables." As you unpack those old memories, wash up your found items and prepare to create some great new memories.

A quick search of local civic, social and religious organizations'

thrift, used or second-hand stores and garage sales can also turn up reusable items to create your picnic kit.

Plates are one of the easiest items to find. Smooth aluminum pie tins (obviously without bottom perforations) or camping mess kits work well. They are easy to find, relatively unbreakable and easy to clean and store.

Reusable plastic glasses with the names of restaurants or special events and the plastic containers that hold yogurt work well as cups.

Instead of the individual juice/drink boxes so popular with kids, use a six- to eight-ounce reusable container. There is no waste to enter the waste stream, you can buy less expensively in bulk and the screw-on lids and snap-down straws make them much neater and spill-proof than the juice boxes.

You can still enjoy the convenience of individual servings while reducing waste.

Metal forks, knives, spoons and serving utensils are plentiful and reuseable as are camping flatware sets (fork-knife-spoon stored together). Heavier plastic utensils which are usually disposed of can be saved and reused many times, too.

You can buy in bulk and not waste the packaging of individual serving items, if you use the very-easy-to-find, inexpensive, sturdy serving containers with lids, such as butter, sour cream or dip tubs. They are made of a recyclable plastic; however, many communities do not yet have ways to recycle these products and reusing them in this way keeps them out of the waste stream.

Of course hot and cold items will have to be protected from spoiling. A cooler or ice chest will do the job for cold items. Jugs, vacuum coffee pots, insulated beverage containers, and even old Thermos containers complete with cork stopper work well for hot and cold beverages as well as the occasional hot item such as soup or stew.



▲ **Plastic drink containers instead of juice boxes are less expensive and reusable.**

Decide what kind of containers will best transport the kinds of foods you enjoy to your picnic site. With a bit of careful browsing and rummaging you will be able to put together a



◀ **Insulated containers with stoppers and screw-on lids are available in several sizes from eight-ounce to a half-gallon. These are useful for serving hot or cold beverages as well as soups and stews.**

perfect picnic set customized by size and intended use.

Cloth napkins, table cloths and ground cloths are very easy to come by and inexpensive. They can also be quickly cut and hemmed from scrap cloth. An even easier way is to cut them out with pinking shears -- no sewing is required. Strangely enough this was a "custom touch" found on many of the *most* expensive, new picnic sets found in stores.

As for the perfect container to hold your picnic wares, almost anything goes. We found the hamper shown in the picture at a local civic group's thrift shop for under \$5. Baskets, tote-bags, coolers and even backpacks work equally well to keep your kit together. An old "disposable," inexpensive Styro-foam cooler can be reused as your picnic hamper. An unglamorous but inexpensive and practical solution is to use a sturdy cardboard box to store your picnic gear. This keeps everything in place while you keep looking to find the "perfect" container.

However you prepare your bag always keep it clean and available. When it's a great day and you decide on a last-minute picnic everything will be there waiting for you. Even if you pick up your meal from the local deli, convenience store or fast food outlet, there is no need to buy disposable plates, cups and utensils. Just buy your food, pull out your picnic set and enjoy and remove the "paper traces" of your visit with you.

From your first spring outing, through summer barbecues or family get-togethers, at your feast after a hike through colorful autumn foliage or your stop by the park for a quick bite after the big school game, you will always be prepared. By planning what you will carry in to your picnic, you have very little to carry out. And, what you do carry out can be reused again and again. That makes sense for your future and for Iowa's.

Remember there are many ways to reduce waste. Iowa's state park's *BYOB*ag program is just one of them. For more information on the *BYOB*ag program contact your local park ranger or call (515)281-5145 for a brochure about the program.



▲ **The common-sense method of preplanning now for a picnic reduces waste and frees you to enjoy the moment.**

The Loess Hills State Forest, nestled in the miniature mountains of western Iowa along the Missouri River, was formed more than 14,000 years ago, as wind swept glacier-fed silt deposits from the Missouri River floodplain. The wind-blown soil or "loess," piled in drifts as much as 200 feet deep along the western edge of the hills system in Iowa. The only other comparable loess formation with depths of 200 or more feet is along China's Yellow River.

Centuries of erosion and plant succession have molded the Loess Hills into a landform that intrigues geolo-

gists, botanists, biologists and nature lovers.

