

IOWA CONSERVATIONIST

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UNDERGROUND SHARECROPPER

INTRODUCTION TO IOWA CANOE TRIPS

By Ralph Church
and Harold Allen

EDITOR'S NOTE: This is the introduction to a series of articles on canoe trips on Iowa streams. They will contain "stream dope" to aid the occasional canoeist in selecting the most interesting waters, travel time, launching and landing locations and other pertinent information.

In these days when the desire for outdoor recreation is at an all time high, and almost five million persons visit our state parks annually, canoeing as a form of recreation is comparatively neglected in our state. This reflects a lack of appreciation of the possibilities for canoeing in Iowa.

It is too often assumed that canoeing is a sport for experts and far-off places. True, there is a thrill to traveling the unpopulated places of the far north and an excitement in running the white water rapids of her streams that cannot be duplicated. These are for the expert, of strong back and adventurous spirit, and for those too short and infrequent periods when he can go far from home for his recreation. But the calm serenity of a day spent floating down a beautiful stream, the ever changing scenery, the exceptional opportunities to enjoy nature—these are aspects of canoeing which appeal to the expert and novice alike, and which can be as thoroughly enjoyed in Iowa as elsewhere.

Iowa canoeing is, generally speaking, of the calm and peaceful variety—lazy down-stream floats, with few and short portages, seldom far from a village or a road. There are innumerable possibilities for one day or weekend trips. There are also many possibilities for those who wish to spend a week or more on the stream. On all of them you will be amazed at how far removed you are from those

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The gopher does not like to be above ground and when there he moves in a limited area with swiftness and economy of motion.

SHEATHING THE PHEASANT MOWER

By Roger Boehnke
Iowa Cooperative
Wildlife Research Unit
Iowa State College

Two crows flapped away from the freshly cut hayfield. Earlier, almost as soon as the mower had been lifted over the pheasant nests, the two birds had dropped down on the little islands of uncut hay and eaten the hidden eggs. Across the field a hen pheasant with both legs cut off lay dead. The peasant nursery in the heart of a great pheasant hunting area, had been ravaged and sacked.

Tilford Christenson, owner of the land, drove his tractor to the fence and watched the crows with disgust. It had cost him valuable time and hay to lift the mower over the nests. The islands of hay only served as nest markers for the crows. Like most farmers, he disliked cutting into pheasant nests.

"Fifteen years ago," he said, climbing down from the tractor, "I mowed with horses. They went

slower and the hens could get away before the mower hit them. Now, these fast tractors don't give them a chance."

Hen pheasants are not legally shot in Iowa and each spring a large population is left to nest. Yet, each fall the pheasant population comes out about the same in most parts of the state. Then many hunters and wildlife managers start asking—"What happens to all of the pheasants?"

Research in northern Iowa shows that the pheasant's favorite nesting site is an alfalfa hayfield where mowing and nesting come at the same time. The hen holds the future to next year's hunting, and is being harvested with the hay.

But the farmer is running a business. As much as most of them hate to cut into pheasants and nests, they have to mow when the hay is ready. Usually this is one to two weeks before the peak of hatching. The big question is: what can be done about it? The

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By John Madson
Education Assistant

Underground, in a dark, cool world of roots, fishworms and grubs, lives the Digger. By instinct he is our greatest miner, and by profession a sharecropper. While his human landlords cultivate crops above the ground, the Digger harvests them from below.

He is known as *Geomys bursarius* by a few people and "pocket gopher" by many. To scientists the latin name means "earth mouse with pockets"; to most people the name "pocket gopher" means mounds and tunnels.

He is dedicated, heart, tooth and claw, to digging. He is the King of Miners, and while Old Badger can dig faster he can't match the Digger's tireless, patient ability to move dirt. Victor Cahalane tells of a gopher digging 300 feet in a single night. To match this a 150-pound man would have to dig a trench 17 inches wide, 17 inches deep and 7 miles long in 10 hours.

Many have never seen a pocket gopher. Like the mole, he is best known not for his appearance, but by his works. These are the fan-shaped mounds of fresh earth that appear in hayfields, pastures and roadsides. They are the spoil-banks of the gopher; the tunnel earth that has been brought up from below through entrance holes and dumped on the surface.

When the Digger is top side he is nervous and uneasy. He does not like to be above ground, and moves in a limited area with swiftness and great economy of motion. When he feeds or gathers nest material he snatches with paws and mouth so fast that the eye can scarcely follow. Swiftly cutting vegetation, he stuffs it into the cheek pouches that give him his common and scientific names.

Unlike the chipmunks and other rodents, the cheek pouches are true pockets and not just loose cheeks. They are lined with fur and open to the inside of the mouth by small slits located near the lower jaw. The pockets extend from the cheeks back along the neck to the shoulder. They are

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MULTIFLORA ROSE FENCE

This old business of fixing fence is getting to be for the birds and other wildlife, too.

During recent years, there have been a number of farmers in Dickinson County to experiment with the latest, the multiflora rose. No fuss, no bother—just plant 'em and wait for them to grow.

Conservationists have done a great deal toward urging more of this new type rose, which when fully grown can serve as an ideal fence for around ponds and other wildlife areas.

The rose will grow to a height of six to eight feet and has a spread of about the same distance. If the multiflora rose flourishes, it will turn almost any domestic animal, and yet, will serve as an excellent runway for wildlife.

Its berries furnish winter food



Two-year-old multiflora rose fence planted on the contour thriving in corn. Jim Sherman Photo.

for birds and its bush furnishes an off-the-ground nesting place.

Scattered success has been had with the plant in Dickinson County. Several of the fences have nearly reached a full growth here and seem to make quite a hit with their owners.

As is naturally expected, the multiflora rose has found its place in this region at the urging of the conservationist. Walt Thoreson, the Dickinson County district's technical advisor, says the rose will apparently do well here, provided that the ground around its roots is kept cultivated.

The root system of the rose does not hamper crops. The plant requires practically no maintenance once it is established.

