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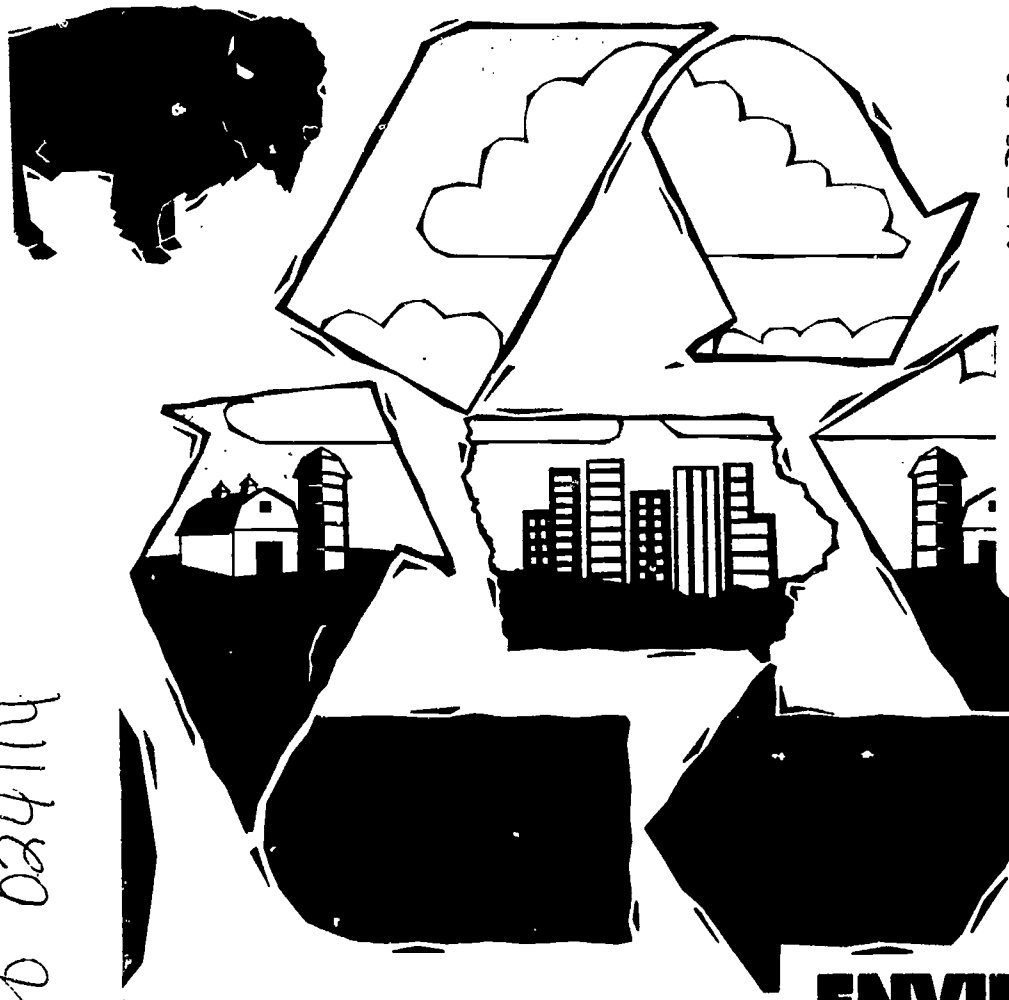
ABSTRACT

This theme issue explores the changes in Iowa's environment. When Native Americans lived in Iowa hundreds of years ago, the land was rich in tall grasslands, fertile soil, wildlife, wetlands, and unpolluted waters. When European-American pioneers settled Iowa in 1833, they changed the environment in order to survive. The first article in this issue discusses recycling. Another article describes the wildlife that used to be plentiful in Iowa, the loss of some species, and the reintroduction of others. Articles are devoted to pesticides, heirloom seeds, and bird watchers. More extensive articles describe Iowa wetlands, Iowa's flood history, erosion, and recycling. A learning activity on making compost is included along with a quiz on compost materials. Iowa's prairie history is explored in another article. Sections discuss breaking the prairie, prairie fires, and prairies today. Other learning activities include a word find, a word scramble, and cartoon, all dealing with the environment. A short story about recycling is included. The last article describes the activities of different youngsters in celebrating Earth Day. A list of four books is offered as additional reading. Four pamphlets available from government agencies or private organizations are included. (DK)

THE Goldfinch

Iowa History for Young People Volume 15, Number 4 Summer 1994



IOWA'S ENVIRONMENT

Wild Rosie's Map

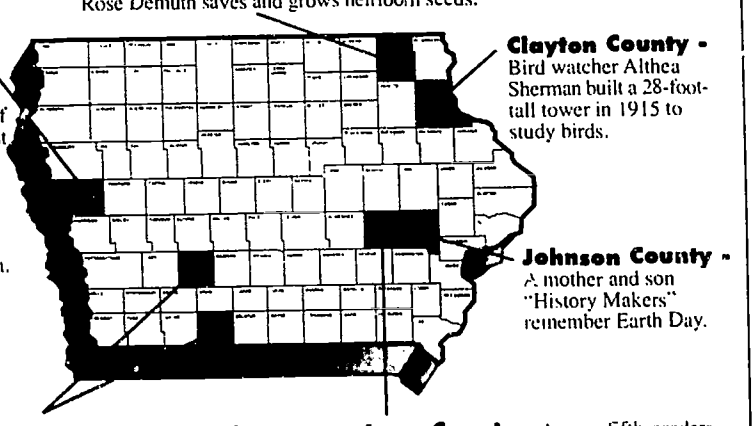
When Native Americans lived in Iowa hundreds of years ago, the land was rich in tall grasslands, fertile soil, wildlife, wetlands, and unpolluted waters.

When European-American pioneers settled Iowa in 1833, they changed the environment in order to survive. Settlers cut down trees to build houses and barns. They farmed Iowa's prairies to grow crops to feed their families and livestock, and they drained the wetlands and turned soggy soil into rich farmland.

Today, all decisions concerning the natural environment can be good or bad for Iowa's land and the humans and animals who live here.

This issue of *The Goldfinch* explores the changes in Iowa's environment. To learn more about Iowa's environmental history, visit the "Delicate Balance" exhibit at the State Historical Society of Iowa in Des Moines.

Some of the Places You'll Visit in This Issue of The Goldfinch



Winneshiek County - Twelve-year-old Bathsheba Rose Demuth saves and grows heirloom seeds.

Monona County - The Loess Hills, some of Iowa's largest remaining prairies, stretch along the Missouri River in western Iowa.

Clayton County - Bird watcher Althea Sherman built a 28-foot-tall tower in 1915 to study birds.

Johnson County - A mother and son "History Makers" remember Earth Day.

Adair and Ringgold Counties - Prairie chickens have resettled in their native grasslands.

Iowa County - Amana fifth-graders learn about wetlands in their community.

Map design by Kris Atha, Art a la Carte, Newton

THE Goldfinch

Parent's Choice Award Winner

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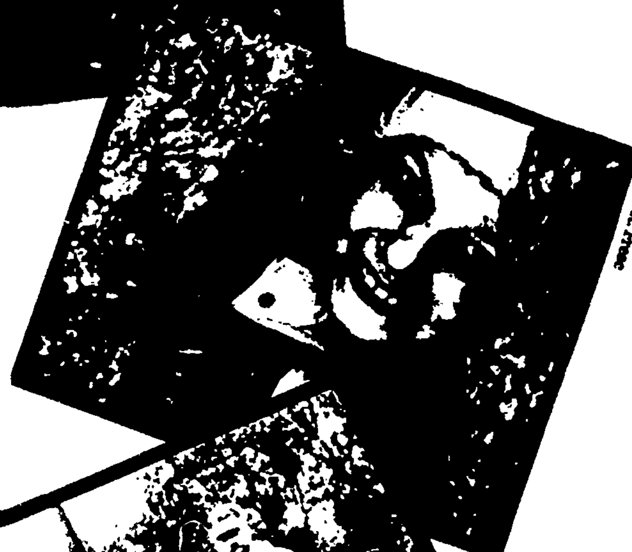

Millie K. Frese

SHSI

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About Iowa's Environment

Ready, Set, Recycle!

IOWA — What would you do with an empty drink bottle? Toss it in the garbage? Maybe slam-dunk it into a recycling bin, or trade it in for a nickel?

If you lived in Iowa 150 years ago, when glass was very expensive, you would wash the bottle carefully, and reuse it until it broke beyond repair.

In later years, when tin and aluminum containers replaced glass, you probably would have thrown your pop containers in the garbage.

All this changed in 1979 when Iowa became the fourth state to pass a "bottle bill," requiring a five-cent deposit on many glass, plastic, and aluminum beverage containers. Like they do today, Iowans received five cents for every empty soft drink container returned for recycling.

When the bill was just a year old, Iowans had reduced can and bottle litter along roads and highways by 79 percent, Jeff Fiagle of the Iowa Department of Natural Resources (IDNR) told *The Goldfinch*.

Now the bill encourages Iowans to recycle. A law passed in 1990 outlawed disposal of five-cent-return beverage containers in landfills.

Because Iowans are so "into" recycling, an estimated 66,955 tons of plastic, glass, aluminum, and steel soft-drink containers were recycled in 1991. Not bad for a state that consumes an estimated 792 soft drinks a year. (That's a little more than 285 containers a year per person!) Some Iowa legislators want to expand the bottle bill to include fruit juice containers. Ten other states have bottle bills similar to Iowa's.

Paper and some plastics also can be recycled. They are made from materials that can be broken down and used again and again. Often, less energy is required to make products out of already recycled materials.

Today in Iowa, recycled newspaper is reused for animal bedding, and crushed glass is used for building roads.

— *Amy Ruth*

Iowa's first Native American residents made very little garbage. They put ashes, animal bones, and broken pottery in empty, underground food-storage pits. They used much of their "waste" in sacred ceremonies, said Marlin Ingalls of the Office of the State Archaeologist.

Early pioneers also didn't make much trash. They dumped or burned food scraps, wooden items, clothing, and glass in open fields.

"If you look back 175 years ago, people raised their own food," Lavoy Haage of the Iowa Department of Natural Resources (IDNR) told *The Goldfinch*. "They didn't throw away nearly as much."

Iowa Wildlife:

KEOKUK COUNTY — When E.D. Nauman (NEW-muhn) was learning to count, his mother called him to the east window of their home in Keokuk County to count the wild turkeys pecking in the orchard. That day in the late 1860s, Nauman counted 22 birds.

Young Nauman also may have seen prairie chickens playing in the tall grasslands, white-tailed deer and American Elk roaming woodland meadows, grouse feeding in the forest, and barn owls nesting in hollow trees. If he was lucky, he might have seen a few buffalo.

GROUSE: same bird native to Iowa

Iowa's Trashy Habits

A manufacturing boom in the 1860s spurred the production of throw-away items such as tin and cheap glass, and the expanding railroad brought these items west.