Prior to 1850 the prevailing ground cover on the Loess Hills was prairie grasslands. Scattered bur oak trees were located on protected slopes throughout the hills in the valleys of the north-facing slopes. Frequent fires, whether set intentionally or accidentally by lightning, kept the tree encroachment down to a minimum on the vast prairie grasslands.

After 1850, as settlement of the Loess Hills rapidly increased, these fires were suppressed. Trees, especially bur oaks, began spreading up the slopes

Article by Brent Olson
Photos by Ron Johnson

from the few originally protected areas and narrow bands of woodlands. In most recent years the forest land advancement has progressed at a much slower rate due to the conditions of the steep, dry south-facing slopes and ridges of the hills.

In 1986, the National Park Service recognized the uniqueness of the area by designating part of Iowa's Loess Hills as a National Landmark. The area's unique hidden canyons, back roads, uncluttered vistas and quiet woods have escaped the tourist rush that sometimes crowds other parks and recreational areas.

Progress in creating a new state forest in this region became possible when lawmakers established the state lottery. A portion of the lottery receipts are earmarked for the expansion of the Loess Hills State Forest as well as the other three state forests established in the 1930s. Also, Resource Enhancement and Protection (REAP) funds and Land and Water Conservation funds have been used to acquire land for this unique forest area.

The Loess Hills State Forest, located around the community of Pisgah on state highway 183, is in Harrison and Monona counties. There are four unconnected proposed units in which the state wishes to buy land from willing sellers. The units are named Pisgah, Preparation Canyon, Mondamin and Little Sioux. The boundaries of the units consist mainly of roads. Also, within the proposed boundary of the Preparation Canyon unit, is the Mid-America Boy Scout Ranch and Preparation Canyon State Park.

The forest will be managed to achieve multiple-use benefits which include timber, watershed improvement and protection, recreation, wildlife habitat, prairie habitat and aesthetics. The timber resources in the area consist of many types of tree and shrub species. Predominant species include oak, hickory, basswood, elm, ash, black walnut, Kentucky coffee

LOESS HILLS STATE FOREST





Formed more than 14,000 years ago, the wind-blown soil or "loess" of the Loess Hills State Forest can be compared to only one other area of the world — along China's Yellow River.



tree, hackberry, cottonwood, silver maple and red cedar.

Goals of management are to provide a stable contribution to the economic life of the local communities; to harvest, on the parts of the forest used for timber, an amount equal to the annual growth; to help in locating and improving the markets for timber and cedar products out of this region; to improve wildlife habitat and water quality; and to manage for high-quality black walnut trees for economic returns. These goals and many more will be accomplished through the planned renewal of the forest as it matures.

There will be areas located within the forest to demonstrate planting, timber stand improvement and different types of harvesting techniques.

Wildlife Values

Over time, wind, water, humans and other forces of nature have transformed this area into a complex network of interlaced wildlife habitat types. Many wildlife species make use of the mosaic of vegetative cover. They use the vegetative cover for shelter, nesting, escape and

to camouflage their movements from one habitat type to another. Through its great diversity of habitat, this area supports an abundance of wildlife species. And some of these species are found nowhere else in Iowa, such as the plains pocket mouse, southern bog lemming and great plains skink. Some more commonly found species in the Loess Hills include turkey, fox, coyote, pheasant, quail and deer. Many turkeys have been trapped from the Loess Hills by the DNR and sent to other parts of the state or used in trading for other wildlife species. The forest also holds a lake which has been restocked with bluegills, bass and catfish.

Recreational Values

Recreational opportunities available at the Loess Hills State Forest include hunting, fishing and sight-seeing from vista points. Future plans for recreational improvements at the Loess Hills State Forest include developing hiking, cross-country skiing, snowmobiling and interpretative trails, picnic areas, off-road parking areas for visitors and camping sites.

Whether your interest is in hiking, bird watching, cross-country skiing, camping, picture taking, fishing, hunting, geology or nature study, the Loess Hills State Forest offers many opportunities to explore your outdoor interests. We invite you to use your newly developing state forest area.

Brent Olson is the area forester at Loess Hills State Forest.

Proposed and current ownership acreages of the forest units.

<u>Unit</u>	<u>Proposed Acres</u>	<u>Current Ownership</u>
Preparation Canyon	5,889	1,929
Pisgah	5,045	1,087
Little Sioux	4,700	1,253
Mondamin	1,992	763
Total	17,626	5,032