Depending on its growth, the rose takes roughly from four to

eight years to reach a height of usefulness as a fence.

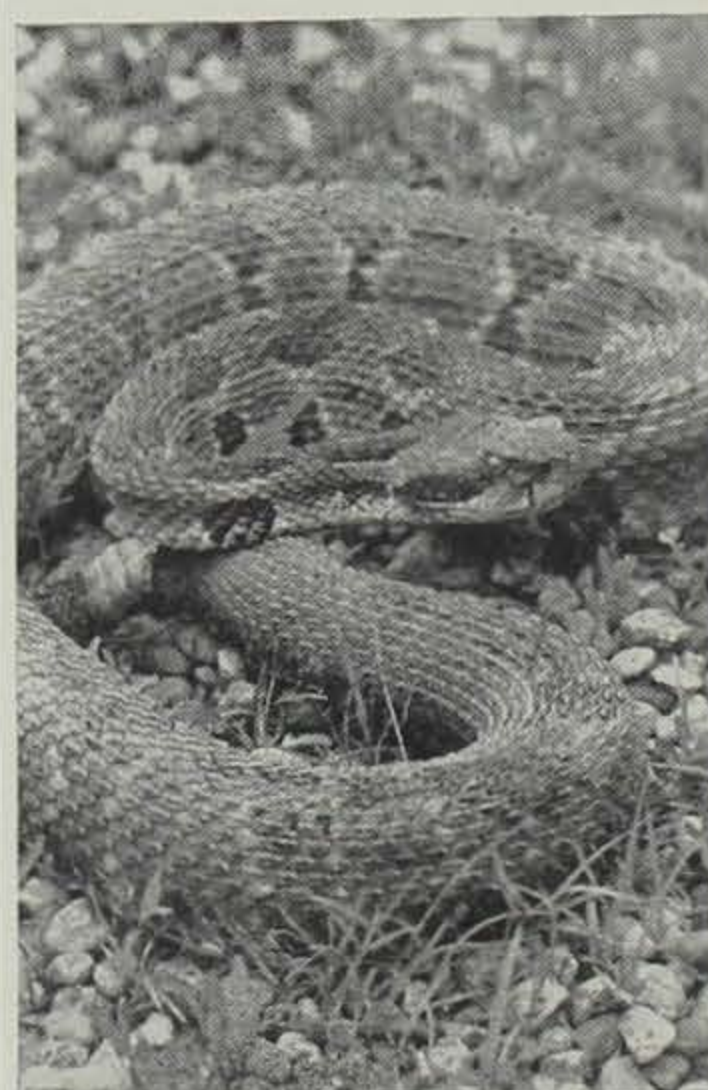
The day may be near at hand when the conservation farmers will be able to strike the jobs of fence-fixing off their list of things to do. —*Spirit Lake Beacon.*

"AS SLOW AS A STRIKING SNAKE"

An old myth claims that a striking rattlesnake is fast enough to dodge a rifle bullet, but recent experiments by a Colorado zoologist have shown that an ordinary man can beat a rattler to the punch.

In an article in *Animal Kingdom*, published by the New York Zoological Society, Dr. Walker Van Riper tells of measuring the speeds of striking rattlesnakes. The deadly stroke of each rattler was timed and photographed with special equipment as the snake struck at a warm rubber bulb.

In 20 tests the average speed of the striking snakes was 8.1 feet per second, one of the slowest of the animal movements we usually



Contrary to popular opinion the striking speed of snakes is relatively slow.

consider as being "quicker than the eye." With the same timing equipment it was found that a blow from the writer's fist traveled 18.1 feet per second, which is probably only about one-third that of a professional fighter.

Van Riper also mentioned that the average man can walk at a rate of 5.8 feet per second or about 4 miles per hour. This is four times as fast as a bull snake can travel and 30 per cent faster than the fastest of our snakes, the western whip snake, which slithers along at only 3 miles per hour, or about 4.4 feet per second.

The scientist said that the speed of snakes, as the speeds of most small animals, is exaggerated because of their small size and snakes give the false impression that they are faster than they really are.



Use long shanked hooks, for bullheads usually swallow the bait and short hooks are hard to remove. Jim Sherman Photo.

BULLHEADS

WHERE: Nearly every pond, river and lake in Iowa, with the exception of trout streams, which are too cold for them. They prefer fairly quiet waters.

WHEN: From the time the ice goes out until the water freezes over again. The best early fishing in lakes is near an inlet after a warm spring rain.

HOW: Use baits such as fish-worms, night crawlers, liver, shrimp, beefsteak, or grubworms. Use long-shanked hooks, for the fish usually swallows the bait and a short-shanked hook would be hard to pull out. An ideal bullhead pole is one 7 to 9 feet long, fairly stiff, and with guides. Use slip sinkers, not too heavy if fishing with a rod, and if fishing with a cane pole where no casting is necessary, use no sinker at all.

Fish on the bottom of the lake or stream, in both clear and muddy water, and fairly close to the shore. —*Iowa Fish and Fishing.*

OUTDOOR SHOP TALK ON TV

April 12 marked a milestone in conservation education as the Iowa Conservation Commission released the first in a series of television programs to every TV station transmitting to Iowa viewers.

The 13-week series entitled "Outdoor Shop Talk," produced entirely by commission personnel, is the first of its kind in the nation. Each of the programs is 15 minutes long and consists of a short studio interview followed by a specially prepared telefilm on outdoor Iowa. The spring program series includes an Introduction to Series, the Spring Goose Flight, the Traveling Exhibit, Trout Hatcheries, Conservation School, The Game Warden, The Man in the Park, Stream Fishing, Lake Fishing, State Park System, Water Safety, Kids' Fish Days, and a Conclusion to Series.