Many farmers dumped their waste on their property, sometimes polluting streams.

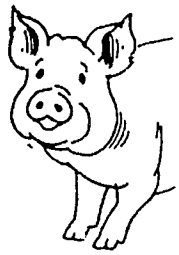
Incinerators were built to burn garbage but were expensive to operate. Des Moines was the third city in the country to build an incinerator in 1887, after New York City and Pittsburgh.

Urban waste went to open dumps outside city limits where it was sometimes covered with soil or burned.

Dumps were used to control waste in Iowa's cities until about twenty-five years ago, Bill Johnson, curator of natural history at the State Historical Society of Iowa, told *The Goldfinch*. The dumps smelled of rotting food and wet, molding garbage. It wasn't unusual to see rats, possums, raccoons, and farm hogs rummaging through the trash for their next meal, Johnson said.

Many of the hogs passed harmful diseases to humans when the animals were slaughtered and eaten. It wasn't until 1955 that legislators made it illegal for farmers to feed their hogs at city dumps.

Modern landfills were developed in the 1960s and have layers of plastic and clay between the garbage and the ground. These layers block the poisons in the garbage from sinking into the soil and polluting the water under ground. But landfills are not 100 percent safe. Unnoticed leaks in the plastic liners allow poisons to seep into the ground.



Iowa's first modern landfill opened in Des Moines in 1972. All open dumps were closed and covered with soil by 1975. Today, there are seventy-five landfills in Iowa.

— Amy Ruth

Lost and Found

These animals lived on Iowa's prairies, meadows, and woodlands long before European pioneers settled in Iowa in the 1800s.

As pioneers from the East started new lives in Iowa by plowing prairies, hunting animals, and cutting down trees to build houses and barns, the natural environment changed. Owls lost their wooded nesting areas, and the farmed prairies no longer provided food or nesting sites for prairie chickens — once the largest population of game birds in the state. Wild turkeys and grouse couldn't find food in the cleared woodlands. The American elk moved west in search of grass, leaves, and twigs.

Although Iowa has lost some of its species, conservation efforts have reintroduced some of Iowa's native animals to the natural environment.

Since 1987, Iowa Department of Natural Resources (IDNR) workers have brought more than 450 prairie chickens to Iowa from Kansas.

These birds have settled in private grasslands in Adair and Ringgold counties. Grouse have resettled in wooded areas in south-central Iowa.

After wild turkeys disappeared from Iowa in the early 1900s, no other animal took over its **habitat** and food supply, said Tim Thompson, wildlife biologist with the IDNR. Because of this, the IDNR successfully restocked Iowa with wild turkeys in the mid-1960s.

Today, there are many wild turkeys in Iowa — so many that some farmers claim the birds dig up seeds in their fields, much like they did in E.D. Nauman's orchard more than 100 years ago.

— Amy Ruth

Habitat : home of a certain plant or animal

Incinerator : enclosed area where garbage

species : group of

Landfill : giant hole in ground where

PESTICIDES
Friend or Foe?

IOWA CITY — Atrazine. Alachlor. Metolachlor. Simazine. These might sound like scary space monsters, but they are really names of pesticides farmers use on their crops. Pesticides are chemicals that are sprayed on farm fields in Iowa to destroy weeds or insects that harm crops.

Farmers haven't always used pesticides to grow crops. Before pesticides were invented, farmers plowed their fields to destroy weeds. Old stalks and plants also kept the weeds from growing. Little could be done, however, to stop hungry insects looking for tasty corn or beans.

In the 1940s, when pesticides were invented, farmers could grow more crops, and fewer unwanted weeds. Pesticides caused corn-and-bean-eating insects to move away, too.

Some of the earliest pesticides were harmful. Instead of destroying only pesky insects, animals, or plants, they harmed other living species they touched. Birds, fish, and tiny animals living in the soil moved from sprayed areas or were killed. Pesticides were even found in drinking water.

The government began to study the pesticides that stayed in the environment and couldn't be broken down by water or air. These pesticides were banned and laws were passed to keep Iowa's drinking water and food free from dangerous chemicals.

State Pesticide Bureau Chief Chuck Eckermann told *The Goldfinch* about laws that require farmers to go to school to learn about pesticides. Farmers also must document the kinds and amounts of pesticides they use. Pesticides are always being studied to see if they are safe or harmful to the environment, said Eckermann.

A small number of Iowa farmers don't use pesticides at all. These farmers are often called **organic** farmers. Instead of using human-made pesticides, they let nature control weeds and pests.

Eight-year-old David Braverman of Iowa City helps his dad, Bob, an organic farmer, hoe and plant their 14-acre farm in the summer. The Bravermans rely on insects, like lady bugs, to control pests. They use hay and straw to control weeds. Decomposed kitchen garbage, like eggs shells, is used as fertilizer.

Many Iowa farmers are now using smaller amounts of chemicals on their crops, Eckermann said. Some still plow their fields to control weeds, just like their ancestors in the 1930s might have done.

— Sherri Dagel

Banned: forbidden by law

Organic: grown with natural fertilizers

DECORAH — When twelve-year-old Bathsheba (Bath-SHEE-buh) Rose Demuth of Decorah reaches into her bucket for a **mangel** to feed her ten rabbits, she's also reaching deep into Iowa's history.

She started growing mangels a year ago, planting in May and harvesting in September. She stores her crop in a root cellar where they keep throughout the winter.

"It's kind of like keeping part of a tradition alive that people have forgotten about," Bathsheba Rose told *The Goldfinch*.

SAVING IOWA'S SEEDS

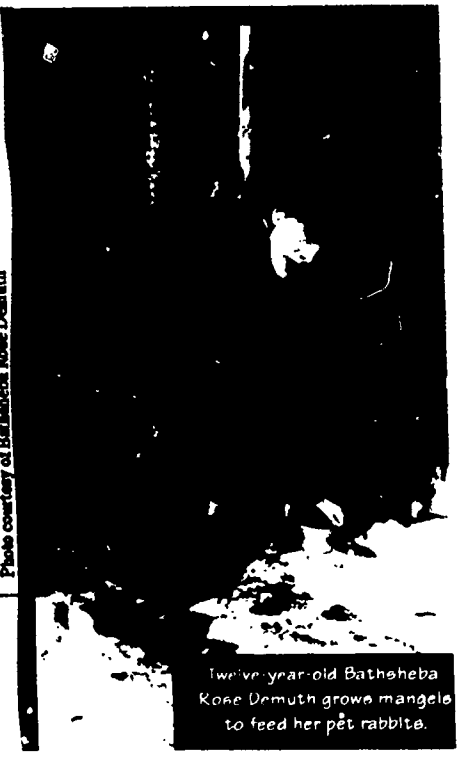


Photo courtesy of Bathsheba Rose Demuth

Twelve-year-old Bathsheba Rose Demuth grows mangels to feed her pet rabbits.

Mangels are inexpensive to grow and store, and were commonly grown in Iowa in the 1800s to feed livestock. At the turn of the century, many farmers began using corn as feed, and stopped growing mangels.

In the 1800s, Iowa farmers also grew many other crops — corn, wheat, sorghum (SOR-gum), and apples — to feed their families and livestock.

Sorghum was used as a sugar substitute. The juice from this grass plant was made into a thick, syrupy sugar, similar to molasses.

With advances in technology, factory-made goods replaced many home-made goods, and products like refined sugar and feed corn became readily available.

After WW II, farmers began to buy seeds from seed companies, instead of saving their own seeds from year to year and replanting them. This led to the loss of many old varieties of seeds, including those once grown in Iowa.

So Iowa's seeds aren't lost forever, Seed Saver's Exchange (SSE) in Decorah collects **heirloom** seeds. Members throughout the country exchange more than 16,000 varieties, keeping them alive by growing them in their gardens.

Bathsheba Rose's father, Steve Demuth, who works for SSE, says growing heirloom seeds is good way to preserve Iowa's agricultural heritage. He has passed this tradition on to his daughter, who is doing her share to save Iowa's seeds.

— Amy Ruth

Art by William J. Wagner

Althea Sherman built her bird observation tower in 1915. Today, the Johnson County Songbirds are restoring the tower so the public can enjoy it once again

Althea Sherman: Iowa Bird Watcher

NATIONAL—Althea Sherman loved birds. As a young girl, she watched barn swallows dive and swoop over her parents' farm in Clayton County. One summer, she and other children collected more than 200 prairie chicken eggs. The kids hoped the eggs would hatch into 200 prairie chicken pets. The eggs hatched after a few weeks, but all of the chicks ran away. Despite this early disappointment, Althea continued watching birds throughout her life.

Born on a farm in northeastern Iowa in October 1853, Althea was the fourth of six children. Her parents, Mark and Melissa Sherman, were pioneers who turned Iowa's natural prairies into farmland. The family's successful farm provided enough money for the Shermans to educate their children.

Althea attended high school in nearby Fayette. After graduating, she traveled with her two sisters to Ohio's Oberlin College where she studied art. After college she became an art teacher.

In 1895, she moved to her parents' home in National, Iowa, to care for her aging father. In her free time, Althea watched the same kinds of birds she had loved as a child. She began to draw and study them.

Althea also kept journals. In her notebooks she recorded the kinds, numbers, and actions of birds she saw each day. She used her art skills to draw pictures of birds and their babies.

Althea wrote more than seventy magazine articles about birds. She became widely known after many of her bird studies were printed in science magazines. She worked hard to develop better bird-watching methods.

In 1915, Althea had a 28-foot-tall tower built in her backyard in National, Iowa so she could study birds without frightening them. People came from miles around, over muddy and dusty dirt roads, to see Althea and her tower.

Althea was sad to learn the numbers and kinds of birds in Iowa had decreased since she had returned to Iowa. Birds were forced to leave when their habitats were destroyed by settlers' fields and houses.

Before she died in 1943, Althea bought many of the houses in her town so the birds had a permanent place to live. Although the plan was never carried out, Althea wanted to build a bird **sanctuary** in National so birds of Iowa could be watched and enjoyed forever.

—Sherri Dagel

Mangel : large, red sweet beet

Heirloom : something valuable shared through generations

Sanctuary : a safe place

Three Iowa Kids

Wonder about Wetlands

When the last glacier melted off Iowa thousands of years ago, large and small openings in the land filled with water. These areas, known as "prairie potholes" and wetlands, are a combination of soggy soil and standing water. Mosquitoes, frogs, beavers, muskrats, and many types of birds make their homes in these wet environments.

European-Americans entering Iowa in the 1830s found that at least one-fifth of the state was wetlands. Their wagon wheels got stuck in the marshy ground and much of the soil was too wet to plant. In the 1880s, farmers took the moisture out of the land by draining it. They dug long, narrow ditches that allowed the water to run off into waterways. They buried clay pipes, called tiles, under the ground to carry away even more water.

