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BLITZKRIEG ON ROUGH FISH

FORT DEFIANCE STATE PARK

Charles S. Gwynne
Professor of Geology
Iowa State College

Several things occur to the geologist as he visits Fort Defiance State Park.

First, there are the geological processes now and recently at work. Second, there is the topography resulting from the action of these processes. Third: the beach materials, revealed in the rock cuts nearby and in the rocks of the park lodge and along the driveway near the lodge.

During the past million or so years one of the active processes was glaciation. Ice scoured the land surface, and left extensive deposits of subsoil when it melted away. The last glaciers occurred in Iowa about 10,000 years ago. Since the disappearance of the glacial ice a second process, weathering, has been at work altering the surface and near-surface materials. Most important of all has been the erosion by running water that is carving out the valleys and ridges. The wind may have played a tripart part, depositing a thin film of dust from time to time.

Another great process which has always been active everywhere on the earth is crustal movement. Slow depression of the crust of North America brought about widespread extension of the sea on the land. Similar slow elevation of the crust and the area became land again. All this, in northern Iowa, tens and hundreds of millions of years ago.

Hills and Knobs

The topography of Fort Defiance is the result of glaciation and the action of running water. Coming into the park from the east one has a fine view of the rolling country to the south. It is a series of low hills and knobs, shallow depressions, irregularly shaped and irregularly distributed. This is an end moraine formed in the course of retreat of the last glacier. The moraine is made of drift, mostly a bouldery clay, carried

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In the first 2 1/2 days of treatment, rough fish removal crews scooped 75,000 pounds of rough fish from a 5-mile stretch of the Des Moines River. Only a fraction of the total kill, they were hauled to farms for fertilizer.

By John Madson

Within two weeks in late September nearly every fish was killed in a 10-mile stretch of the Des Moines River, and in one morning countless gizzard shad died in Storm Lake. All were victims of two sweeping experiments in waging total war against Iowa's rough fish.

Angling in the Des Moines River near Humboldt had been poor for about five years, and the area's once-famed walleye, northern pike, catfish and bass fishing had almost ceased.

Catfish Dwindle

Fisheries biologist Harry Harrison, who had worked this area for several years, knew why. He had noted that between the Rutland, and Humboldt dams the catfish population was dwindling, stunted and thin. In 1953, Harry estimated a population between the two dams of 104,000 catfish. In 1954, the estimate dropped to 64,000. Last fall, he carefully estimated the catfish population in this 5-mile stretch of river at only 38,000. Nearly all were small fish and were requiring four to six years to grow ten inches. In check ponds, catfish have grown eleven inches in one year.

Some factor was reducing catfish production and depressing their growth rate—a factor that also caused muddying of the water, crowding, and competition. It was thought that this factor was a tremendous number of carp and other rough fish, and it was decided early this fall to wipe out the 5-mile portion of river between the dams and restock it in a unique experiment.

Battle Begins

In late September, fisheries biologist Tom Moen and Chuck O'Farrell, supervisor of rough fish control, joined Harry in the first step: killing all fish for five miles above Rutland and "sterilizing" that upstream area to slow the movement of carp into the test area between the Rutland and Humboldt dams. O'Farrell and his crew rescued as many game fish as possible before chemical treatment, removing over

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THE PHEASANT CROP: WHAT IS IT AND WHY

By Richard Nomsen
Pheasant Biologist

To the majority of Iowa's hunters, the highlight of the year is the annual pheasant season. The ringnecks have provided the Iowa gunner with upland game shooting where other game birds have failed to prosper, and the pheasant has held his own through good years and bad.

The immense popularity of this colorful game bird has prompted the Iowa Conservation Commission to carry on extensive annual surveys in an effort to keep track of this exotic species. An over-all picture of what the pheasants were doing from month to month during the year is drawn from frequent checks by conservation officers, rural mail carriers, farmers and game biologists.

Records of similar studies taken during previous years are kept by the biology section and a comparison of these with the latest results reveals how well the birds are doing this year.

After Final Shot

Pheasants were being counted less than a month following the final shot of the 1955 season. This first census of the new year closed the 1955 studies and inaugurated the 1956 program. It was designed to determine the sex ratio, or hens per cock, of the winter pheasant population.

First of all, we learned the results of the previous season. What effect did several hundred thousand hunters have on the rooster pheasant population during the 25-day shoot?

After a thorough investigation—well over 100,000 birds were checked—it was found that hunters shot 62 per cent of the 1955 fall pheasant population. During the winter months an average of 3.3 hens was recorded for each rooster seen, and the percentage of kill was calculated using the difference in sex ratios from fall to winter.

We also learned that the kill was not excessive. It never has been. For example: hunters shot 66 per

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MORE THAN FOOD

By Jack Stevens

Editor's Note: This is one of the last articles written for the *Clear Lake Reporter* by Jack Stevens, senior conservation officer, who died September 24. It expresses part of his philosophy, and indicates his lifelong concern of tomorrow's sportsmen, and the outdoor legacy they will receive.

Approximately one out of every three or four persons in this country of ours is interested in some form of fishing or hunting—the farm boy who dunks a doughball in a muddy stream for carp; the office clerk who casts a plug for bass; the offshore enthusiast who battles a big marlin; the rabbit hunter, the pheasant hunter, the fox hunter, and the man who seeks the giant moose and bear of Alaska.

A vast new army of hunters and fishermen has come into being since the war. Many of the recruits are city men who have learned the spell of the outdoors—the sound of rain on canvas, the feel of a trigger, the smoke of a camp fire and the beauty of a winter sunset. Those of us who are old at the game know that it is the sum total of these things

which makes the sport dear to us.

A dead fish in a meat market is merely a dead fish, but a live fish flashing from the clear, cold stream or lake is a priceless thing—not to be measured in pounds and inches.

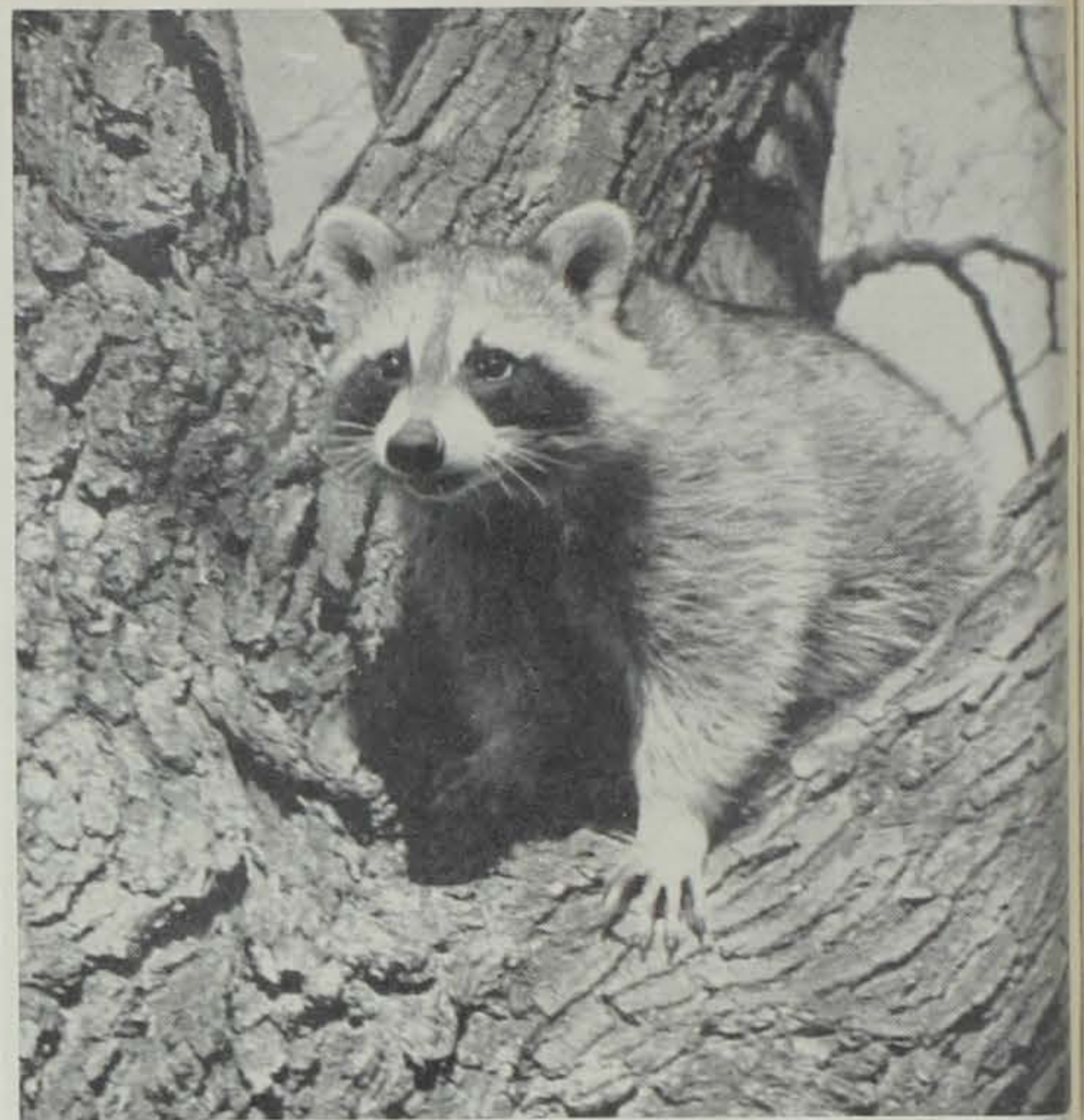
A wild duck is not to be valued in terms of food along with beef and pork chops. It means day breaking over the marshes and the whistle of fast wings in the gray light. Who can put a price on the sight of teal climbing over the rushes or mallards setting their wings to decoys?