The series has been scheduled on the following stations:

WOI-TV, Ames	Monday	10:15-10:30 p.m.
WMT-TV, Cedar Rapids	Monday	6:30- 6:45 p.m.
KG-TV, Des Moines	Sunday	10:15-10:30 p.m.
KQ-TV, Fort Dodge	Wednesday	8:00- 8:15 p.m.
KV-TV, Sioux City	Monday	10:45-11:00 p.m.
KWWL-TV, Waterloo	Friday	6:30- 6:45 p.m.
KCRI-TV, Cedar Rapids	Monday	7:15- 7:30 p.m.
WOC-TV, Davenport	Saturday	1:00- 1:15 p.m.
KGLO-TV, Mason City	Thursday	9:15- 9:30 p.m.
WHBF-TV, Rock Island, Ill.	Saturday	4:30- 4:45 p.m.
WOW-TV, Omaha, Nebr.	Saturday	11:15-11:30 a.m.
KMMT-TV, Austin, Minn.	To Be Announced	
WHO-TV, Des Moines	Wednesday	9:00- 9:15 p.m.

Program times may vary, or may not be listed here, but can be found in local newspapers.

If the spring series is successful a fall series will be planned on hunting, gun safety, game management and other subjects.



A single bluegill nest in a farm pond may produce over 200,000 young. Jim Sherman Photo.

ROE AND LIBERALIZED FISHING

By Kenneth D. Carlander
Iowa Cooperative Fisheries Research Unit
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There is a deeply ingrained feeling among fishermen that the removal of fish is poor conservation. We have a long tradition of protecting the Mother and the Nest. With the recent liberalization of fishing regulation, fishermen are catching female fish full of eggs and some fishermen feel a compunction against removing the fish and its eggs from the lake before the spawning season.

What does biological research tell us of the desirability of removing this brood stock?

First of all, we recognize that fish are much more prolific than any of the higher animals. Even guinea pigs and rabbits are pikers compared to most fish. A female walleye produces 30,000 to 600,000 eggs per year; a female northern pike, 2,000 to 600,000 eggs; and white bass up to a million eggs a year. Species which build nests usually lay fewer eggs than species like the walleye, white bass, and northern pike, which scatter their eggs somewhat indiscriminately but even the nest builders have large families. A small female trout may produce only 100 to 200 eggs the first breeding season but as she grows larger her annual complement of eggs will average about 2,000. Channel catfish lay from 2,000 to 50,000 eggs per year; bullheads about 2,000 to 15,000; largemouth bass from 2,000 to 100,000 and bluegills from 2,000 to 50,000 eggs. A single bluegill nest may produce over 200,000 young, since several females often lay their eggs in the same nest. Only one male cares for each nest, however.

Second, it is obvious that all of these eggs cannot produce adult fish. On the average, it can be expected that the offspring from each female will produce only one pair of fish which live long enough

to spawn. If a greater number survived the fish population would soon become more than the lake could support. Then the fish grow slowly and none of them reach catchable size. (If all the eggs which two large walleye females lay in one spawning season hatched and the fish survived until they were mature, at about 2 pounds, there would be a solid acre of fish one foot deep with no space for water. These offspring would be more than 4 Spirit Lakes, or 6 Clear Lakes could support even if these lakes could support 100 pounds of walleyes per acre. It is doubtful that any lake could long support 100 pounds per acre of predatory fish such as walleyes.)

What happens to all the fish which don't grow up? Many of the eggs don't hatch, probably many of the fry die before they can find the proper food, thousands of the small fish are eaten by larger fish, many may be caught by fishermen before they have a chance to reach maturity, and others may be taken by diseases, by catastrophes such as winter kill suffocation, or becoming entrapped in a drying pool.

If the mortality is so great, it is not essential that there be a superabundance of offspring? Perhaps we still have to protect the brood stock, even though each individual female is extremely prolific. In a very real sense, quoting of fecundity figures, as I have done above, may be beating around the bush and may have no significance as to the need for protecting brood stock. Every species of animal is capable of maintaining its abundance as long as the environment is suitable. The reproduction may be very high to counterbalance a high mortality or the mortality may be reduced through added

protection of the offspring. It is one of the basic biological principles that, over a period of time, reproduction and mortality of a species must be equal in order for a species to maintain itself.

The main advantage that a fecund species has over a less fecund species is that it may increase more rapidly if conditions become more favorable. Sometimes this advantage backfires. The more fecund species may increase so rapidly that it overpopulates the improved environment and thus becomes subjected to starvation, intense competition, or increased mortality.

The best answer that I can give to the question of whether or not catching brood stock before it has a chance to spawn will decrease the population of the next generation is as follows: In the research on freshwater fish, I know of no study which shows that an increase in number of breeding fish increases the number of fish which survive until they, in their turn, spawn. On the other hand there are numerous instances where a few brood fish have produced large populations. Many situations are also known when an abundance of brood fish has undoubtedly prevented the survival of their offspring.

The law of carrying capacity is also significant in understanding the effect of removing some of the brood stock or eggs. The amount of fish which a lake or stream can support is limited by food, space, and a combination of other factors. The total poundage of fish which a body of water will support is called the carrying capacity. If the number of young fish produced is larger than usual, two things can happen. The fish may grow very slowly and become stunted because their aggregate weight quickly reaches the carrying capacity, beyond which there can be little growth unless some of the fish are removed. Or the mortality may be greater than normal, re-

sulting in about the usual number of catchable-sized fish.

Suppose the number of offspring is below the usual number because many of the brood stock were caught in the spring. The young fish then grow more rapidly and the mortality will probably be less than normal. Mortality rates of fish are correlated with the abundance of the fish. If room and food are plentiful as is the case before the total weight of fish reaches the carrying capacity, the mortality rates are low. If there are too many fish in relation to food and cover, predators and disease kill a higher percentage because the individual fish are less secure.