Today, fewer than 30,000 wetland acres remain. Many organizations and individuals are trying to protect Iowa's remaining wetlands. Three Amana fifth-graders discovered farm fields in their community that will be returned to their natural marshy state. Annie Trumpold, Kathryn Croco, Andy Grimm, all eleven, talked with Mike Shoup of Amana Society farms about fields the Amana Society will restore and keep as a wetland.

"The wetlands we're planning will cover 136 acres," Shoup

Millie K. Frese

Andy Grimm, Kathryn Croco, Annie Trumpold, and their teacher, Marty Reihman, inspect an Iowa County map with Mike Shoup in the Amana Society Farms and Forestry Office. They learned how fields can be restored to a natural wetland state.

said. The two large fields that will become wetlands were marshy pastures when Shoup attended school in Amana in the 1960s. "It was planted with beans and corn sometime after that," he said, and crops have been there ever since.

The Amana Elementary School students were happy to learn that wetlands help reduce flooding. Much of their communities were effected by the flood of 1993. Andy said he remembers a foot of water in his family's basement. When a levee in Main Amana broke last summer, he filled sandbags to protect Amana businesses.

The Goldfinch listened in as Shoup, Andy, Annie, and Kathryn talked about restoring wetlands.

Why do you want to put in a wetland?

Water quality is one of the primary reasons. Wetlands give water a place to stay before it filters down into the ground water. Soil and vegetation are very good filters.

Wetlands provide habitat for wildlife, giving them a place to nest, hunt or pass through during migration.

Flood prevention is another reason for restoring wetlands. The wetlands store water. By increasing the area for storing the water, we actually decrease flooding. Wetlands are also a good area for people to go and enjoy and learn about nature.

How will you build the wetland?

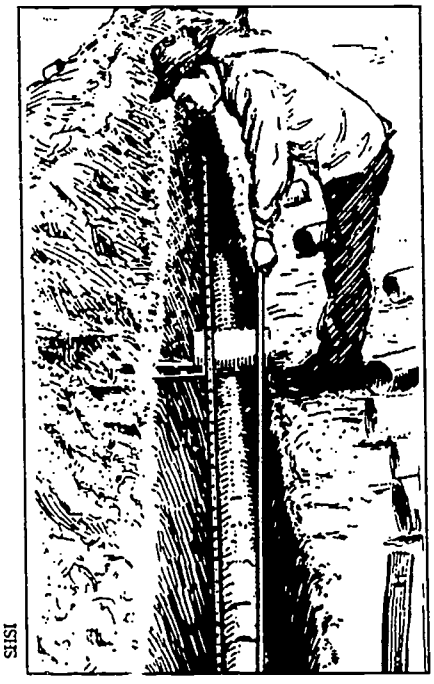
We're going to put dikes around the entire area. Any tiling that was done for draining the land will be removed. Control structures will allow us to lower or raise the water level.

Since wetlands existed naturally in Iowa before land was farmed, why do they now have to be managed by people to survive?

Today people are everywhere. We're influencing everything. We've put boundaries around things and changed things to a certain point where they have to be brought back closer to a balance again. People have also introduced a lot of different plants and animals that have an impact on what used to be "natural."

How was the land originally changed from wetlands to crop land?

What has happened throughout Iowa and throughout the United States is that farmers have wanted to farm more ground. As they've drained and farmed the wetland areas, problems such as flooding have gotten worse. We've also lost a number of animal species. Migration patterns for birds have changed. Many animals lose their habitats when wetlands are drained. People are realizing that we need wetlands to maintain a balance.



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Iowa's first European-American settlers used underground clay tiles to drain wetlands.

Wetlands clean the water and help stop flooding. Ponds, marshes, swamps, bogs, and other water areas are all wetlands.

How long will it take to make the wetland, and what will it look like?

Probably two to three years. The area will be sixty to eighty percent covered with shallow water. There will be cattail and bulrushes growing up through the water. You'll probably be able to see a number of muskrat nests in the water that look like little mounds. Around the edges there will be native prairie grasses. As the year progresses, there will be a lot of birds out there.

Will we see new kinds of birds?

There will be a wide variety of birds. Some will hunt and nest here. Others, such as white pelicans, will come through during migration.

Will converting fields to wetlands lead to a shortage of crops?

I see people and their technology remaining ahead of any reduction in crop acres. The improved varieties of seeds that farmers plant will make up for any difference in the number of acres planted.

• • • • • • • • • • • •

As the wetland develops, there are many ways Andy, Annie, and Kathryn can help. First, they will go back to their classmates and share what they've learned about wetlands — stories of birds and plants, water and mud, and how it all comes together as a balanced ecosystem.

Then they can all get involved. Kids can help keep the wetland area clean and participate in nature studies as the wetland takes shape.

— *Millie K. Frese*

What You Can Do

May is American Wetlands Month — a good time to study wetlands in your community. Observe plant and animal life in a pond or swamp. Compare wetland soil and water samples to samples you take from your backyard or a riverbank. How are the samples different? How are they the same?

ecosystem: all living things in one environment

IOWA S FLOOD HISTORY

Six-year-old Andy Reddick rode piggy-back on his uncle's shoulders, wrapping his muddy feet tightly around his chest as they waded across the flooded, cocoa-colored Des Moines River. "Keep your feet out of the water," warned his uncle, Aaron Fellows. The summer heat and flies were attracted to the flooded, swamp-like river, and to Andy, who held on as tightly as he could.

It was summer, 1947, and Andy and his uncle were caught in the rages of a state-wide flood. Andy had broken his arm earlier in the day while playing in his Grandmother's yard in Douds, Iowa. The closest doctor was in Ottumwa — about 18 miles away. Andy and his uncle traveled by rowboat, waded through flood waters and finally drove miles out of their way on winding back roads to reach Dr. Cooper's office.

"I was such a tiny thing and so afraid," Reddick, now 53, told *The Goldfinch*. "I was so scared and wanted my momma."

Throughout Iowa's history, floods have ravaged the state, taking many lives and causing billions of dollars worth of damage to homes, businesses, roads, and crops.

Flood Facts

Floods occur for several reasons. Heavy, constant rains soak into the soil, fill rivers, and overflow waterways. Large quantities of snow during the winter melt easily with higher spring temperatures and cause rapid flooding. This is what happened in 1880 when the state received record amounts of snow that quickly melted with warm April temperatures.

Heavy flooding often turns city streets into canals, like this Dubuque street in 1916. For years, Iowa flood victims have relied on rowboats and canoes to travel through flood waters.

Levee: wall that holds back water

Cultivation also causes floods, because it speeds up the flow of water across the land. Plowing and planting loosens the soil, and rain washes the soil downhill. This soil collects in **streambeds**.

Flooding also can be good for the environment. Flood waters have carried fertile **sediment** to Iowa's riverbottoms for thousands of years, making it some of the state's richest soil.

But flooding also damages the environment. Flood waters can cover the soil with sand deposits, making it hard to grow crops. Trees are pushed over or split from the force of flood waters.

Flood waters can kill water plants that ducks and other water animals depend on for food and shelter. Fish living in shallow, clear water can't survive in deep, murky flood waters.

Floods effect business and industry, too.

Located on the Mississippi River in northeastern Iowa, the town of McGregor floods almost every year. In 1909, flooding left garbage, dirt, and lots of water on this downtown street.

SHSI

Wet and soggy soil prevents farmers from planting crops. Construction workers can't begin to dig basements of new buildings until the soil is dry.

First Flood

Iowa's first major recorded flood struck the state in 1851, devastating the property of Iowans who had settled low areas by rivers and creeks to be close to fresh water supplies and timber. Spring rains in 1850 had been heavy, and by spring 1851, the soil was so moist, it couldn't hold much more **precipitation**. Heavy May rains quickly overflowed waterways in two-thirds of the state, flooding roads, homes, businesses, and farms. The streets in Keosauqua, Bonaparte, and Farmington in the southeastern part of the state turned into canals. Many families evacuated their homes and found relief from the rising waters on higher ground. As the rain continued to pour through their towns in June and July, food supplies ran short. Flood waters swept away supplies of corn stored in silos and destroyed the fields that held crops for the coming year.

Like they did in the flood of 1993, Iowans caught in the flood of 1851 filled sandbags and built **levees** to protect their towns.

Controlling Floods

Although floods can't be controlled completely, precautions can prevent some flood damage. Iowans have built bridges high enough to handle rising waters, and strong enough to bear the force of raging waters. Many people have built their homes away from rivers. For Iowans with homes and businesses near rivers, building levees can sometimes keep flood waters out.

Streambed: bottom of stream

sediment: sand and dirt that collects at bottom of rivers

Precipitation: rain, snow and other moisture from the sky

Dams and reservoirs control water levels. These structures store and hold back river water, which is released slowly through gates, depending on how much water the riverchannel can hold. Iowa's four reservoirs — Coralville, Rathbun, Red Rock, and Saylorville — were built between 1938 and 1977.

Leonard Hentges (left) and his uncle Nicholas Hentges of LeMars inspect the street corner where their house once stood. Heavy flooding in 1900 washed it away.

More Flooding

Iowa has experienced many major floods in its history, particularly in the early 1900s, the 1950s, 1960s, and 1970s. The flood of 1993 devastated many states in the Midwest. The Mississippi and other rivers across the Midwest slowly began to rise in March and April, and began overflowing in the summer.

"The big thing with last year's flooding was we got a lot of rain in a short period of time," Joe Winters, a Cedar Rapids weatherman, told *The Goldfinch*. "The constant rain and clouds don't allow the sun to dry things out." More than forty-eight inches of precipitation fell on Iowa in 1993, Winters said. That's almost fifteen inches more than the state's annual average of precipitation.

The flood of 1993 knocked out water supplies in Des Moines for nineteen days. In eastern Iowa, the citizens of Chelsea were forced to evacuate their town. Cities and towns all over the state faced constant rain and flooding as Iowa's rivers raged on. Many Iowans relied on rowboats and canoes for transportation. Flood victims and volunteers from around the country prepared thousands of bags of sand, built levees, and shared precious resources, like bottled water and food. When the flood waters finally died down, seven Iowans had lost their lives, and millions of dollars worth of homes, businesses, crops, and personal property were lost.

Floods are like no other natural disaster. Tornadoes and blizzards come and go. Snow can be shoveled. But flood water stays in fields, roads, and buildings until it flows out, evaporates, or is pumped out. Iowans can learn from the floods of the past to prepare for future natural disasters.

"The areas that normally flood every year will experience some flooding again this year," Winters said. "The soil moisture is still pretty high and if we get a lot of heavy spring rains we could get some more flooding. But it's really too soon to predict."

— Amy Ruth, with special thanks to Andy Reddick.

What You Can Do

Many Iowans are still struggling with the effects of the flood of 1993. Call the Red Cross office in your community and ask what you can do to help. Volunteer to fill sandbags if flooding returns to Iowa this year.

dam: a wall across a river to hold back water

reservoir: an artificial lake where water is stored

It was happening while you were in the first grade. It was happening while you were at a friend's house last week. It is happening as you read this issue of *The Goldfinch*. Soil erosion is a part of yesterday, today, and tomorrow.