Every sportsman knows that the thrill is in the taking and not in the processing. Broiled venison steaks are hard to beat, but so is good beef steak. It is the memory of a frosty morning and an old buck sneaking across the clearing which we cherish.

This love of the chase—matching our wits against the wild creatures—comes to us as a heritage from the early days of the race, when man was forced to fish and hunt in order to eat and live. It is a natural instinct.

Today we do not have to hunt for fish and food but turn to the outdoors for sports and relaxation. The very fact that 40 millions of Americans find their chief recreation with rod and gun means that we must approach the situation with a new realization of the problems—not on a basis of meat hunting, taking all we can, but with a full realization of the meaning of conservation in terms of the future.

There is no place today for the game and fish hog—if the next generation of Americans is to have any sport afield. The rising generation is very keenly interested in all phases of outdoor life. Your boy and your neighbor's boy have as much right to the thrill of the leaping fish or the whirl of game birds' wings as you ever had.
—*Clear Lake Reporter*



Jim Sherman Photo
Eyes sparkling with mischief and intelligence, the raccoon is at home in trees, in water or on land. Evidently insulted at being called "the Indian's pork" in 1840, he left Iowa. Eighty years later he returned.

LITTLE BROTHER TO THE BEAR

By John Madson

Shambling through our dense river forests in the easy, flat-footed fashion of the bear, goes an American legend.

He was the reluctant haberdasher for a pioneer era, furnishing warm headgear to several generations of frontiersmen. He has colored our folklore with Old Zip Coon, the Bearcat, Br'er Coon, and the Ringtailed Whizzard. He's the raccoon: the black-masked, high-rumped, hound-scarring little hero of a thousand hunts.

The Washer

His college name is *Loter*, Latin for "the washer." Around water, he may dip bread or some other soft food until it almost disappears. Several coons dunking food in a small pan of water can reduce it to a semi-liquid soup, losing most of the original meal in the process. Even a frog or crayfish—freshly taken from clean water—may be repeatedly dunked.

No one really knows why. Away from water, the 'coon takes his food as he finds it, sans dipping. Some naturalists think it's because the raccoon likes to mess around water like a small child, and others suspect that the raccoon just likes to feel submerged food with its sensitive hands. One authority says simply that "Perhaps this sensitivity is an obsession, just as some beavers seemingly hope to flood the world."

Curious

You'd expect something like this from the raccoon. He's a character that stands alone in a forest of

characters. Even more than most animals, he has a burning itch to investigate the universe.

Once, for a photographer, I entered the big State Fair raccoon cage which held about eighty young 'coons. The curious little ringtails swarmed all over me, stole my pencil, and tried for my notebook. They saw the foil on my cigarette package, and almost got away with my lighter. They were in pockets, after buttons, and just generally made pests of themselves.

It wasn't until early that evening—after running some errands in downtown Des Moines—that I noticed the 'coons had found the shiny metal tab of my trousers' zipper and had thoroughly unfastened things.

This curiosity, and a fascination for bright, shiny objects, often leads to raccoon disaster. A time-honored trapping method is to place a trap in shallow water and cover the trap with shiny tinfoil. 'Coons can't resist it. Like children, raccoons often get into trouble through their ability to pick things up. Their long, black, dexterous fingers are capable of grasping objects and manipulating them, and while the 'coon does not have the opposable thumb of man and the higher primates, he does right well. For most practical purposes, he has hands.

Snails and Hawks

With these hands, he may feel under rocks and along margins of streams for crayfish and frogs. He may eat snails and mussels, or tear apart rotten logs for worms and grubs. Raccoons may eat birds

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Jim Sherman Photo
Hunting means more than just meat; it means day breaking over the marshes, and the whistle of wings in gray light. It means the smoke of a campfire and a winter sunset.

Fort Defiance . . .

(Continued from page 73)

along frozen in the bottom of the ice. The front of the ice wavered back and forth through Emmet and other northern Iowa counties—now advancing and retreating—until the final retreat. The end result, the Algona Moraine, is the deposit made while the ice front was thus wavering back and forth. It is not so rugged in the vicinity of the park.

The wooded area is mostly in shade and is threaded by park trails. A mile or so east of the park is the West Fork of the Des Moines River, flowing in a rather wide valley. The valley is the result of the work of running water, some of it occurring before the glaciers or between glacial periods. This is the valley along the north side of the park. This is the work of Four Mile Creek which flows from Four Mile Lake a few miles west.

Many smaller valleys, ravines, and gullies are tributary to Four Mile Creek. These all have high gradients and everywhere the slopes are steep. This rough, broken country is the result of erosion by running water in post-glacial times. The East Fork is about 100 feet below the upland level. Four Mile is hurrying to get down to that level, and all the tributaries are hurrying to get down to the level of Four Mile. Slump and creep along the hillsides have hastened this process of dissection.

Rock Rubble

The park's subsoil material is the glacial drift, mostly of the kind called *till*. This is an unsorted mixture of clay, silt, sand, pebbles, cobbles and boulders. Being mostly clay, with a noticeable content of boulders, it is often called boulder clay. Some sorted material, deposited by the meltwater, is also present. At the time of this writing there were excel-

lent exposures of the drift, almost all till, on the road eastward to Estherville. The lower part, gray in color, is the unweathered till. The upper part of the exposure is brown because of the weathering. Iron-containing minerals have weathered to the mineral limonite, brown in color.

The stones of the drift are in great variety, for they represent materials gathered by the glacier from a wide expanse of country. One of the most prominent is a reddish-purple rock called quartzite. The rock used in construction at the lodge is almost all quartzite, but it probably came from quarries in the vicinity of Sioux Falls, South Dakota, where the quartzite forms the bedrock beneath the soil and subsoil of the area.