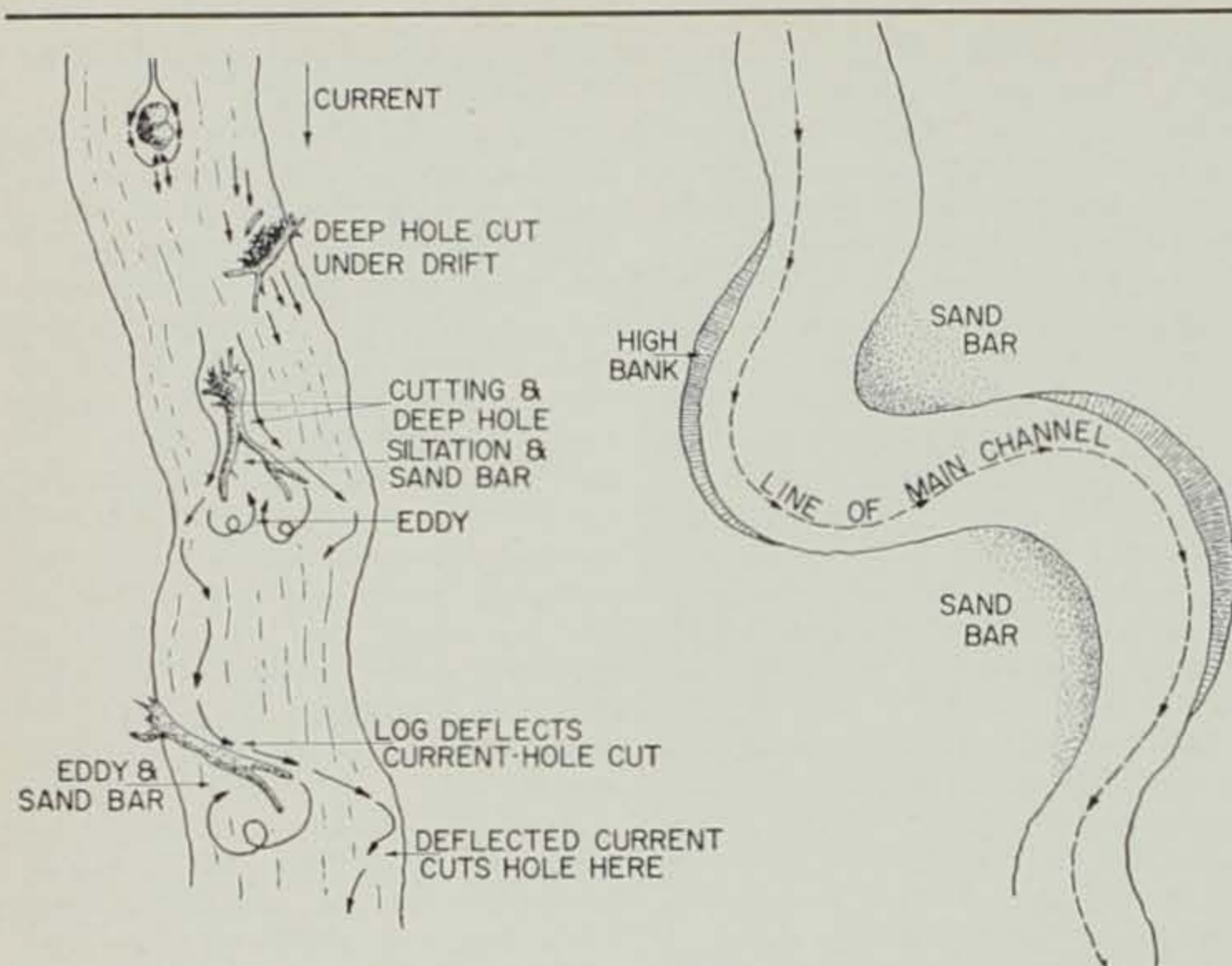
It is an accepted principle in fishery biology that the greatest production of fish can be secured when fish are removed from the lake as rapidly as possible, up to a limit. That limit is the point where the remaining fish cannot by reproduction and growth bring the lake to or near carrying capacity within a few months. This limit is seldom approached in fertile warm-water lakes. In most waters, more fishing would result in faster growth and more catchable fish than are available with the present amount of fishing. Liberalized fishing regulations are based upon recognition of this fact.

RABIES

Again let me warn you readers about wild animals that seem to be tame. When a naturally wild creature ambles about aimlessly, and is easily captured, rest assured there is something radically wrong with that wild creature. It is certainly sick—more than likely it is afflicted with rabies. If in picking it up you get a bite or a scratch, you are exposed to the disease from which the sick animal is afflicted. Leave such wild things strictly alone—your life may be at stake!—*Fins, Furs and Feathers, Manchester Democrat.*



This four-pound walleye is giving up 100,000 eggs to the abdominal pressure of the hatcheryman. Jim Sherman Photo.



EXAMPLES OF RIVER CUTTING

READING RIVERS FOR FISH

We don't know if Shakespeare was a fisherman, but in *As You Like It* he speaks of "books in the running brooks, and sermons in stones". So we do know that he studied rivers and if he was a fisherman, he was probably a good one.

Lessons can be learned from anything in nature, and from an angling standpoint rivers are worth pondering. *With practice a river can be read like a book and a correct translation means the difference between a novice angler and a crack fisherman.*

A river never rests, but is constantly shifting in its channel and carving, filling and changing. Experienced fishermen know that the bottom of a river is not uniform, but a tangled wilderness of holes, channels, cuts and bars.

When a stream bends, the water at the outside of the curve—like the rim of a wheel—moves the fastest. This rapid, swinging current at the far edge of the river cuts bank and bottom deeply. The water at the inside of the bend is much slower, for it need not travel as far and as fast to make the turn. As a result, the silt and sand load in the river settles out from the slowed current, and a mud or sand bar is formed. On the bend of any river you will find the same thing . . . the outside of the bend will have comparatively high banks and deep water . . . the inside of the bend will be gradual shelf of sand and mud.

If the bend is quite sharp the river may be deflected by the bank and "ricochet" across the stream bed to cut the opposite bank downstream. If the river is straight and without obstructions the channel will cut straight down the middle of the river bed, where the current, not slowed by "rubbing" against the banks, moves the fastest.