Soil erosion, the wearing away of the earth's surface by wind and rain, has built and is tearing down many land forms we see today. Think of a hill you've climbed or seen recently. A glacier, the wind, or water may have helped shape that hill thousands of years ago. Every day, a little piece of it gets carried away by wind and water. This is natural erosion.

A Recipe for Healthy Soil

Nature makes soil every day to replace what is carried away by erosion. First, wind, and water break rocks into tiny grains. Tiny air pockets form between these grains. Then remains of dead plants and animals add nutrients to the newly formed soil. Finally, new plants grow in the soil. Roots take in the air and nutrients while helping the soil remain in place.

A good batch of soil attracts earthworms, ants, spiders, and even rabbits and mice looking for underground homes. Humans depend on soil to grow food and store water.

Sometimes old soil is blown or washed away before new soil can take its place. This loss of soil is called accelerated erosion. Many consider accelerated erosion one of Iowa's most serious environmental concerns.

Farming the Soil in Iowa

American Indians were the first Iowa farmers. More than a thousand years ago, they grew crops in the soft, sandy soil along Iowa river bottoms.

When pioneers came to Iowa in the 1830s, they cut down trees and broke through the soil. They plowed up the native prairie vegetation. The strong roots of these plants snapped and popped as plows broke them. Iowa's soil — once protected by trees and prairie grasses — stood exposed to wind and water.

Over the years, more and more land was used to grow crops. The amount of Iowa land planted with corn and beans increased from one million acres in 1860, to 21 million acres in 1989. The amount of **topsoil** on this unprotected land decreased. Land that was once covered by sixteen inches of rich soil now is covered by as little as one or two inches in some areas.

15

Topsoil:
top layer of soil.
It is very fertile

After every rain storm or wind gust, Iowa's land lost more soil. Soil clogged ditches. Soil-filled streams killed fish and polluted drinking water.

Soil in the Air and in the Water

In the 1930s, Iowa did not get enough rain. Wind and water easily carried away the dry soil. People were concerned because so much soil was being lost. Donald E. Fish, who lived in Iowa in the 1930s, never forgot how much soil dust was in the air one day in 1933.

"I remember one warm day in May 1933. I drove all over the country with my lights on and my windows rolled up because of a dust storm. All that day you couldn't see the sun. Sometimes the clouds were almost red. If it rained, the first rain that came down looked like red paint," he said.

Today, the Soil Conservation Service studies the causes and effects of soil erosion. Wind and water cause most of the erosion in Iowa. Crops grow less food when rich nutrients and water needed by plants are lost by soil erosion. More and more soil stands exposed to the wind and water.

Other programs control erosion and help Iowa farmers protect the soil. The Iowa Soil 2000 Program shows farmers how to protect the soil so it stays in place rather than eroding away. The 1992 Cost Sharing Program helps farmers find and pay for ways to protect soil.

Protecting Iowa's Soil

Conservationists recommend that farmers plow and drive over their fields as little as possible. Leaving old plants on the field during winter protects the soil and adds nutrients to it. Growing grass or hay on steep, easily eroded hills instead of crops also prevents rain from washing away the earth.

ISHS

Above: Iowa's first European-American settlers cut down trees and tall prarie grasses to build houses and farms. This field was left exposed to wind and water that wore away its topsoil.
Page 14: Erosion leaves the ground looking like this Pella, Iowa field in 1955.

Farmers aren't the only people who need to control erosion. According to Bill Brewer of the Iowa Department of Agriculture and Land Stewardship, erosion also occurs near towns and construction sites. Water runs rapidly off sidewalks, roads, and pavement, rather than soaking into the ground. Construction sites leave large amounts of soil uncovered, resulting in soil loss.

Every Iowan should be concerned and learn about soil erosion. Soil is a valuable resource that provides us with food and water. It provides a place for animals and insects to live. Soil that is protected today will provide what we need for many years to come.

— Sherri Dagel

What You Can Do

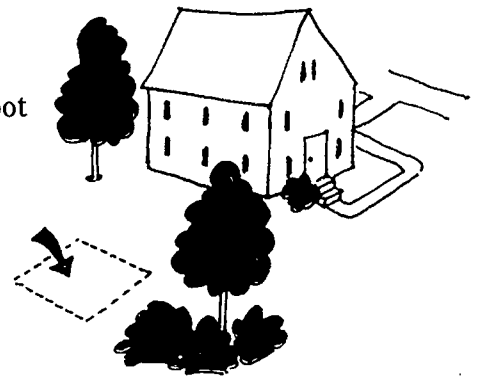
Learn more about soil erosion in your part of the state. Write the Soil Conservation Service, 210 Walnut Street, Des Moines, Iowa 50309.

Conservationists: people who preserve the environment

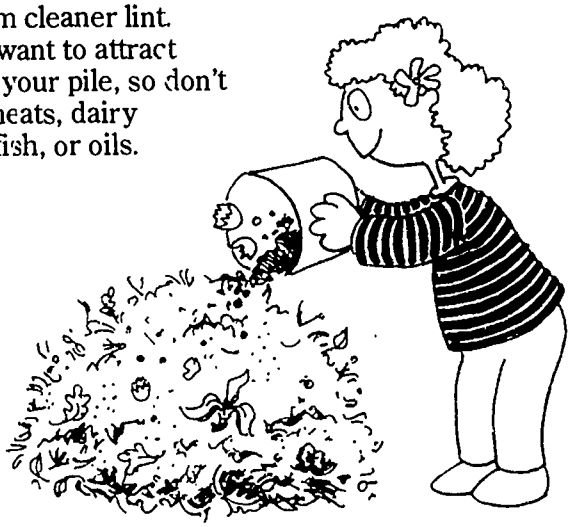
Rosie's Riches: Striking

Composting is a natural way to make **organic** waste into rich, fertile soil that won't harm the environment. Although people have been composting for thousands of years, it is relatively new in Iowa. Composting is good for the soil because it helps prevent erosion and pesky weeds. And it's good for you because you'll save money by making your own fertilizer. Finally, it's good for Iowa because your composted waste won't take up space in landfills.

1. In your backyard, choose a flat, grassy spot away from the house and out of the sun.



2. Start a pile of yard waste (leaves, mowed grass, and shrubbery trimmings). Add other waste to your pile: egg shells, tea bags, stale bread, pasta, spoiled fruit and vegetables, shredded newspaper, and vacuum cleaner lint. You won't want to attract animals to your pile, so don't compost meats, dairy products, fish, or oils.



This activity is adapted from: *Going Green: A Kid's Handbook to Saving the Planet* by John Elkington

Gold in the Compost Pile

3. Once every few weeks, turn your compost pile with a shovel, mixing the waste well. This will circulate air throughout your pile. When the weather is hot and dry, sprinkle your pile with a bit of water.

4. Don't worry if your pile begins to smell a bit—it's supposed to! To reduce odors, sprinkle the pile with cat litter, and mix well.

5. In a few months, your pile of garbage will turn into rich, fertile soil that you can use in your garden or to pot house plants. The composted soil is ready when it crumbles out of your hand and is a dark brown color.

QUIZ:

Composting is a good way to break down organic materials, but your backyard is not a good place to compost items that will attract animals who carry diseases. Which of the items listed below should not be composted? Turn to page 30 for the answers.

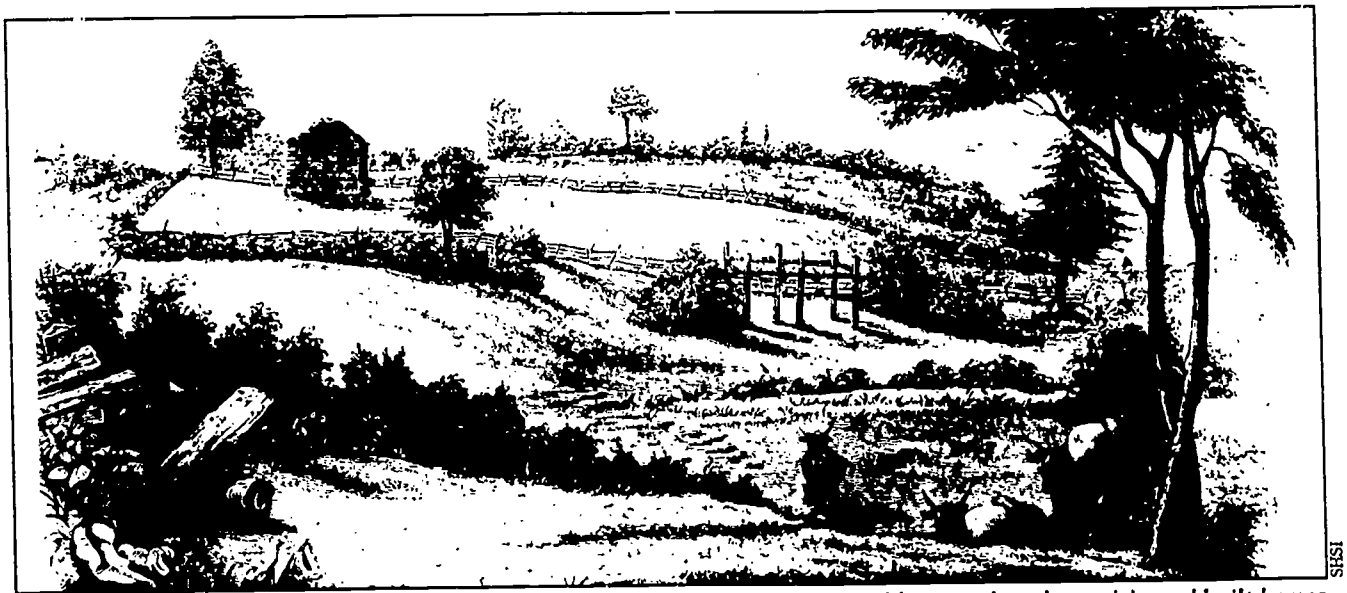
1. Chicken wings
2. Raked leaves
3. Leftover cheese omelet
4. Egg shells
5. Weeds
6. The last bite of a hot dog
7. The last bite of a hot dog bun
8. Tea bags
9. Fish fingers
10. Double chocolate fudge ice cream sundae

Iowa's Prairie History

The grass grew so tall that a child walking through it seemed to disappear. Bright flowers and singing birds added color and music to the land. Almost all of Iowa was once a **prairie**, covered with grasses and plants. There were few bushes and trees except for forests along rivers and streams.

Native Americans often lived in the river valleys where they could find wood and water. On the prairies, they hunted deer and elk and gathered plants for food and medicine.

In the 1830s European-American settlers started moving west towards Iowa. When they were allowed to enter Iowa in 1833, they avoided



European-American settlers adapted to Iowa's prairie environment. They learned how to plow the prairie and built homes and shelters for their families and animals.