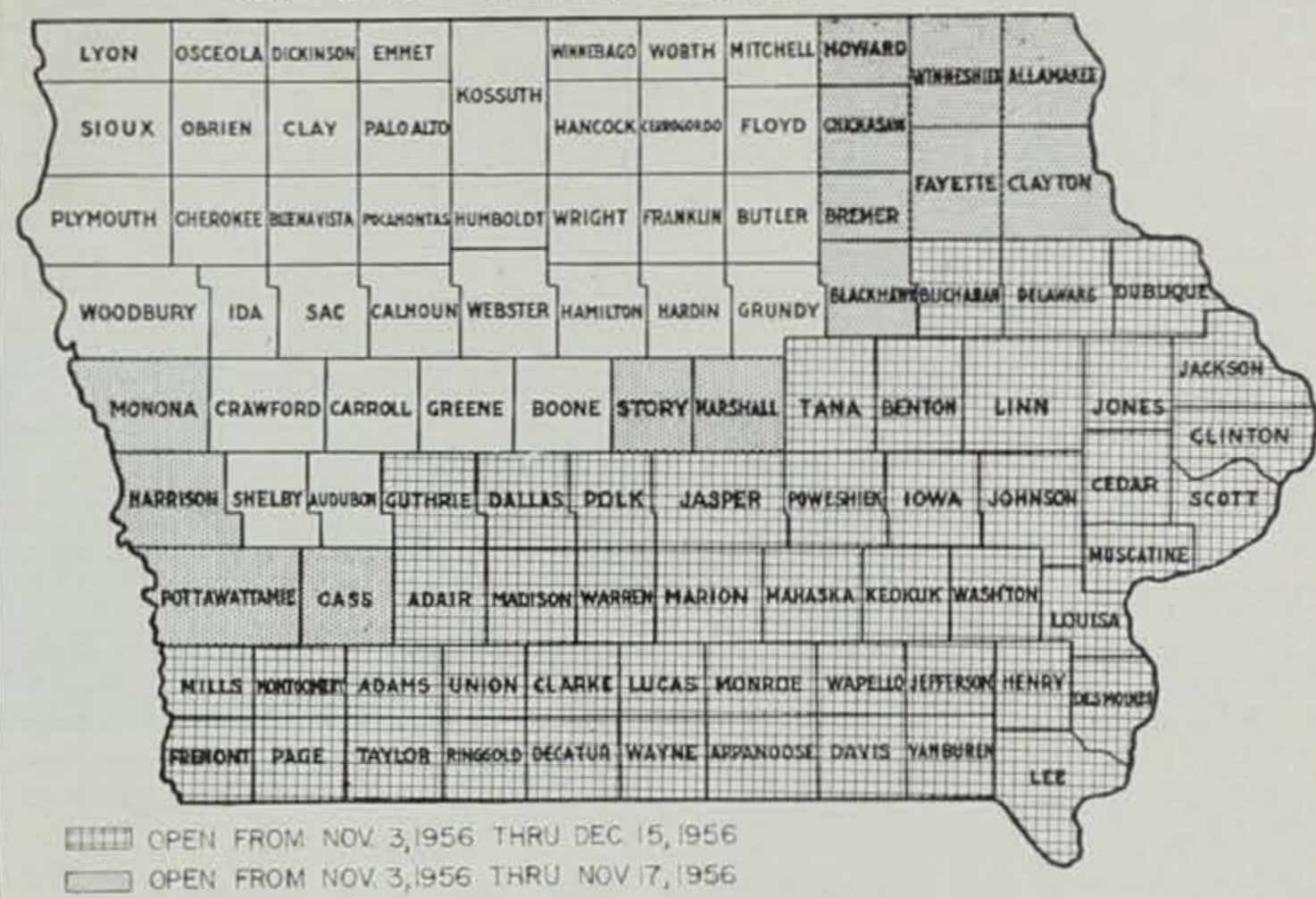
Scratches Steel

This quartzite is composed almost entirely of the common mineral quartz which is hard enough to scratch steel and it is quite resistant to abrasion. Furthermore, it is not changed by chemical weathering as are minerals like feldspar and pyrite.

Most of the particles of quartz were probably originally part of granite or a related rock. Weathering reduced the rock to a mass of clay and quartz grains. These quartz grains were later rounded and reduced to sand size by stream wear. They presently accumulated as a deposit of sand, perhaps hundreds of feet thick, in an ancient sea. The grains then became cemented together to form sandstone; a porous and permeable rock. Still later, perhaps after deep burial, the quartz sand particles of the sandstone took on still more quartz until the rock became a solid mass of quartz, lacking porosity.

Gneiss, a banded rock, is prominent in the park. There are two gneiss boulders in the foundation on the north side of the lodge. Another rock which attracts the attention of the visitor is lime-

1956 QUAIL HUNTING SEASON



stone in irregularly shaped masses. Under natural conditions limestone is subject to solution. This accounts for the shape of these fragments. Covered with subsoil and in contact with subsurface water the limestone slowly dissolves away, leaving fragments oddly and curiously shaped.

The park lies just west of Estherville, mostly in the rough and broken country along Four Mile Creek. But that is just part of the last page in the history of the area. Farther back in the story of ancient seas and of long periods of erosion, all hidden beneath the soil and subsoil.

INSECTICIDES POSE THREAT TO WILDLIFE RESOURCES

An article in the current issue of the *Audubon Magazine*, published by the National Audubon Society, tells about the damaging effects on wildlife of modern, highly toxic insecticides.

The article calls for a special appraisal of proposed insect control programs, with adequate emphasis on the possible harm to birds, animals and fish.

Dr. Paul F. Springer, author of the article, is a biologist with the U. S. Fish and Wildlife Service. He recognizes the role of insecticides in controlling insects which damage crops and livestock, and annoy human beings, but he points out that too often our wildlife resources are impaired through oversight, ignorance or carelessness in the preparation and carrying out of insect control programs.

The harmful effects of using the powerful toxic substances developed by modern science—those classes of insecticides known as chlorinated hydrocarbons and organic phosphates—are emphasized by research studies and case histories cited in the article. The author discusses important factors which ought to be considered in appraising an insect control program. These include the kind of insecticide, the rate at which it is applied and the animals apt to be adversely affected.

Selection of the insecticide

known to be least harmful to animals, birds, fish and desirable insects will keep harmful effects at a minimum.

As an example, Dr. Springer reports that insecticides known as parathion and dieldrin are the most destructive to bees, while toxaphene, methoxychlor and TDE are the least harmful. The relative danger of most modern insecticides to birds, fish and animals is also cited.

Because insecticides are far from specific in their action, even those carefully chosen may have some bad effects on wildlife. As an illustration of the importance of timing, it is noted that bees suffer the least harm when insecticides are applied in the evening, a few days before the height of flowering, or after the blossoms have fallen. The interval between applications and the frequency of applications are important factors.

Since insecticides carried by the wind may damage adjacent areas, Dr. Springer believes no spraying should be done during windy weather.

Modern insecticides are so highly toxic that even a minute quantity may result in damage to wildlife. The article cites many instances where severe damage was inflicted by applications of less than a half pound per acre. Two ounces of aldrin per acre caused the death of nestling redwing blackbirds on rangeland in Montana. An application of as little as one tenth of a pound of dieldrin and toxaphene per acre to control mosquitoes, has caused the death of fish.

Insecticide damage to wildlife may be by direct contact. The organic phosphate known as TEPP is so powerful that it can be absorbed through the horny material covering the feet of birds. Another cause of fatalities or damage is poisoning or destroying the food supply of certain birds and animals.

The article appeals for greater caution in the use of insecticides and utilization of other insect control measures where practicable.—*Nonpareil, Council Bluffs, Iowa.*



Jim Sherman Photo.

the stone foundation of the Fort Defiance lodge, visitors can see several banded gneiss boulders, rocks that are prominent in the park.

Rough Fish . . .

(Continued from page 73)

15,000 pounds of fish by seine. Of these, 900 were stunted, "race-horse" catfish that totaled only 70 pounds. The rest was rough fish.

Then began the treatment with rotenone, an organic compound deadly to fish but harmless to higher animals. This chemical, so potent for short periods, soon loses its effects. It was first applied with a power sprayer above the Murray Bridge about 5½ miles upstream from the Rutland Dam. It was swept downstream by the slow current and was reinforced wherever needed.

About a mile below the bridge is the "Rock Hole", a limestone-rimmed pool about 400 yards long that was once a fine fishing area. It took the initial jolt of rotenone about two hours to reach this pool and for hundreds of yards, upstream and down, riverbank observers watched carp break water as the dying fish tried to gulp air. Farm dogs had a field day wading into the shallows to catch floundering carp.

O'Farrell's crew staked their big nets across the river channel and used a truck to remove the dead fish to nearby farms. They needed that truck. From the 400 yards of river, almost 4,000 pounds of carp, quillback and redhorse were removed. A few green sunfish, some catfish, and one walleye showed up. But of nearly two tons of fish killed, less than 10 pounds were game fish.

In a larger downstream pool the next day, over 12,000 pounds of fish were killed with the first slug of rotenone, including three walleyes, one northern, one small-mouth and a number of thin catfish.

The third day over 30,000 pounds of fish were scooped out above the Rutland Dam after the wave of chemical struck them. In the 2½ days, O'Farrell's rough fish crew hauled away over 75,000 pounds of rough fish and were forced to abandon tons of fish in the river shallows.

Harrison estimated that in this 5½-mile blitzkrieg, about 250,000 pounds of fish were seined or killed with rotenone, and that no more than 1,500 pounds of this total were game fish, including catfish!

* * * * *



Jim Sherman Photo. The carp couldn't take the jolts of rotenone, and surfaced in a last vain attempt to gulp air. With their death came clear water.