Uprooted trees furnish fine nat-

ural fish shelters as driftwood builds up against them. The water is deflected down into the stream bed by this surface obstacle, gouging out the bottom and resulting in a deep hole. Watch for such uprooted trees, brushpiles and drifts; they will always have fish under them, particularly in periods of low water. Driftwood may collect until it reaches the bottom of the stream and forms a natural wing dam. The river (if it is a small one) will be deflected at an angle across the channel. A hole will be cut where the current is deflected away from the drift and the current will also cut another hole in the opposite bank.

Obstacles such as half-submerged boulders are excellent fish cover. A large rock in the middle of a river will undercut on its upstream face and along its sides. Below the boulder the water eddies, slows, and deposits a small bar of sand or mud. The deepest area around such a rock is often along its sides, and as the river works on the stream bed beneath the boulder an interesting event takes place. The current washes away the river bottom beneath the stone, eventually causing the rock to topple into the undercut hole. That is why, over a period of many years, a boulder will "walk" upstream against the current, often for considerable distances!

Don't overlook concrete bridge pilings in a river, no matter what their size or the size of the river. There is almost always deep water beside them. If the piers have picked up a load of driftwood the river may cut down almost to bed-rock beside the unyielding pier, forming a deep, cool hole.

One of the reasons for the productive angling below dams is the fast water that carves out holes of considerable depth. This water has also been aerated by its turbulence and its load of life-giving oxygen is very attractive to fish during mid-summer level of low, stagnant water. The same conditions are also found in natural rapids and

riffles. This water is oxygenated and invariably cuts a hole at the tail of the fast water. That's where any sensible fish should be: in a deep hole with plenty of oxygen and food organisms washing out of the rocky riffle above. And game fish, being sensible critters, are usually there.

Another general rule to remember is that when a river slows and broadens, it often becomes shallow, while it is swift and narrow it is often deep. In some of the large, muddy streams try fishing where small, clear feeder streams flow into the larger river. Walleyed pike have a fatal weakness for such spots.

The boulder or log in the middle of the river is often a hangout for smallmouth bass if the river is a clear, rocky stream. The bass loaf along the sides of the boulder or just below its downstream face waiting for something to turn up. Smallmouths are also found in pools at the tails of rapids and riffles.

During the day walleyed pike prefer deep water, either in holes or in the shelter of cutbanks. In the evening, however, they invariably move up into the shallows to work on minnows and other food organisms. So, in the daytime, fish for walleyes on "the outside of the bend" in deeper water. Come evening, cast for them in the shallows on the "inside," just off the sand-bars where minnows school at night.

Channel catfish have a similar *modus operandi*, loafing beneath brush piles and deep cut bank holes during the day and moving out into the channel and below riffles late in the day, and finally up into the shallows at night. The angler who fishes deep holes at night is usually wasting his time. Work up into the sand or mud shoals. Big catfish are often found in water that barely covers their backs.

With all species of fish, the more broken and varied a river is, the better. Fish demand good cover and a variety of habitat. A straight,

Scattered through this issue are some brief tips on fishing gleaned from the midwest anglers' handbook, *Iowa Fish and Fishing*. For more complete fishing tips see the book itself, available for \$2.00 postpaid from the Iowa Conservation Commission.



Bluegills may be caught during the hot months when other fish are not interested in bait.

BLUEGILLS

WHERE: Almost any river or lake in Iowa.

WHEN: From June 15 to August 1, a period when some other fish are not interested in being caught.

HOW: Fish around docks or in weedy bays about five feet deep. Angeworms are excellent bait, but use small hooks, at least a number 10.—*Iowa Fish and Fishing*.

Quaking aspen, found in many parts of Iowa, was a favorite firewood of the old-time mountain men of the west. This aspen, when dried, gave off practically no smoke to betray cooking fires to Indians.—*J. M.*

slow, shallow stretch of river is just as monotonous to a game fish as to a game fisherman. Pick out streams with logs and rocks, with many curves, bends and holes. If you read such rivers correctly, they'll spell f-i-s-h.—*J. M.*



With practice a river can be read like a book. The correct translation means the difference between fish and empty stringers.



Many have never seen a pocket gopher, but his works, mounds of fresh earth in pastures and roadsides, are a familiar sight. Jim Sherman Photo.

Sharecroppers . . .

(Continued from page 33)

not used to carry dirt, but only food and nesting materials.

With his front feet the gopher stuffs cut grass first into one of the pockets and then the other. He can pack away enough food for a full meal in half a minute. He then pops back into his tunnel and slams the door behind him, a neat trick accomplished by shoving a bit of loose soil into place for an entrance plug.

Once sealed inside he slips down a foot or two into a horizontal passage. This is one of the feeding tunnels. These may be as much as half a mile of winding, twisting passages one gopher wide and one gopher high.

Here and there along these feeding tunnels are small pantries or food chambers. These are packed with all kinds of trash, moldy roots, withering grass and other slightly stale food items that Digger could not resist bringing home.

Somewhere along this maze of feeding tunnels is another downward shaft leading to the Digger's private chambers. The master bedroom may be from four to eleven feet beneath the surface. A few tunnels wander off from the nesting chamber, but these are not as extensive as the food tunnels above.

Even in his nesting chamber the pocket gopher packs food and finely cut grass. If it begins to spoil and becomes too much for him he simply moves to another chamber. The Digger may not be neat but he is always clean, and sometimes even has toilets along his passageways; small pits that are periodically covered and abandoned.

When the Digger gets a yen for fresh roots and grass, he goes upstairs to the end of a feeding tunnel. He begins work with his heavy front claws, loosening dirt and shoving it back between his front legs, beneath his body, and out behind him. During his mining his eyes are tightly closed and the

lids permit no soil particles to get into his eyes. Even his ears are valved to prevent entrance of dirt. If the soil is hard and dry, he may use his great yellow incisor teeth to loosen it, for like the beaver, his lips can be closed behind the front teeth, keeping dirt out of his mouth.

When much loose dirt has accumulated behind him the Digger pokes his head between his front legs, back between his hind legs, and twists at the same time. With a lightning flip he is then facing the other way in his tight tunnel. Lying on his belly he places his front feet, claws upward, in front of his face. Then he drives forward with his hind legs, a miniature bulldozer pushing the loose dirt before it. When there is more dirt than he can handle he digs a short tunnel to the upper world and *voila!* you have a gopher mound in your yard!