Prairie: large, flat, grassy area with few trees

the prairies. They built their homes along rivers and streams. Like Native Americans, they needed water and timber for houses, fences, and fuel.

Some settlers thought that prairie soil was not rich and fertile enough and would not grow good crops. If trees did not grow there, how could corn and wheat survive?

When settlers had purchased all the wooded land along rivers and streams, only prairie land was left to buy. Settlers then discovered that prairies could be farmed and that the black soil would grow good crops.

Breaking the Prairie

Because the prairie had never been plowed before, breaking the land was the first priority. The tall grasses and plants had tough and tangled roots. The settlers had to cut the tall grass and then plow through the mass of roots.

Fires spread across Iowa's prairies in the fall. Settlers and travelers who depended on the prairies for food and shelter did not welcome the fires.

Breaking the prairie was hard work. Some settlers hired special crews of workers who brought their own oxen and plow. A dozen oxen pulled the huge, heavy breaking plow. The moist soil clung to the **plowshare**. Thick roots dulled its edge. Every few feet the workers stopped to scrape off the soil and to sharpen the share.

Breaking the prairie was easier after a new plow was invented. The new plow was smaller and could be pulled by only two or three horses and oxen. The plowshare was made of polished steel that cut through the roots easily. The soil did not stick to the steel. Now one person could do the work of an entire crew.

A Land of Fire

The settlers soon discovered that fires burned the prairies in the autumn when the grass was dry. The fires were good for these grasslands because they allowed the prairie plants to grow back stronger in the spring.

But prairie fires were bad for settlers, their homes, and farms. As they worked, settlers watched the horizon for smoke or a reddish haze that signaled a prairie fire.

A prairie fire could start easily from a forgotten campfire, lightning, or a careless person. Prairie fires often were started on purpose to clear the land, and could easily burn beyond control. If there was no wind, the fire burned slowly. It looked like a red line creeping along the countryside. But on windy days, the fire roared across the prairie for miles.

Settlers protected their property by plowing fire strips around them. When the flames reached

Plowshare: the blade of the plow

the strip of plowed ground, there was nothing to catch fire. The fire could not burn on bare soil.

More Fields, More Farms

Each year the settlers learned more about living on the prairie. Better farm equipment made plowing and planting easier. Each year farmers stayed in Iowa, they plowed and planted more fields. As trains brought lumber to towns, families bought wood and built bigger houses. They planted trees to shade their houses in the summer and to stop the winds of winter. The prairies were almost gone. Without miles of dried grasses in autumn, fires did not start so easily or burn so much. By the 1880s, Iowa was covered with farms, towns, and cities.

— Ginalie Swaim

Editor's note— this article was adapted from articles in the November 1985 Goldfinch, *Volume 7, Number 2.*

Prairies Today

In 1846, the year Iowa became a state, more than 30 million acres of prairies covered the land. The tall prairies were home to more than 300 different kinds of plants that thrived in the thick grasses. Big Blue Stem, Little Blue Stem, and Indian Grass grew as tall as six feet and had roots that grew deep under the soil.

The prairies prevented soil erosion (see story on page 14) and many animals lived off its grasses and plants.

Today, roughly 30,000 acres of native prairies exist in Iowa, John Pearson of the Iowa Department of Natural Resources (IDNR) told *The Goldfinch*. These preserved native prairies, which have never been planted or used to graze farm animals, survive mostly in the Loess Hills in western Iowa, and along the Little Sioux River in northwest Iowa. The Loess Hills prairies are big tracts of land, sometimes as large as 1,000 acres. Smaller prairies (less than 10 acres), are scattered around the state.

Restored prairies are areas that have been farmed or heavily grazed and are now being replanted to a native prairie condition. "Restored prairies are greatly lacking in their native species," said Pearson.

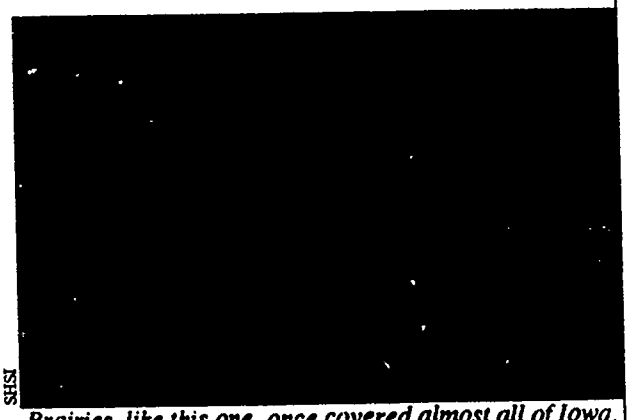
"The prairies were a source of a native species and as we learn more about them we find that they can serve us in many different ways," he said. "We'll never know what has been lost."

Today, government agencies like the IDNR and private organizations protect Iowa's remaining prairies so that all may enjoy and learn from them.

— Amy Ruth

What You Can Do

Visit a prairie in your part of the state. Is it a restored or preserved prairie? Write a story about what life was like for the early settlers who lived on Iowa's prairies.



ISHS

Prairies, like this one, once covered almost all of Iowa.

Our Environment

WORD FIND

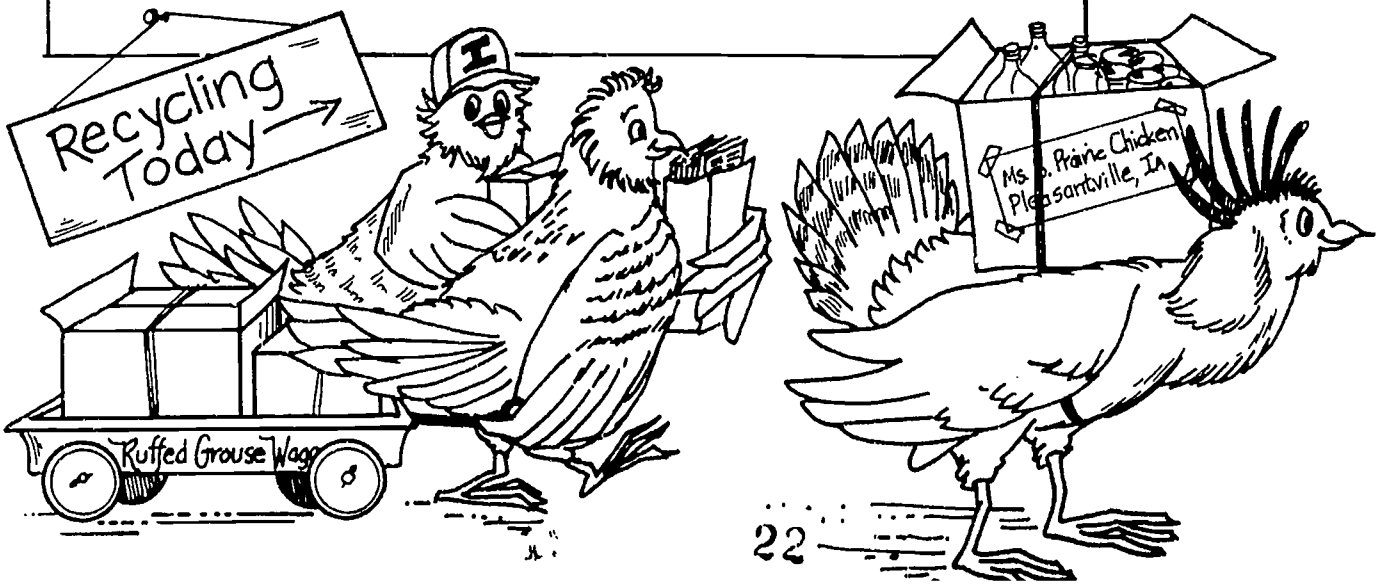
E	R	U	T	A	N	X	E	B	C	Y	Z	E	M	T
I	E	F	L	G	S	T	C	N	I	T	X	E	H	I
R	C	S	L	O	S	L	E	F	E	C	U	D	E	R
I	Y	K	I	P	A	Z	S	L	O	B	C	S	D	R
A	C	R	F	L	R	R	U	D	A	O	F	O	P	F
R	L	M	D	A	G	A	E	S	M	E	L	I	G	I
P	I	O	N	N	L	L	R	P	R	M	O	L	J	L
E	N	P	A	E	L	M	O	E	E	I	O	N	A	L
V	G	Z	L	T	A	S	W	T	E	H	D	L	K	A
S	D	N	A	L	T	E	W	E	R	O	S	I	O	N

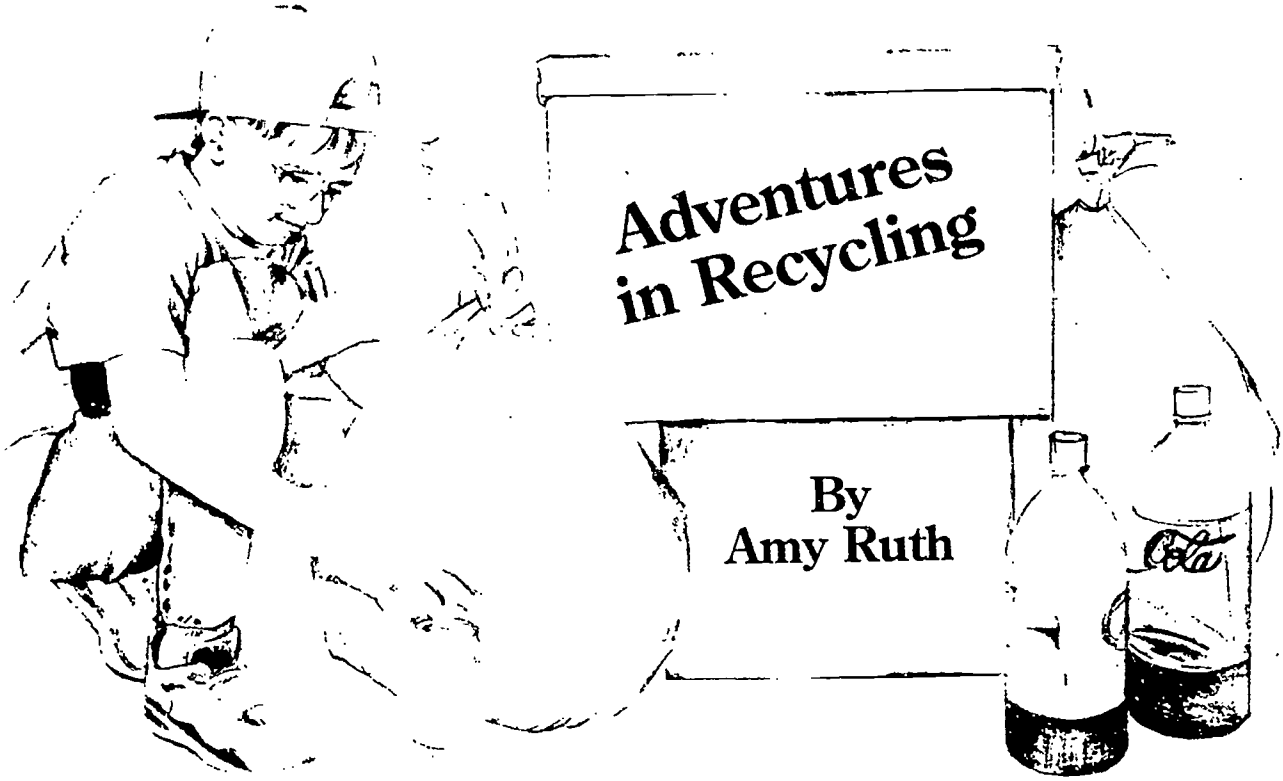
COMPOST
EROSION
EXTINCT
FLOODS
LANDFILL
NATURE
PLANET
PRAIRIE
RECYCLING
REDUCE
REUSE
SOIL
TALL GRASS
WETLANDS

Circle the words in the puzzle that are listed here.