Jim Sherman Photo. Spray planes, guided by marker boats, spread regular lanes of shad-killing rotenone on Storm Lake. Plane appears to be flying into Jim Sherman's camera, and it almost did.

Water Clears

With the area above Rutland neutralized, the men began the real job: wiping out rough fish in the impoundment between the Rutland and Humboldt dams. This is to be the main, restocked study area.

This project was still underway at press time, but Harrison phoned that "vast numbers of rough fish are being knocked deader than a hammer, and that the numbers of fish per acre and the species composition was about the same as above Rutland."

On the second day in the Humboldt impoundment, O'Farrell trucked out 10 tons of buffalo fish. In this area, only about 100 catfish weighing from 5 to 15 pounds were killed, as well as a number of smaller catfish. The same ratio seemed to persist: less than 200 pounds of game fish for every 1,000 pounds of rough fish.

Within 24 hours after the first kills in the Humboldt impoundment, muddiness in the river almost ceased and the stream cleared overnight. "On Wednesday, we couldn't see six inches into the carp-roiled water," Harrison reported. "One day later we could see bottom in four feet of water." Local fishermen saw this too, and liked it.

Ambushing Carp

River impoundments are ideal habitat for carp which root in the silty bottoms and make life miserable for sight-feeding game species. The carp also multiply in vast numbers, causing crowding that many species cannot tolerate. Little can be done about river conditions that encourage carp while tons of Iowa topsoil continue to roll into the streams, but the Iowa biologists believe that short-term benefits may be realized if carp can be controlled.

Although the impoundment between Rutland and Humboldt is now barren of fish life, the area will be stocked soon with walleyes, northrens, black bass and catfish. Carp moving into this neighborhood—and they will eventually—may be faced with the competition of a well established and vigorous game fish population. The carp will have an uphill struggle before they can again become the dominant species.

Carp will win this struggle but their progress will at least be stalled and until they regain the upper hand there should be some good game fishing. This may be for three years; it may be for ten. That's one of the things the biologists want to learn.

It may be possible to treat long reaches of Iowa rivers, eliminating all fish in entire townships, counties or watersheds, and restocking game fish as the crews work downstream. Such management is cheaper and more effective than seining, and is harmless to water supplies. Harrison treated one mile of the river for about \$11, a fraction of seining cost even if effective river seining were possible. Which it isn't.

As far as we know, this was the first such chemical fish management ever attempted on a midwestern river, and it is unique in Iowa.

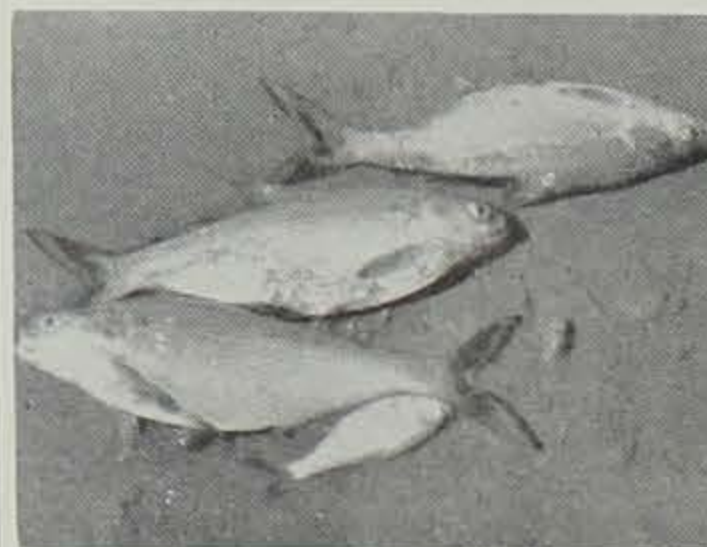
Aerial War

The chemical treatment of Storm Lake had a different motive: to selectively kill young gizzard shad in the lake in an attempt to determine the effectiveness of such control and its effects on game fish.

In mid-June, biologist Jim Mayhew closely observed the spawning dates and patterns of gizzard shad in southern Iowa. He carried on electric shocking and chemical surveys of the shad and succeeded in taking ripe spawn from females and later finding shad fry in the same areas.

These findings provided new information about Iowa gizzard shad. The shad are sensitive to chemical treatment, and biologists think it may be possible to hit them hard during spawning periods and other

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Jim Sherman Photo. Gizzard shad quickly outgrow food stage for game fish, and as adults are worthless to man and fish alike.

WARDEN'S WOES

I've always figured that a game warden had a pretty easy life. All he has to do all day is fish and hunt, always locating the other fellow's good fishin' spots, and occasionally ask fellow hunters and fishermen if they have licenses.

That's what I thought. And I still think it's a nice way to make a living. But the other day a game warden friend of mine told such a tale of woe about his duties that I darn near had to get out the cryin' towel.

It seems that game wardens sometimes work at night, too. (I guess that's the best time to get fishermen who use illegal practices.) And on this night the warden had quite a time for himself.

Taking off in his motor boat, he motored up to the lake north of the Illinois Central railroad tracks where he either stopped to talk to or check on some fishermen. When he got ready to leave, he couldn't get his motor started. After partially overhauling the motor, it started . . . and then stopped again. But that was just the beginning.

Taking a manly hold on the oars, he rowed up the river quite some distance and spotted some figures who looked very much as if they were setting trot lines. He tried to get to the fishermen from several different ways, but each time had to turn back to try another way.

After picking up half-a-dozen blisters from rowing, he finally reached the fishermen . . . but they were fishing legally then. And on searching along the shore (in the company of the fishermen) he couldn't find the illegal lines.

With much disgust, he finally gave up the hunt and began the long row back to town. When he finally made it back to town and had his motor and fishing gear all loaded in the car, the final blow fell . . . the car wouldn't start. And to close the story, he finally had to call his good wife to get out of bed and come get him.

Now if that isn't a tear-jerkin story, I never heard one. But cheer up, Jim, things are bound to look up.—*Independence Conservative.*

THE BROOK

Tom Pease

"I come from haunts of coot and hern,
Alas, a fatal sally!
For through what heaps of junk I churn
As I go through the valley!
"By dirty dumps I hurry down
Where refuse lies in ridges
And folks bring garbage out from town
To heave it off the bridges.
"Mid wrecks of motor cars I flow
The bus, the truck, the flivver.
Oh, Men may come and men may go,
But I go on forever!"

"I slip, I slide, I gloom, I glance
O'er pipes and rods and wires;
I make the golden sunbeams dance
Among the worn-out tires.
"I chatter over pots and pans
In little sharps and trebles;
I bubble out among the cans
That quite conceal the pebbles.
"Til last polluted do I flow
To the polluted river;
Ah, saboteur! You come and go,
But I go on forever!"

—*British Columbia Wildlife Review*



Jim Sherman Photo

Pheasant legs tell a story, and collecting them is one of Officer Frank Starr's duties. By measuring spurs, the ratio of young roosters in the population can be computed.

The Pheasant Crop . . .

(Continued from page 73)

of the crop in 1954, the heaviest kill ever recorded in Iowa, yet reproduction in 1955 was the best we have had in recent years. Three-fourths of the fall population of cock birds are surplus birds whether the population is up or down. They are an annual crop and must be harvested as such.

No Stockpile

The fall surpluses of cock birds cannot be "stockpiled" and passed from one year to the next. The pheasant range has a carrying capacity that will support only so many birds through the winter, either the hunter takes the surplus of pheasants in the fall or nature will take it during the winter.

In early spring, surveys were made to measure the brood stock of pheasants. The 1956 spring populations were good as a result of excellent reproduction in 1955 and the relatively mild winter. So far, the surveys have been good.

When began a series of studies to

determine pheasant reproductive success in 1956. It's the hatch that counts, for 90 per cent of the cocks shot during the 1955 season were young birds.

With this significant fact in mind, data were collected from early spring to late summer in order to gain all possible information through this critical period.

Temperatures Tell

Our first indication of probable hatching success comes from a study of spring weather conditions, particularly temperatures. A warm, early spring indicates high nesting success; a cool one, poor reproduction. Mean temperatures for April and May have indicated the probable success of reproduction. (See graph.)

Temperatures were normal this year so we could expect average success for nesting hens. On the graph, notice the excellent 1955 reproduction, and the correspondingly high spring temperatures. Naturally, there have been exceptions to this general rule. Remember the cold snap in early May in 1954? It lowered the rate of hatch-

ing success below that expected from the average figures.