If you happen to be sitting nearby and haven't warned him with your footsteps, you'll get a rare look at the Digger. He isn't very pretty. His eyes and ears are small and at the front of his mouth is a pair of large, curved yellow buck teeth. His front feet are armed with sets of long, heavy claws, the tools of his trade. Our Plains Pocket Gopher is big, as gophers go. From his blunt nose to the base of his hairless tail he may measure 9 inches, with his tail adding another 4½ inches. Although a clean animal, his short velvet-soft fur tends to the color of the earth in which he lives. In Illinois and Iowa, for example, he is almost black; farther west he becomes lighter and sandier in color.

Except during mating season, pocket gophers are lone hands. They are morose, often vicious animals that will readily fight a man, dog or other gophers. If two gophers happen to meet in a tunnel they may battle to the death.

With the first spring rains, Digger throws caution to the winds and may even travel overland in

broad daylight. He is seeking a mate, who hides coyly in her tunnel and waits for Galahad Gopher to find her. Since it isn't too easy for pocket gophers to get together, the mating season may be as much as three months long. If it was only a week or so, the pocket gopher might become extinct. There is much variation in litter size, which may range from one to nine young. The birth of these baby gophers is an especial miracle of nature.

To be born, all baby mammals must pass through a circular opening formed by the fusion of various bones in the hip region, called the pelvic girdle. In tunnel-dwellers such as gopher, however, these bones are compacted and reduced to enable the animals to turn around easily in their snug tunnels. As a result, the gopher pelvic girdle is very small.

Dr. Lloyd Ingles, a California zoologist, reports that the pelvic bones of a young female pocket gopher could not possibly permit birth. However, during the first pregnancy, a hormone in the blood simply dissolves much, or most, of the pubic bones. Thus young pocket gophers can be born without difficulty, and their mothers keep their narrow hips!

Like any maligned wild creature there is some good in the pocket gopher, for his tunnels aerate the earth, mix soil and allow entry to moisture. By cramming some of his tunnels with food he provides much sub-surface organic material which enriches the soil with its decay.

However, pocket gophers can wreak havoc in orchards and gardens, where their sharecropping talents come into full flower. One may extend a tunnel down a row of potatoes, wipe out every hill, turn at the end and go down the next row. Young orchard trees are often killed by root gnawing and pasture and hayfield losses can amount to 10 per cent of the crop.

Adult minds cannot understand gophers. If you would destroy them hire a small farm boy. Farm boys and gophers seem to have an especial affinity. You may try trap or poison but the gopher will be safe from most of your assaults. He is king of the Diggers and belongs to the underworld and the underworld protects him well.

POCKET GOPHER CONTROL

Attack gophers in the spring and fall, when vegetation doesn't hide mounds. Poisoned baits are readily accepted by gophers. Any firm root vegetable can be used, and potatoes are excellent. Cut into strips ½ by ½ by 1½ inches and place cut baits into a quart measure so you will know how much you have. One quart of bait (75 to 80 pieces) will poison 2 acres of gopher infested lands.

Place the fresh baits in a paper sack and dust with one-sixteenth of an ounce of powdered strychnine per quart of bait. Close the sack and shake vigorously to dis-

tribute the poison. The strychnine can be mixed with flour to be applied more evenly to the bait.

Poison only the two freshest mounds in a mound system. Locate the main runway by probing with a sharp broom handle. The main runway is 4 to 12 inches away from the flat or indented side of the mound, and from 3 to 12 inches below the surface. Withdraw the probe and drop two or three pieces of bait into the hole. Close the probe hole immediately after placing the bait; otherwise, the gopher will become alarmed at the entry of light.

After each mound system has been poisoned, rake down all old mounds. Any gophers missing the

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CRAPPIES

WHERE: In most of the natural and artificial state-owned lakes in Iowa.

WHEN: For bait fishing, between the hours of 6 a.m. and 9 a.m. For fly fishing, between the hours of 4 p.m. and 6 p.m. Best fishing is from around May 1 to June 15; often very good in small inlet areas and along abrupt banks with overhanging tree limbs. Don't fish along lee shores during high winds . . . in general, the quieter the water, the better.

HOW: For bait fishing, use a light bobber and minnow for bait. Hook minnow just below dorsal fin in back, and use leader material for the line between bobber and hook. Fish from a boat slowly drifting along the shore. Do not move boat rapidly once you have located a school of crappies, and be careful not to bang around in the boat. Talking is O. K., but don't stomp!

If trolling, use a minnow hooked in the mouth and a small spinner. Troll slowly along the shore, particularly so around rush beds, rocky areas, brush piles, ends of docks, etc.—*Iowa Fish and Fishing.*



Use a light bobber and minnow for bait, hook the minnow lightly, just below the dorsal fin. Jim Sherman Photo.



The canoe series will be an aid to the occasional canoeist and will contain definite recommendations on suitable launching and landing locations.

Canoe Trips . . .

(Continued from page 33)

roads and villages when you round that first bend in the stream. Every lover of the out-of-doors, whether he be camper, fisherman, photographer, amateur botanist, or observer of wild life, will find there are endless sources of enjoyment.

A person interested in canoeing, but with a limited knowledge of the streams in our state, has many questions he wants answered. What and where are the canoeing possibilities? How do we get there? Where do we put in the stream and where do we take out? How long does it take to go from this bridge to that village? These are all practical questions, and the answers to them are hard to come by.

Last fall the authors started out to find the answers to those questions, and in the process to become better acquainted with Iowa stream fishing. We discussed our plans with James R. Harlan, assistant director of the Iowa State Conservation Commission, and others. In doing so we found a considerable interest evidenced in our project and it was suggested that it might stimulate interest in this type of outdoor recreational activity in Iowa if we made the information we develop on our field trips available to others. This we are glad to do, especially since we have been assured of the cooperation of the Conservation Commission, which will be of invaluable assistance to us in planning, carrying out and reporting the results of our expeditions.