The words go up, down, and diagonally.

Answers on page 30.





Adventures in Recycling

By Amy Ruth

Rain fell on ten-year-old Joe Rhodes in dull drops as he lugged two bulging bags of aluminum cans and a bundle of newspapers across his backyard to the storage shed.

"It would have to rain," he grumbled as his foot struggled with the shed door. Once inside, he dropped the cans and papers to the floor. The shed was almost bursting with the recyclable materials he'd collected in the last week.

He hated dirty cans and newspapers. He'd only been out of school for an hour and a half and already he was sticky and grimy. He hadn't wanted to get involved with the school recycling program in the first place, but his parents wanted him to get to know the neighbors and kids in his class.

The Rhodes family had moved to Ames, Iowa six months ago when Joe's mother accepted a teaching position at the state university. Joe hadn't made any friends yet. He met with the recycling group before school every Wednesday, but still felt like the new kid in town. The truth was, he missed his friends back in California. Most of all, he missed the fun they had swimming, water-skiing, and surfing.

Sighing, Joe pushed his wavy brown hair from his eyes. He wiped his hands on his damp jeans and decided to get it over with. It was Friday afternoon, and he was looking forward to sprawling on his bed with a bowl of popcorn and an adventure novel. Moving to the door, he pulled a piece of crumpled paper from his pocket. He glanced at it and groaned

before he quickly balled it up and stuffed it back in his pocket.

"Oh well," he said aloud. "Better get going."

He walked out of the shed, back through the tangled wet grass in the backyard, and down the driveway. He was going to see the last person on his list. Every day after school for three weeks, Joe had visited the families in his neighborhood with a notebook and pamphlets stuffed in his pocket and a pencil tucked behind his ear.

He would sit politely on their couches, explain the importance of recycling, and persuade them to let him pick up their aluminum cans and newspapers. Every Saturday morning, he and his father would load the pickup truck with the recyclable materials and drive to the recycling center. His father would back the truck up to the bins and swing Joe up on the truck bed. Side by side, they'd toss newspapers and cans into the bins. When they were done, they'd treat themselves to a breakfast of pancakes topped with syrupy strawberries.

But right now, Joe had to go see Mrs. McGrath.

He thought Mrs. McGrath was weird. She wore bright pant suits splashed with bold flowers and almost always went barefoot. The Rhodes often saw her working in her garden, pulling long weeds from the ground, or gently pruning her pink roses. She'd always smile and wave from under floppy hats. Sometimes she talked to her cats. Once, Joe thought he heard Mrs. McGrath talking to herself.

Joe walked slowly up the front path to the small, ranch-style house. He hesitated at the door and drew in a deep breath before he rang the bell.

In an instant, Mrs. McGrath appeared at the door in fuzzy pink slippers and a purple pant suit dotted with white daisies.

"Oh child," she fussed, sweeping Joe inside. "It's raining out there. You're soaking wet." Mrs. McGrath smiled broadly and led Joe into a large living room, stuffed to the corners with thick, dark furniture and plush chairs. Stacks of old newspapers tied with strings, bundles of envelopes, and dozens of jars filled with pennies lined the floor and tables.

Joe settled himself in a green easy chair in the middle of the room. "Now you just wait right here, dear," Mrs. McGrath said. She disappeared out of the room, singing softly, "Hey, diddle-diddle-hey-ho, hey, diddle-diddle-hey-hum."

"Oh boy," thought Joe as he looked around the crowded room. "Mrs. McGrath sure needs a lesson in recycling. Good thing I showed up today."

The living room was large but seemed smaller because it was so cramped. A bay window looked out into the front garden and Joe smiled at a gray cat curled up happily on the window seat. A small, green bird chirped loudly in a cage in the corner of the room, but the cat only stretched lazily and resumed his nap.

Mrs. McGrath returned a few minutes later with two steaming mugs of tea. Actually, they were old jelly jars made of thick glass, like the antique pop bottles Joe's dad collected.

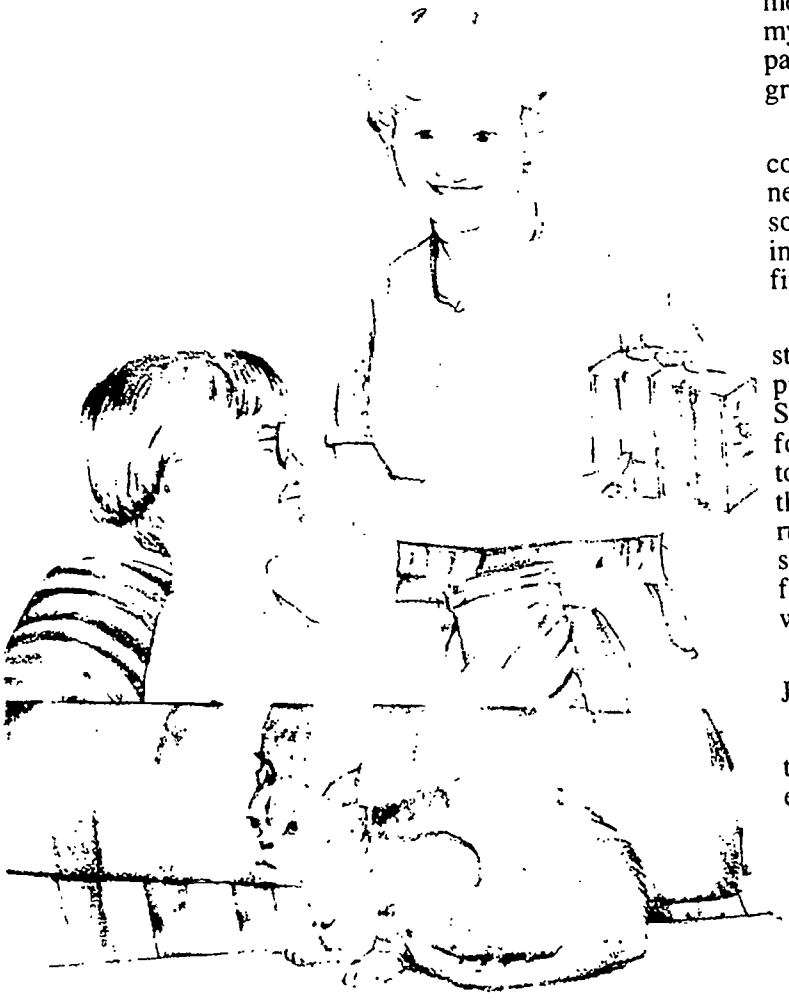
Joe accepted the jar and took a tiny sip. Setting his drink on the coffee table, he cleared his throat and began his rehearsed speech.

"My name is Joe Rhodes," he said mechanically. "I'm helping the planet by

recycling newspapers and aluminum cans." He reached across the coffee table to the couch and handed Mrs. McGrath a pamphlet. "But I can't do it alone," he continued. "I need your help. If you'll agree to participate in the Greenwood Elementary School recycling program, I'll come to your house once a week and pick up your recyclable goods."

He took another sip of tea. Mrs. McGrath smiled and shook her head.

"Thank you, child. But as much as I'd like to help, I have to say no."



Joe couldn't believe he had been turned down. Everyone else he'd visited had agreed to help. He thought for a moment, quickly skimming a pamphlet. He wasn't prepared for rejection.

"But Mrs. McGrath, " he sputtered. "Recycling is so-oo important. Without it, our planet will soon run out of its natural resources, and then we'll all be in trouble."

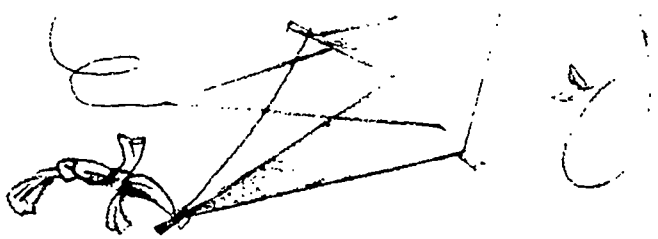
"Oh my, child," Mrs. McGrath said, crossing her long, purple legs. "Now you can't put all that on me. I do my part, you know. Recycling means reusing, and I reuse everything! I use my newspapers to line my bird cage and for packing material when I send gifts to my grandchildren in Canada."

Then she motioned to the jars of tea on the coffee table. "You see those? I haven't bought new glasses or cups since 1947. These jars are so thick, they keep lemonade nice and icy cold in the summer, and hold tea and coffee just fine."

Before Joe could respond, Mrs. McGrath stood up and walked across the room to a desk piled high with papers and knick-knacks. She'd almost emptied two drawers when she found what she was looking for. She returned to the couch and placed a topless cigar box on the coffee table. She pulled a handful of rubber bands from her pants pocket and strung them around the box. She ran her finger across the bands. "Twang, twing, wrang, wwong."

Mrs. McGrath laughed and laughed, and Joe couldn't hold back a smile.

"This, my dear, is a home-made guitar. Used to keep me and my five sisters and brothers entertained for hours."