Sight counts were begun in mid-July, and continued through August. Brood counts cannot be taken until the chicks are five to six weeks old, since hens usually keep the very young chicks under cover.

More than 3,000 broods of young pheasants were recorded by officers and rural mail carriers. All hens were counted, with or without chicks. The ratio of young for each adult hen was used to show the relative hatching success.

Many Normal Broods

All surveys agreed that the 1956 hatch was a normal one for Iowa. Although the high rate of reproduction of 1955 was not reached this year, the 1956 hatch was much better than for the poor year of 1951.

Last spring this average production, coupled with the increased brood stock, spells a fall population this year about the same as in 1955, which was well above the previous five-year average.

In other words, the success of last spring's hatch was normal, but the high carryover of 1955 brood stock provided more normal broods and a good fall population of young birds for 1956.

There were indications that extreme weather conditions lowered populations in some parts of the state. Local areas hit by heavy hail or severe drought will contain fewer birds this fall. An increase was noted in eastern Iowa where conditions were more favorable.

Waste

Ringnecks have produced magnificent sport for Iowans, but let's not waste them. Our crippling loss is still above 15 per cent.

If at all possible, hunt over a good dog. If you can't, at least mark each downed bird with great care and make every reasonable effort to find him. The rugged, gallant ringneck pheasant deserves something better than being left crippled by an impatient hunter.

DEER MOVE IN CLOSE TO TOWN

If there are any local archery enthusiasts who wish to try their hunting marksmanship this fall, the deer are cooperating. They are, it seems, coming into range.

Deer have been reported only a short distance from the edge of town. At the Wayne Klahn farm only a half-mile east a deer has been seen on a couple of occasions; and deer have also been seen at the Westermann place southeast of Treynor. Wayne Klahn reports that he watched one of the agile animals for some five minutes one day recently, during which time it hopped lightly over three fences in order to get into a cornfield.

Open season for bow and arrow hunting of deer begins in a month from now, on October 13. Possibly the visible presence of deer close at hand may bring out more would-be Hiawathas.—Record, Treynor, Iowa.

VETERAN CONSERVATION OFFICER DIES



Jim Sherman Photo.

J. Z. Stevens, 1899-1956

One of Iowa's veteran conservation officers, Jack Z. Stevens, 57, died September 24 at Clear Lake, following a 7-month illness.

Stricken by a heart attack in late March, Stevens was on limited duty at the time of his death. In term of service, he was the second oldest Iowa conservation officer, having been appointed April 1, 1933, as deputy game warden under the old State Fish and Game Commission.

In 1935, when the present State Conservation Commission was formed, he was appointed state conservation officer. His early service was spent in statewide enforcement work and he was later assigned to Boone and Greene counties as a game warden. In August, 1935, he was assigned to Cerro Gordo County, and had made his home at Clear Lake until the time of his death.

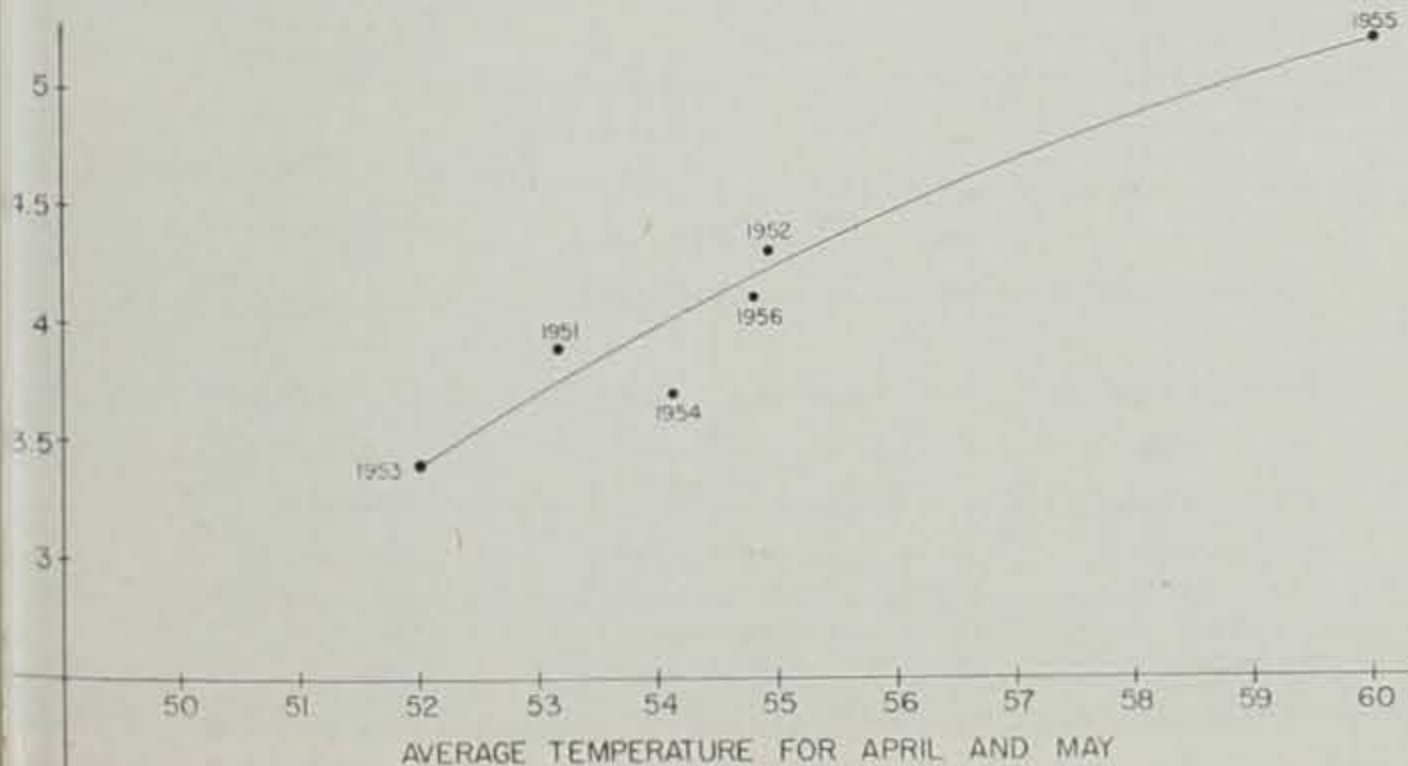
A colorful and efficient officer, Jack was "Mr. Clear Lake" to thousands of Iowa hunters and fishermen. Funeral services were held September 26 at Clear Lake, and were attended by many sportsmen who had known Jack since they were children. Burial was at the Memorial Cemetery at Clear Lake. Jack Stevens is survived by his wife, Helen, of Clear Lake; a sister, Mrs. Ruth Waring of Boone, and a half-brother, Boyd L. Lund of Des Moines.

DUCKS FROZEN OUT, DISGUSTED

Sun Valley, Idaho—Pity the poor mallard: Shot at during duck hunting season, deceived the year-around.

A flight of mallards swooped down over this resort Wednesday. Three times they tried to land. Three times they failed. Finally they gave up in disgust and wheeled off to a nearby lake.

Their first landing target: An outdoor ice skating rink.—Evening Tribune, Des Moines, Iowa.



Comparison of average pheasant broods and average spring temperatures for the past six years. The 1956 figures and field reports indicate a good season ahead.



Jim Sherman Photo.

If you're lucky, and the 'coon isn't, the dogs may hold him "treed" until you get there—if you don't break a leg on the way.

Little Brother . . .

(Continued from page 74)
eggs, and there is one record of a 'coon climbing sixty feet to a red-tailed hawk's nest, eating the eggs, and then curling up in the nest and falling asleep! The observer didn't say what happened when Ma Hawk came home.

Although raccoons are not closely related to the bears, they are often compared with them. Like

bears, 'coons are omniverous, and will eat almost anything. They love berries and young corn. Like bears, they are plantigrade, and walk flat-footed. And, like many bears, they often choose to die facing their enemies.

Rough Customer

A big male raccoon has plenty of fire if he's pushed, and can cut a good dog "deep, long, wide and consecutive." A large female 'coon

with young can be a terror. There is an old hunting story that 'coons may lead pursuing hounds into deep water and kill them by climbing on their heads and drowning them. If this is fiction, it's at least universal, and believed by thousands of hunters. It could happen. A raccoon is a strong swimmer, a powerful animal, and is well armed. Big adult males in Iowa have been reported to weigh almost 40 pounds. One out-of-state report indicated a weight of 49 pounds, but was not verified. Anyway you look at it, a boar 'coon weighing over 30 pounds can handle a lot of dog.