The project is, of course, a large one. On the basis of a preliminary survey we have tentatively decided to explore the following streams: The Upper Iowa, the Yellow, the Volga, the Turkey, the Maquoketa, the Wapsipinicon, the Cedar, the Iowa, the Des Moines, the Raccoon, the Little Sioux, and parts of the Mississippi bordering Iowa. We hope to cover all parts of these streams navigable by canoe. Other streams may be added later.

This canoeing season we will present a series of six articles in

the IOWA CONSERVATIONIST, commencing with the June issue. The articles will be designed primarily from the standpoint of the canoeist who is not an expert, and will emphasize one day and weekend trips. Each article will be complete in itself and will cover a portion of a stream that we consider most suitable for short trips. A detailed description of the portion of the stream covered will be given, together with approximate distances and estimates of the canoeing time involved. Canoeing time will, of course, depend upon the condition of the stream and how hard you want to work. But to the novice, particularly, some idea of the time involved is most helpful in deciding how much time he has to fish, explore, eat lunch, or just plain loaf.

Each article will be accompanied with strip maps, designed to be working tools for the canoeist. These maps will show suggested places to put in and take out of the stream with reference to named bridges, roads, or other readily identifiable landmarks. Suggested camp sites for those interested in overnight trips will be located, as well as canoeing obstructions such as dams and rapids.



For Iowa canoeing, Church and Allen have found a seventeen-foot standard gauge aluminum canoe very satisfactory.

Some persons reading this will want to know something of the equipment required. We use a 17-foot standard gauge aluminum canoe and find it very satisfactory. It is light and yet is rugged enough to stand the rough treatment that goes with the shallow water encountered in some of our streams in late season. Doubtless, other types of canoes would prove equally satisfactory. On some of the larger streams heavier boats can be used, and even motors. If you plan to camp you will add other equipment. We carry a light 7 foot by 7 foot tent, sleeping bags with air mattresses, a gasoline stove and, on easy trips, even an

ice box. A canvas water bag comes in handy, as does an axe and 50 feet or so of light rope.

Since stream canoeing is so little developed in Iowa there are few persons who make a business of renting canoes and transporting canoe parties to and from the put in and take out points. It ordinarily is not difficult, however, to find someone at a nearby oil station to deliver you to the stream and spot your car at the take out place.

It is hoped that the material to be presented will be informative as well as useful and practical, and that it will encourage you to get out and see our really fine Iowa streams.



During daylight hours troll with the old reliable June Bug spinner and minnow.

WALLEYED PIKE

WHERE: The best walleye waters are Storm Lake, the Okobojis, Spirit Lake, Clear Lake, and the channel dams of the Mississippi.

WHEN: The most walleyes are taken from May 15 to July 1, and from September 15 to November 30. Winter fishing up to mid-January is also excellent for walleyes.

HOW: During daylight hours,

troll with the old reliable June Bug Spinner and minnow or nightcrawler around rock reefs, sandbars, and over rock piles in deep water. Troll slowly, just off the bottom. When a school of feeding walleyes is located, anchor when trolling, use a rod with plenty of backbone, and stiff in action.

In still fishing, the most common method is the anchor over rock piles or reefs, and fish from 6 to 8 inches off bottom. In stream fishing, most anglers fish just below dams, or drift large minnows, chubs with the current through deep channels, into brush drift piles or pools below fast rocky riffles. Walleyes bite through the daylight hours but twilight and early morning hours are excellent.

Bait and fly casting is best in the evening when the large schools of walleyes work in toward shore. Inlet streams coming into the lakes are excellent for evening and after dark fishing.—*Iowa Fish and Fishing.*

The bones of birds are hollow and serve several unique purposes. Not only are such bones lighter, as they must be in a flying creature, but they also contain air. This air can actually be used by the bird for respiration and the bones thus serve as valuable extra "lungs."—*J. M.*



The hen rolled over the mower a lifeless mass of blood and feathers.

Sheathing . . .

(Continued from page 33)

only solution is to scare the hens away from the mower and even if the eggs are lost the hens can re-nest.

Early in the spring of 1953, Russell Robbins, a graduate assistant in the Iowa Cooperative Wildlife Research Unit, was assigned to test the efficiency of the Ohio Flushing Bar under Iowa conditions. Eight weighted cables, long enough to reach the ground, were suspended from a steel bar the same length as the mower. This "flushing bar" was located from 12 to 16 feet ahead of the mower blades, depending on the model of tractor and mower.

Before mowing began, ten test hayfields were selected and each divided into two equal parts. Half of each field was to be mowed with the bar attached and half without it, then the results could be compared. As the fields were mowed, the cooperating farmer would point out flushed hens or crippled hens and their nests. Nests were then studied to determine the age of egg incubation and the degree of hen injury. If the hen was flushed by the mower, feathers around the nest would tell how hard she had been hit.

The first swath around Tilford Christenson's hayfield was cut without a flushing bar. At the far end of the field Tilford stopped his tractor and pointed out a crippled hen pheasant flopping back into the uncut hay. Three swaths later another hen was hit. As she tried to duck under the mower her head and both wings were cut off. On the first half of the field not a hen pheasant escaped injury.

By noon the second half of the field was reached and the flushing bar slipped on. The weighted cables broke through the heavy alfalfa and bounced along the ground. A young rabbit dashed out ahead of the bar, ran well, but lost his race. Even though the tractor was only moving about five miles an hour, the hay flashed by in a blur and the mower caught any animal that hesitated for even a second.

Three laps around the hayfield and no pheasants. Tilford whipped the tractor to a right angle at the



Flushing bar in action, the cables have just broken through the alfalfa. Cutter bar is twelve feet behind.

end of the swath and then pulled the end of the mower up against a fence. The flushing bar moved perfectly in front of the mower with no interference.