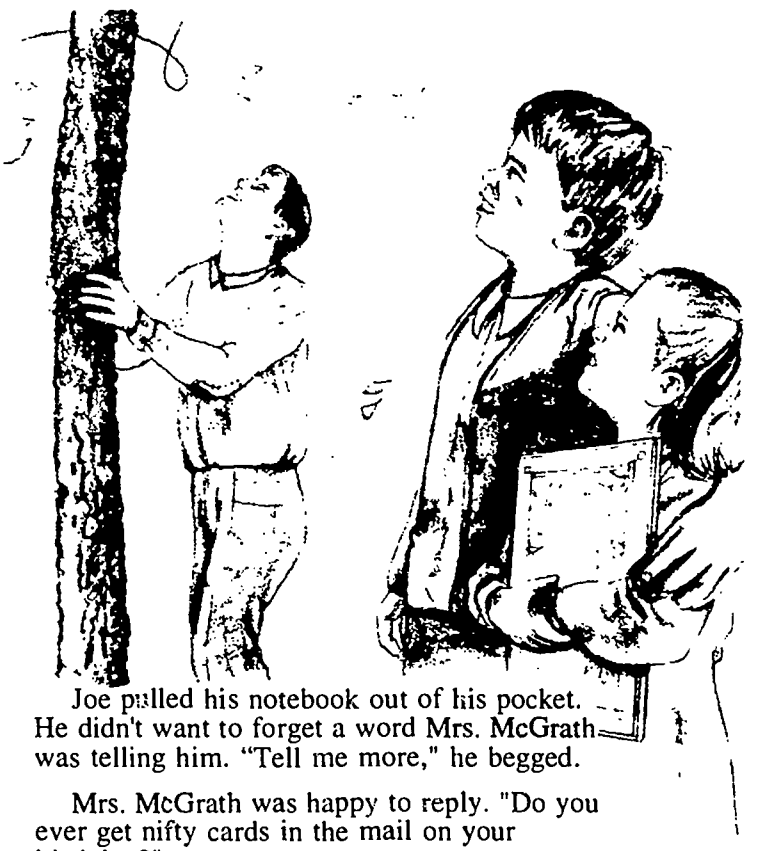


Joe was getting curious now. His teacher hadn't told him about this kind of recycling. "Where did you learn how to do all this?" he asked enthusiastically. "No one told me about reusing old jelly jars and making guitars."

Mrs. McGrath laughed, her slim frame shaking till she almost teetered over. "Oh child, oh child. I grew up in the Great Depression. The worst times this country has ever seen. Back home in Nebraska, times were hard for farmer families like mine. We were poor, child, but we were smart, too. We put our heads together and didn't want for anything."

Joe reached for his tea and rearranged himself in the chair. He was getting comfortable because he wanted to know more. "What else did your family do?" he asked, shyly.

Mrs. McGrath settled back in the couch, stroking a black and white kitten who had emerged from the cushions. "Well, in the summer, we didn't wear shoes. We saved them for winter when we really needed them. But I remember one fall, our shoelaces wore out, almost all at the same time. We couldn't afford new ones. Momma would tie them back together as best she could, but they'd just break again. One day, on our way home from school, my oldest brother, Erwin, spotted a big red and yellow kite in a pine tree. Now my brother Erwin was a smart one. He grabbed the trunk of the tree and shook and shook. Sure enough, that kite fell to the ground. Erwin knew that kite string is made of strong, durable material. The next day, we all had new shoelaces."



Joe pulled his notebook out of his pocket. He didn't want to forget a word Mrs. McGrath was telling him. "Tell me more," he begged.

Mrs. McGrath was happy to reply. "Do you ever get nifty cards in the mail on your birthday?"

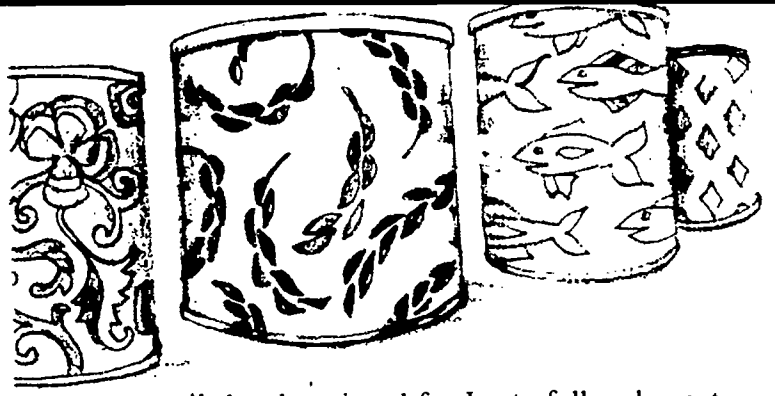
Joe nodded, his pencil perched above his notebook in a ready position.

"Well," continued Mrs. McGrath. "If there's no writing on the back of the side where the picture is, you can cut the card in two, along the spine and viola! You have a postcard."

Joe crinkled his forehead until his eyebrows almost touched. "I always throw my cards away, so do my parents."

Mrs. McGrath nodded knowingly. "Lots of people do, you know. But it's never too late to start recycling and reusing."

Joe wrote "postcards," "cigar box guitar," and "jelly jars" in his notebook while Mrs. McGrath stood up and stretched her legs. She



smiled and motioned for Joe to follow her out of the living room.

"Come with me and I'll show you some more," she said over her shoulder. Joe leapt up and followed her into the kitchen. It was equally as cluttered. Glass jars, newspapers, and coffee cans covered with pretty paper stood on the counters.

"What do you use the coffee cans for?" Joe asked.

Mrs. McGrath reached for one and took off the lid. "This one is for sugar." She snapped the lid back on and pointed to the other cans. "That one is for flour. I keep tea bags in the third one, and I fill the fourth one with cookies when my grandchildren visit."

While Joe wrote "coffee can canisters" in his notebook, Mrs. McGrath opened a door and flipped on a light. They walked down the stairs to the cellar and Mrs. McGrath pointed to rows and rows of boxes bursting with bunches of twigs and tree branches. Joe felt as if they had just walked into a forest.

"This is my firewood," Mrs. McGrath explained, patting the boxes. "I gather these in the fall and they dry out real nice down here. Bundle them together tightly with vines, and they'll burn longer. These twigs fall from the trees in my backyard. Many people cut down trees for firewood. Not me! By the time it gets cold, I know I'll be toasty warm with my twigs crackling in the fireplace."

Joe flipped to a blank page in his notebook, writing, "Tell mom to cancel firewood guy."

The two returned to the first floor. Joe's clothes had dried out, and he realized ne was almost late for dinner.

As Mrs. McGrath walked him to the door, Joe had an idea.

"Hey, why don't you come to my school and give a talk about recycling! The kids would love hearing about the jelly jars and the guitar and the postcards!"

"Well, okay," said Mrs. McGrath, "but only if you promise to keep visiting. Come by next weekend, and I'll show you how I make fertilizer for my garden."

Joe agreed enthusiastically and hugged his new friend before scurrying home. The rain had stopped, and he ran happily up the driveway, singing, "Hey, diddle-diddle-hey -ho, hey, diddle-diddle-hey-hum."

He banged in through the kitchen door with such energy that his mother came running out of her study where she had been grading papers. "Hi, honey," she said, "anything wrong?"

Joe answered her with a wide grin, and his mother's face relaxed into a smile. "Did you get Mrs. McGrath to help with the recycling program?"

"Did I ever!" Joe answered, pulling his notebook from his pocket. "You know those jelly jars we never reuse, and the birthday cards we throw away? Well, do I have some neat ideas for you!"

Treasures in the Trash

WORD SCRAMBLE

Unscramble the following words which are all related to recycling. Then take the circled letters and unscramble them to discover the mystery word. Answers on page 30.

LPATSCI _ _ _ (_) _ _ _

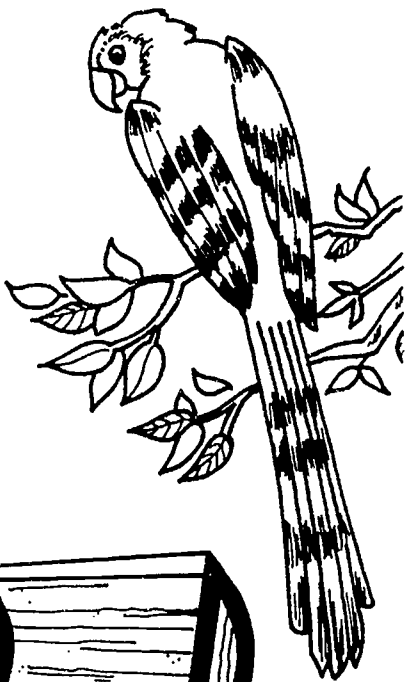
MAULNIMU ANCS _ _ _ _ _ _ (_) _ _ _ _ _

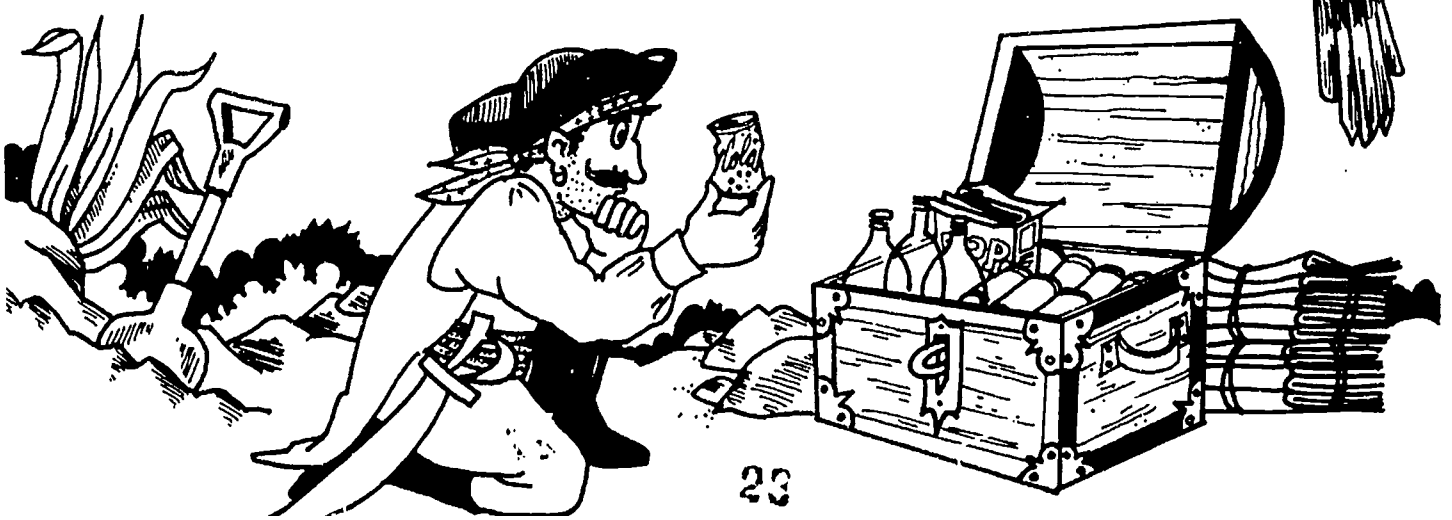
ENSWASPPRE _ _ _ _ _ _ _ _ _ (_) _

TLAEMS _ (_) _ _ _ _

VEINORMEMTN _ _ _ _ _ _ _ _ _ (_) _ _

MYSTERY WORD _ _ _ _ _ _





History Makers remembering earth day

Theresa Carbrey of rural Johnson County was one of 20 million people across the country who spent April 22, 1970, concentrating on the environment. This first Earth Day was organized to encourage Americans to think about environmental issues. Earth Day is still celebrated on April 22.