Most of our Iowa raccoons, however, weigh from 10 to 20 pounds, and are at their heaviest when they go into the winter. Raccoons do not hibernate in the true sense, but may sleep for days at a time when winter really cracks down and the going gets tough. Unlike hibernating woodchucks and ground squirrels—wintering raccoons do not show a drop of body temperature and pulse rate; they are not true sleepers, but are snoozers, and if disturbed during their winter nap, they can awaken instantly and be ready for action.

Raccoon Mystery

Until recent years, there weren't many raccoons in Iowa. In Galland's *Iowa Emigrant*, published in 1840, it was stated: "Raccoons are in great abundance in every district of the state, and more especially along the watercourses. They constitute the pork of the Indians."

That was in 1840. For many years after that, Iowa raccoons were almost unknown.

Then, in the 1920's, something happened and raccoons began to appear in Iowa. They began to appear in some trappers' catches, although to most trappers a raccoon remained far more difficult and unusual to catch than a mink. But since the late 1920's, raccoons have steadily increased in Iowa, and they are now a common mammal. The present status of the raccoon has only been reached in the past 30 years, and what depressed the 'coon population before that is not known. Perhaps the

comeback was made under protection, or because the raccoon had ceased being an important game animal and people had forgotten how to hunt them. Perhaps there were important changes in the environment that made the comeback possible. Whatever the reason, Br'er Coon is back, and thousands of Iowa hunters are glad of it.

'Coon Nights

Raccoons are invariably hunted with trailing hounds. The object is to tree the 'coon before he can den up. This may take some doing, for old 'coons become expert at tangling trails, crossing and recrossing streams, and taking to trees.

The dampish, not-cold nights of late fall are best for this sort of thing, nights when 'coon scent hangs strong and pungent for the dogs. A broad, strong band of smell for the dogs to run by.

Those are the nights! Those apple cider nights of late fall with fur moving along the river and an old moon buried in the low clouds. The kind of nights when hunters follow their hounds through tangled lowlands of soft maple and box elder in a November Parade.

There'll be lanterns swinging under the hill, and the boys cussing the catbriers and grapevines that keep them from their dogs. Then, up the river away and ahead, the full-voiced hounds will be chopping at the trail, with the young dogs all antsy and boneheaded, and the older dogs with their scars and patient ways. And farthest along—leading the parade—will be Old Zip Coon himself, growling and chirring under his breath because he'd rather eat than run tonight, and working himself up into a state where he'll purely comb some burrs out of a few dogs!

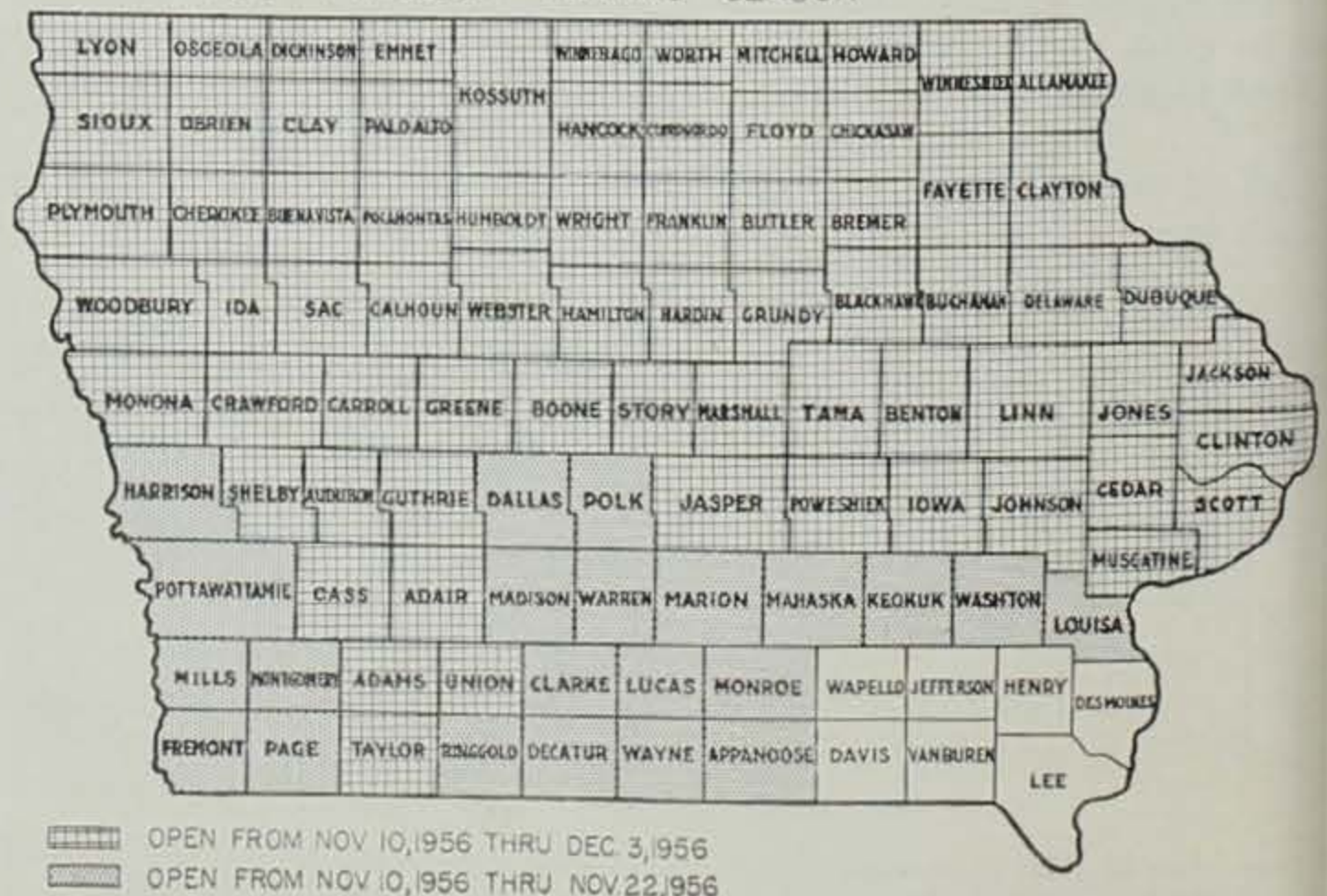
And he'll do it, too, so don't feel sorry for Old Zip. You can't kill a legend.

The immature seeds of American lotus, common along the Mississippi, are said to be delicious either raw or cooked. They taste much like chestnuts, and were a favorite food of the Indian.



Iowa raccoons go big, and 30-pounders are not rare. A big boar 'coon can absorb a lot of punishment, and can cut a young dog down to size.

1956 PHEASANT HUNTING SEASON



DUCK HUNTERS CAN HELP WATERFOWL

Sportsmen throughout the nation have an opportunity to bring about an immediate increase in the waterfowl population if they will cooperate in an effort to reduce serious crippling losses, according to the Atlantic Waterfowl Council.

Millions of ducks are being lost annually through crippling, and reduction of this loss is possible in only one way—by the hunters themselves. Participation by each hunter in a self-imposed campaign to kill cleanly and to recover each bird downed is the only way the job can be done.

To emphasize the seriousness of this crippling loss, the Atlantic Waterfowl Council cites figures obtained from recent studies by a number of state fish and game departments. These show that annual crippling losses range from 8 to 53 per cent, and average 25 per cent on a national basis for ducks that are downed in sight of the hunter but go unretrieved." Obviously, the unobserved birds which are hit but succumb later add substantially to the total.

It may well be that one bird is lost for each two that are taken home by the hunter. A clue to these additional losses is found in survey studies in the west which show that 25 to 35 per cent of the ducks examined carried shot in their body tissues.

"The problem of crippling losses relates directly to gunning practices. That is why the solution lies with the gunners," the Waterfowl Council advises.

According to the Council, practices which cause this crippling are:

1. Trigger-happy shooting; that business of letting fly at anything that passes even though there isn't a good chance of bagging the bird.

2. Inability to judge distances. Shooters with this handicap attempt to knock down every duck that flies over. In many cases, birds are hit but seldom fall. This type of shooting frightens away all ducks that might normally use an area and spoils the hunting for all gunners.

3. Poor marksmanship—the kind of gunning demonstrated by the fellow who doesn't bother to practice during the off season. This gunner tries to regain his shooting eye by firing at every bird that comes into sight.

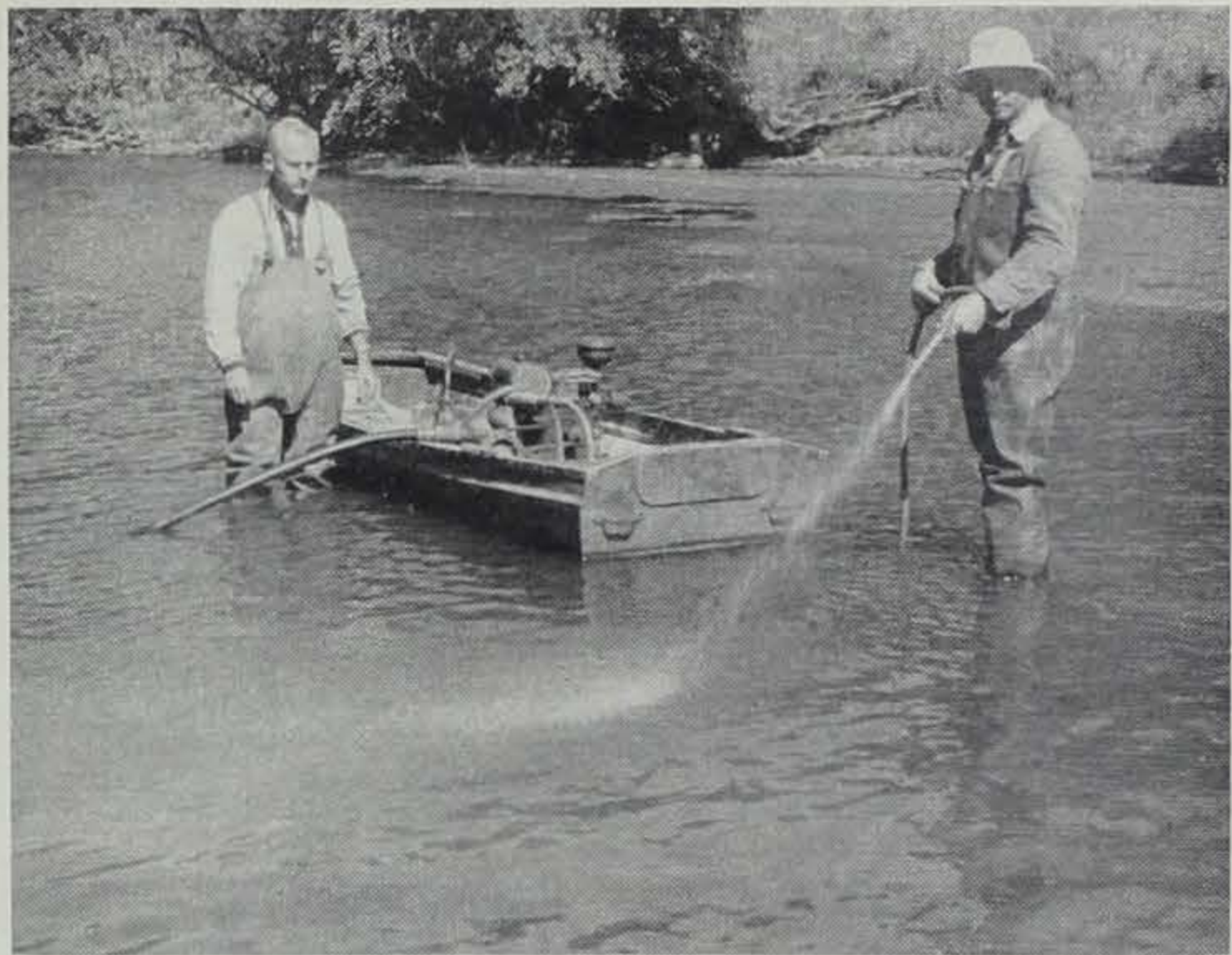
4. The inability of some shooters to recognize the limitations of their guns and ammunition. Although modern shotgun shells have excellent performance, too many shooters try to kill ducks past the point at which they can properly swing with the bird and shoot.

5. Many downed birds are lost because the hunters do not use a suitable retrieving dog, or because the birds are dropped in places where there is no opportunity to recover them.

The heaviest crippling losses occur early in the season in marshes when the vegetation is most dense. The use of waterfowl decoys tends to reduce crippling losses if the hunter positions himself so that all of the decoys are within gun range and then shoots only at those birds that come in or over the spread. Some losses occur in open waters when the birds are not hit solidly.

The Waterfowl Council suggests that observance of the following code would assist waterfowl shooters in voluntarily undertaking a united campaign to reduce the number of ducks and geese that are hit but not retrieved each year:

1. Learn to use your gun and



Biologist Tom Moen watches rotenone being sprayed into the Des Moines. The fish kill cost, about \$11 per mile of river, may offer cheap, total war on rough fish.

Rough Fish . . .

(Continued from page 76)

vulnerable times. The life span of a gizzard shad is about three years, and if young shad could be killed in a lake for three consecutive seasons during spawning periods, a powerful check would be exerted.

In early September, biologists Earl Rose and Tommy Moen treated a 28-acre portion of Storm Lake with dilute rotenone, killing thousands of young gizzard shad but no game fish. It was decided to project this on a full scale, and treat the entire lake.

Two commercial crop-dusting planes were hired to spray Storm Lake with a minute dilution of rotenone. (In his blitz of the Des Moines River, Harrison used a concentration many times more powerful.)

Promising Kill

Unlike the river treatment, there was no way to accurately determine the extent of the Storm Lake kill. Long shoals of dead shad washed in on the north shore of the lake, and on some beach areas they were heaped in broad windrows for hundreds of yards. Thousands sank to the bottom. Rose made an early estimate of 300,000 pounds of dead adult shad, and

could not even hazard a guess on the total poundage of dead young shad.

The biologists noted many dead young channel cat after the spraying, and the next day they found about 2,000 dead adult walleyes. "The heavy wind made flying difficult," Rose said, "and caused some spray lanes to overlap and concentrate the rotenone in deeper water. This killed some game fish." But immense poundages of shad were also killed, and Rose, Moen, and Storm Lake fishermen were pleased with the results.

The day after the treatment, a sample haul with a small otter trawl revealed 80 dead shad and several that were dying. In the same net were small crappies, walleyes and catfish, all in good health. Deeper samplings yielded countless young-of-the-year shad from a lake bed literally covered with dead weed fish. No game fish were found in these bottom samples.

Final results of the two experiments will not be known for months, but early findings are encouraging. New tactics and weapons are being used in the war against Iowa's rough fish, and while we cannot win, we may at least stop losing.

ammunition; know their capabilities and their limitations.

2. Shoot only at birds that are within reasonably close range.
3. Use a retrieving dog when at all possible.
4. Be a sportsman in the true sense of the word.—*Outdoor News Bulletin.*

FARMERS BUILT 2,181 PONDS

Iowa farmers built 2,181 ponds in the year ended last June 30, bringing the state total of farm ponds to 14,209, Soil Conservation Service records show.

The agency said a record number of 78,800 farm ponds were built in the nation between June 30, 1955

and June 30, 1956, in soil conservation districts.

Iowans also planted 221 acres to trees in the same period. This brought the state's total to 24,946 acres planted by Iowa farmers.

Other soil conservation activities in Iowa during the year and the cumulative total through last June 30:

Pasture planting, 16,253 acres and 239,595 acres; terracing, 2,926 miles and 25,421 miles; contour farming, 162,123 acres and 2,600,406 acres; and wildlife area improvements, 6,783 and 21,845 acres.

The agency said there are 56,649 soil conservation district co-operators in Iowa covering 10,317,214 acres.—*Times, Cherokee, Iowa.*



Jim Sherman Photo.

About one-fourth of ducks shot are lost by the hunter—a waste that a good retriever could reduce. For all bird hunting, a good dog adds joy to the game and birds to the bag.

NEW DUCK HUNTING AREA LOOKING GOOD

The new Colyn Game Area south of Chariton, described in last February's CONSERVATIONIST, is looking good for this fall.

The two small lakes on the area were partly filled by late summer rains, and the 200-acre northern impoundment now contains about 125 acres of water. The smaller 99-acre southern basin is nearly full.