Theresa described the first Earth Day as an assortment of speeches, rallies, tree plantings, and pranks.

"Back then you could easily gather a crowd of 3,000 people for rallies in Iowa City," Theresa said. "I was a hippie then. Hippies are who brought us Earth Day."

Hippies were people in the 1960s and 1970s who were concerned with many issues, including war, the environment, and Americans' dependence on material things like cars and money. They questioned the belief that making money was the number one goal.

Environmental concerns quickly spread beyond the hippie community. "Environmental issues became important to a wide range of people after the first Earth Day," Theresa remembered.

Demonstrations on April 22, 1970, drew attention to pollution threatening land, water, and air. People began to think more about saving the earth's natural resources — trees, oceans, soil, and plants and animals. Theresa said she grew more concerned about the environment after participating in the first Earth Day.

"I found peace and harmony and wished to align myself with what I saw in nature," Theresa said.

Like Mother, Like Son

Today, Theresa and her nine-year-old son, Justin Webb, live in a little cabin in the woods along the Iowa River. As they talked to *The Goldfinch* on a snowy January afternoon, icicles dripped from the frame of the cabin, and Canada geese honked noisily as they flew above the churning river.

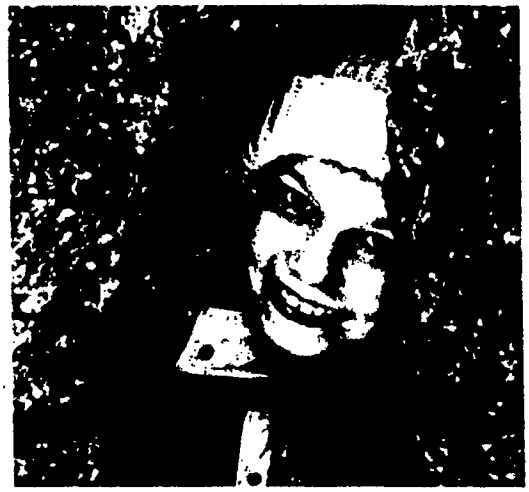
Theresa and Justin's front yard is a riverbank full of living things, even in the dead of winter. Rabbit and squirrel tracks dotted the newly fallen snow. Theresa pointed out young trees scarred by beavers who sharpen their long teeth on the trunks. When they're done, the trees look like sharpened, stubby pencils.

Millie K. Frese

Justin and his mother, Theresa Carbrey, inspect beaver markings on a tree in their front yard.

A hollow cottonwood tree is Justin's hideout. He shares it with wildlife, like the mice whose tracks he found when he crawled inside. Nearby is an ancient silver maple tree where raccoons gather.

While other kids his age hang out at malls and arcades, Justin prefers the peaceful riverbank, the hunt for tracks of deer and coyote, and the excitement of seeing an eagle soar above him.



Millie K. Frese

Justin Webb of rural Johnson County shares his tree-trunk hideout with mice and other wildlife.

At Work and at Play

Theresa's devotion to the environment also can be found in her choice of careers. She directs educational programs, writes a newsletter, and researches environmental issues for New Pioneer Co-op, a fresh food market in Iowa City.

In addition to her job, Theresa also is involved in many other environmental activities. She participates in organic growersworkshops and water-quality seminars, and helps with creek clean-ups and educational recycling programs. Last year, she won a Governor's Volunteer Service Award for her efforts to preserve **nongame** species in Iowa.

Together, Theresa and Justin help Iowa's environment by attending local rallies and Earth Day celebrations.

For one of her recent Earth Day projects, Theresa and an environmental group planted a small tall-grass prairie near the Co-op.

We're a prairie state, yet few people know the native prairie species," she said.

The volunteers put small signs in the prairie to identify the plants and grasses that once covered Iowa.

"Our little prairie attracts butterflies," Theresa said proudly. "Now we're just waiting for buffalo!"

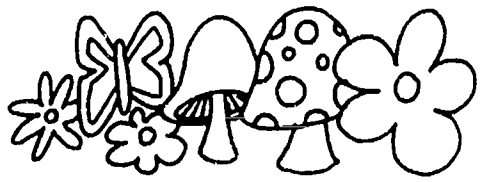
For the last twenty-four years, Earth Day has happened just once a year, but the ideas and concerns behind it encourage people to help the environment every day.

People like Theresa and Justin.

— Millie K. Frese

What You Can Do

Find people in your community who participated in the first Earth Day in 1970. What did they learn about the environment? What kind of environmental changes have they seen over the years? Write their stories and share them with your friends and family.



nongame: not for hunting

What Next?

To learn more about the natural environment, spend time outdoors. How has the environment changed in the years since Althea Sherman and E.D. Nauman were kids? Record your observations in a journal or sketchbook.

If you want to read more about the environment, ask for the following books at a library:

- ▲ "Recycle! A Handbook for Kids" by Gail Gibbons
- ▲ "50 Simple Things Kids Can Do to Save the Earth" by The EarthWorks Group
- ▲ "Going Green: A Kid's Handbook to Saving the Planet" by John Elkington
- ▲ "The Goldfinch: Life on the Iowa Prairie," November 1985

Information also is available from government agencies and private organizations. These places will send you free or almost-free pamphlets, booklets, or other information to help you better understand Iowa's natural environment. Write for the following:

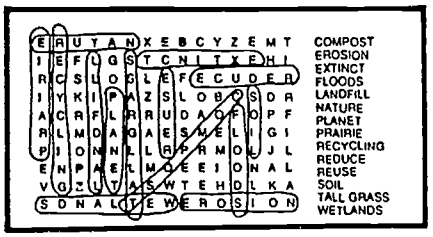
- ▲ "Lines on the Land" and "It's a Whole New World" IA Department of Agriculture and Land Stewardship, Wallace Building, Des Moines, IA 50319
- ▲ "Living on the Edge Coloring Book," "Recycling Guide," and "Fishing is Funtastic," IDNR, Wallace Building, Des Moines, IA 50319
- ▲ "Attracting Backyard Wildlife" (cost is $1) IDNR, Wallace Building, Des Moines, IA 50319
- ▲ "Consumer's Handbook for Reducing Solid Waste" Consumer Services Branch, U.S. EPA, 401 M Street, Washington, D.C. 20460

Answers

Page 16-17 (Composting Quiz):

(1) Chicken wings (3) Leftover cheese omelet (6) The last bite of a hot dog (9) Fish fingers (10) Double chocolate fudge ice cream sundae

Page 21 (Word Find):



Page 27 (Word Scramble):

LPATSCI PLASTIC

MAULNIMU ANCS ALUMINUM CANS

ENSWASPPRE NEWSPAPERS

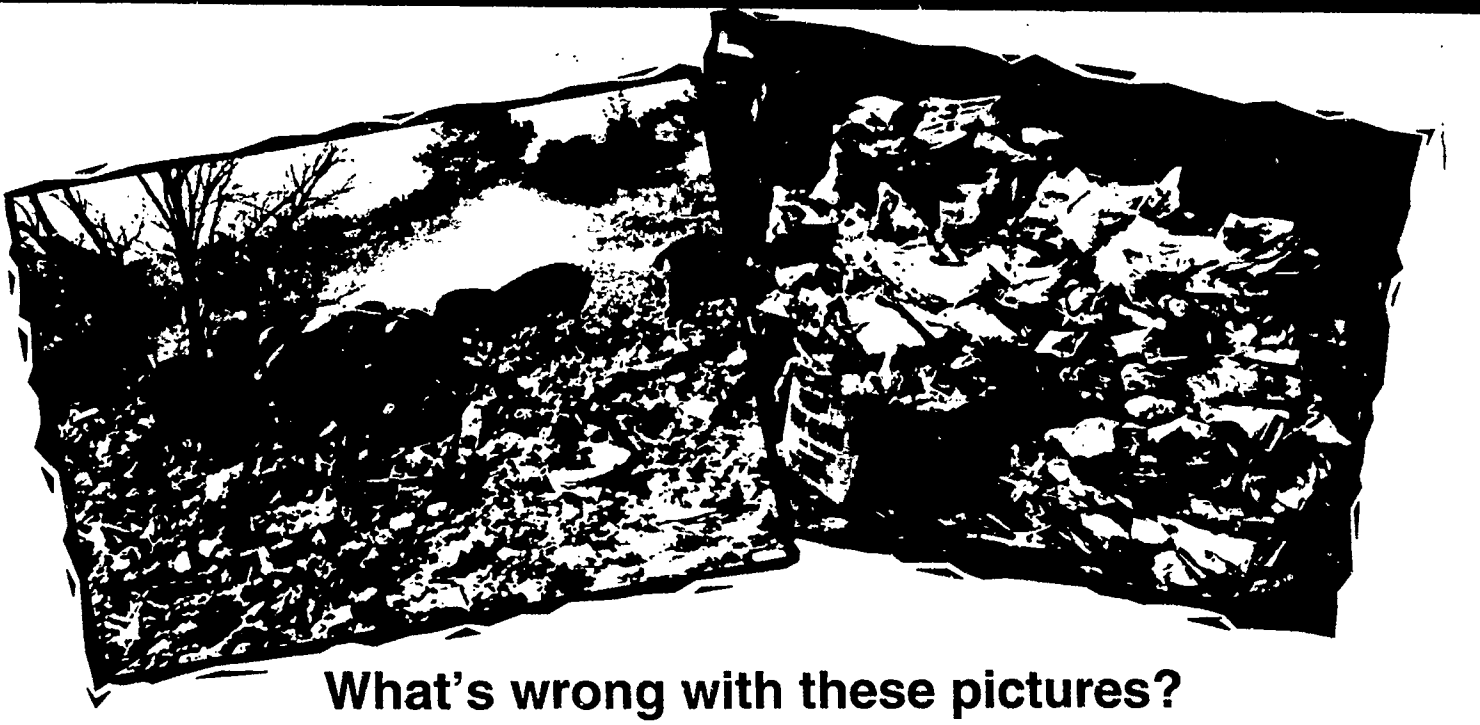
TLAEMS METALS

VEINORMEMTN ENVIRONMENT

MYSTERY WORD REUSE

The Roost


CHOCOLATE!
RIP!
RIP!
RIP!
YYUMMMY!
FREEZE!!!!
GOLDIE! YOU'D BETTER PICK UP THOSE WRAPPERS!
DO YOU REALIZE THAT IF EVERYONE THREW TRASH ON THE GROUND...
THE WORLD WOULD BE A GIANT, MESSY, STINKY...
MOUNTAIN OF NASTY GARBAGE!
WOW!! SO THAT'S WHY THEY CALL IT JUNK FOOD!
JERRY BROWN



What's wrong with these pictures?

You are a time-traveling garbage inspector visiting Des Moines in the 1940s. Your mission? Teach residents about proper garbage disposal methods. What would you tell them about leaving trash piled on the street? Do you think it's a good idea to let animals feed off of open dumps? Read this issue of *The Goldfinch* to find out.

The Goldfinch

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