This smaller pool will be held as a refuge during the waterfowl season, providing an area for ducks to rest and to prevent their being "burned out" of the district by heavy hunting pressure. The bigger pool will be open to public hunting.

Both water areas consist partly of flooded timber and wasteland. The "hunting pool", now containing over a hundred acres of water, is a maze of trees, stumps, smartweed, and long grasses — all flooded. In early September the area swarmed with teal that sought refuge in heavy, flooded cover. There were also some big ducks in the vicinity.

All in all, it looked good. It does need more water, but when you look at the state in general it does appear to be a promising hunting

ground.

Another good rain might fill both pools to capacity. They have a huge combined watershed (11,000 acres) and game managers have quipped that a heavy dew on this massive watershed would probably cause a flash flood in the Colyn basins.

Boats will be allowed on the pool open to hunting, but may not have motors — which makes sense on an area of this size. There is certainly little need of a power boat on a marsh so small. Sculled or rowed boats will be welcome, and there will be plenty of cover for boats in the flooded weeds and timber. The Colyn Game Area is about 10 miles southeast of Chariton.

A few miles east of this area, Brown's Slough is also in pretty good shape for waterfowling, and seems to contain more water than last spring. This slough furnished excellent gunning last fall.

Permanent blinds will not be allowed on either area, but temporary blinds of grass and weeds may be built daily. Also, under a new policy, decoys may not be left overnight to "stake claim" to a particular shooting location.

Colyn and Brown's Slough are projects of the Federal Aid Program, and were constructed under the Pittman-Robertson Act from funds furnished by federal excise taxes on sporting arms and ammu-

nition. For such approved projects the government furnishes 75 per cent of the cost from these taxes with the remaining 25 per cent paid by the State Conservation Commission.



Colyn Area's south pool, shown here with 90 acres of water, will be held as a waterfowl refuge. The bigger north pool will be open to public hunting.

LIFE HISTORY CHART OF MAMMALS IN IOWA

Name	Range In Iowa	No. of Litters Annually	Breeding Season & Habits	Gestation Period	Number of Young	Habitat	Food	Length	Weight
Northern Coyote <i>Canis latrans</i>	Irregular	1	February Monogamous	63 days	5-7	Terrestrial	Carnivorous	2 1/2-3 ft.	20-35 lbs.
Southern Woodchuck <i>Marmota monax monax</i>	General	1	Monogamous	?	2-8	Terrestrial, Fossorial	Herbivorous	22-27 in.	
13 Striped Ground Squirrel <i>Citellus l. tridecemlineatus</i>	General-M-North	1	March Monogamous	40-60 days	7-14	Terrestrial, Fossorial	Herbivorous	11 in.	
Franklin Ground Squirrel <i>Citellus franklini</i>	General	1	Late May Monogamous	40-60 days	4-7	Terrestrial, Fossorial	Herbivorous	14 in.	
Gray Eastern Chipmunk <i>Tamias striatus griseus</i>	Eastern Southeastern	1 plus	Spring or Fall	30 days	4-5	Terrestrial Arboreal	Herbivorous	9-10 in.	
Western Fox Squirrel <i>Sciurus niger rufiventer</i>	Wooded parts	1 plus	Spring and Summer Monogamous	37-60 days	3-4	Terrestrial Arboreal	Nuts, Acorns, etc.	21 in.	1-3 lbs.
Northern Gray Squirrel <i>Sciurus carolinensis leucotis</i>	Eastern	1 plus	Early Spring Monogamous Polygamous	44 days	2-4	Terrestrial Arboreal	Nuts, Acorns, etc.	20 in.	1 lb.
Red Squirrel <i>Sciurus hudsonicus</i> (var.)	General	1 plus	Spring and Summer Monogamous	37-50 days	3-5	Arboreal Terrestrial	Nuts, Acorns, Grains, etc.	12-13 in.	
Eastern Flying Squirrel <i>Glaucomys volans volans</i>	Wooded parts	1 plus	Spring Monogamous	40 days	3-6	Arboreal	Nuts, Acorns, Grains, etc.	9-10 in.	
Missouri River Beaver <i>Castor canadensis missouriensis</i>	General	1	Monogamous and Polygamous	90 days	3-5	Aquatic	Herbivorous	40-43 in.	45-55 lbs.
Common Muskrat <i>Ondatra zibethica zibethica</i>	Eastern one-half	2 plus	Spring and Summer Monogamous	30 days	3-8	Terrestrial & Aquatic	Herbivorous	22-23 in.	
Great Plains Muskrat <i>Ondatra zibethica cinnamomina</i>	Western one-third	2 plus	Spring and Summer Monogamous	30 days	3-8	Terrestrial & Aquatic	Herbivorous	20 in.	
White-tailed Jack Rabbit <i>Lepus townsendii campanius</i>	General	2	Early Spring Polygamous	30 days	3-5	Terrestrial	Herbivorous	24 in.	5-6 lbs.
Mearns Cottontail <i>Sylvilagus floridanus mearnsi</i>	General	2 plus	Spring and Summer Polygamous	28 days	4-7	Terrestrial	Herbivorous	18 in.	
Plains white-tailed deer <i>Odocoileus virginianus macrourus</i>	General	1	Polygamous	205-212 days	1-2	Terrestrial	Herbivorous	90 in.	150-300 lbs.
Virginia Opossum <i>Didelphis v. virginiana</i>	General	2	Jan., Feb. Monogamous	15 days	10-18	Arboreal-Terrestrial Fossorial	Omnivorous	33 in.	5-10 lbs.
Eastern Raccoon <i>Procyon lotor lotor</i>	General	1	Jan., Feb. Monogamous	63 days	4-16	Arboreal, near streams Terrestrial	Omnivorous	30 in.	10-20 lbs.
Bonaparte Weasel <i>Mustela c. cicognani</i>	Northern	1	Late March Polygamous	?	5-8	Terrestrial & Semi-arboreal	Carnivorous	9-11 in.	?
Least Weasel <i>Mustela rixosa</i>	General	1	Feb., March Polygamous	?	5-8	Terrestrial & Semi-arboreal	Carnivorous	6-7 in.	?
Long-tailed Weasel <i>Mustela longicauda spadix</i>	General	1	Feb., March Polygamous	?	5-8	Terrestrial & Semi-arboreal	Carnivorous	15-18 in.	1/4-1/2 lb.
Common Mink <i>Mustela vison mink</i>	General South	1	Feb., March Promiscuous	42 days	5-6	Terrestrial-Arboreal Semi-fossorial-aquatic	Carnivorous	23-25 in.	1 1/2-2 lbs.
Mississippi Valley Mink <i>Mustela vison letifore</i>	General North	1	Feb., March Promiscuous	42 days	5-6	Terrestrial-Arboreal Semi-fossorial-aquatic	Carnivorous	24-26 in.	1-2 lbs.
Canada Otter <i>Lutra canadensis</i>	Northeast	1	Jan., Feb. Monogamous	61 days	3	Terrestrial, Aquatic	Carnivorous	53 in.	24 lbs.
Prairie Spotted Skunk <i>Spilogale interrupta</i>	General	1	Jan., Feb. Polygamous	?	4-5	Terrestrial	Omnivorous	20-22 in.	1-3 lbs.
Northern Plains Skunk <i>Mephitis hudsonica</i>	Northern one-half	1	Jan., Feb., March Mon. and Poly.	63 days	4-8	Terrestrial	Omnivorous	24-29 in.	?
Illinois Skunk <i>Mephitis mesomelas avia</i>	Southern one-half	1	Jan., Feb., March Mon. and Poly.	63 days	4-8	Terrestrial	Omnivorous	25 in.	4-8 lbs.
Common Badger <i>Taxidea taxus taxus</i>	General	1	Monogamous	?	2-4	Terrestrial	Omnivorous	23 in.	15 lbs.
Northern Plains Red Fox <i>Vulpes regalis</i>	General	1	Jan., Feb. Monogamous	51 days	4-9	Terrestrial	Omnivorous	40 in.	7-12 lbs.
Wisconsin Gray Fox <i>Urocyon cinereoargenteus ocythus</i>	Northeast	1	February Monogamous	51 days	4-9	Terrestrial	Omnivorous	41 in.	6-12 lbs.
Mountain Lion <i>Felis orogenesis hipolestes</i>		1		91-97 days	1-4		Carnivorous		