Along the fence a hen got up under the bar, a good ten feet from the mower. In the next 15 minutes two more hens were flushed safely. Each bird had from 12 to 16 feet to escape the mower after the cables from the bar passed over, yet each missed the blades by inches.

At five miles per hour the tractor was moving about seven feet a second. That gave the pheasant about two seconds to take off and miss the mower after the flushing bar had passed over. They had to move, and quick!

In that first hay mowing in northern Iowa more pheasants were killed in a few days than would be shot in a year of hunting. Farmers hated it . . . everyone hated it.

Many hen pheasants and their future young were saved by the flushing bar. Some weren't. These hens refused to move for man or

machine. They were dead birds when a mower entered the field, flushing bar or not.

About 35 per cent more pheasants were killed with mowers not using a flushing bar. Without the bar even hens which were not setting on nests were killed, but no non-nesting hens were killed by mowers with flushing bars attached.

The flushing bars caused little hindrance to tractors, and although most farmers are happy to use them, the \$20-\$30 cost and the time for construction discourages them. This is where sportsmen's clubs come into the picture. It is an ideal project, and on a group basis flushing bars could be made cheaply and distributed to cooperating farmers in hunting areas.

In some sections of Iowa, in spite of good food and cover, the pheasant population stays at a constant low level. A few flushing bars

CITY WATER FROM NEW LAKE

Creston is discovering the new state Green Valley Lake is coming into use as a city water reservoir much sooner than had been expected when plans were in the making for building the lake as a three-party cooperative effort.

This week water is to be released from the new lake into the city lake. It won't be a great amount, but it is hoped it will be sufficient to tide over until the anticipated late spring and early summer rains come.

It was generally felt that Creston's \$100,000 investment in Green Valley Lake was a good one. It was not expected it would be proved up so soon.

Southwestern Federated Power Cooperative (REA), by the way, invested \$125,000 and they must feel that large body of water a good investment in this period also. For the state, it is a recreation lake. But it is serving many other important and worth-while purposes, too.—Creston News Advertiser.

RED TAPE

Ever been out a fishin' at night . . . one of those dark but starlighted nights . . . you have parked your tackle box, creel or spare rod just exactly where you can find it on your return . . . only to find that upon that return your flashlight will not pick it up? Now if there had been a piece of that red tape like you see on the bumpers of cars fastened somewhere on the missing gear . . . your lantern would surely mark it a lot quicker. Something to think about!—Marshalltown Times Republican.

A good catfish blood bait is made by mixing duck down with fresh chicken blood. The mixture is placed in a flat pan so it can drain well, and the coagulated cake can be cut into strips with scissors, packaged in waxed paper, and frozen. It is an extremely durable blood bait.—J. M.



The flushing bar is folded forward for movement through a gate.



Jim Sherman Photo.
In the evening fish the channel, later at night the shoal water is productive.

CHANNEL CATFISH

WHERE: In nearly all major Iowa streams. During the day, fish in deep holes beneath logs and brush piles. In the evening, fish the channel, and later at night fish the channel and the shallow shoal areas.

WHEN: Iowa catfishing is good early in the season. In July, with the coming of spawning season, fishing will taper off. From May up into June, and from mid-August through September are the best channel catfish months.

HOW: With a stiff pole not less than 5 feet long and a 100 yards of line. Baits may be blood, cut bait, or stink baits, or live baits. Chicken blood is the best bait, but is hard to keep on hooks. Drift coagulated chicken blood down through long river holes, re-baiting after each drift. Cut bait will stay on hooks well, and are made from fillets of rough fish, cut into strips one-half inch square and two inches long. May be fished fresh, but are better if allowed to sour a day or so in a glass jar. Also use the fish guts while still bloody.

Chicken guts are also good, and are prepared from the whitish gut that comes off the gizzard. String out this gut, clean off all fat, and cut into 8-inch lengths. Cover with corn meal and allow to sour before using. The preceding baits, as well as "stink" baits and natural baits, may be either still-fished or floated.

—Iowa Fish and Fishing.

Sharecropper . . .

(Continued from page 37)

poisoned baits will continue to throw up new mounds that can be easily seen and treated the next day.

BURN OR BURY UNUSED BAIT! BE SURE TO WASH YOUR HANDS AT ONCE!—Dr. Harold Gunderson, Extension Entomologist, Iowa State College.



Jim Sherman Photo.
The cartridge of the Ackley .17-222 is not much larger than the business end of a bumble bee, but is much hotter.

THE POWERFUL PEEWEE

One of the newest features in the "wildcat" rifle world is the .17 calibre cartridge recently developed by P. O. Ackley of Salt Lake City.

The new cartridge is not available commercially, and has been used only by a few shooters with special rifles and loading dies. It is officially designated as the Ackley .17-222, meaning that gun-maker Ackley necked down a Remington .222 cartridge case to .17 calibre to produce the cartridge.

The little .17 calibre bullet is jacketed and weighs only 25 grains, as compared to the 45-grain .22 long rifle lead bullet. Because of the large cartridge case and powder capacity, however, the little slug moves out at about 4,500 feet per second. (The muzzle velocity of a .30-06 is 2,700 feet per second.)

This mighty midget is intended only for use on varmints and can never be considered a big game cartridge. Although it is metal jacketed its great velocity causes it to explode on impact and thus offers a minimum danger of ricochet. It is said to be very accurate and has practically no recoil.

In recent years there has been a rash of high-velocity, small-bore cartridges, each trying to outdo the others. But none of them will ever come up to one recently designed by a rifleman with a sense of humor. He necked a .30-06 cartridge case down to about .062 calibre, and used a phonograph needle for a bullet!

During the past three seasons the average size raccoon litter in southern Iowa has ranged from 3.55 to 3.96 individuals.—G.S.



Jim Sherman Photo.
The best perch fishing is from August 15 until the lakes freeze over.

YELLOW PERCH

WHERE: In Iowa's "Great Lakes" . . . Spirit, Okobojis, Clear.

WHEN: The year around, but the best fishing seems to be from August 15 until the lakes freeze over. For fishing in shoal water, the hours of 5 a.m. to 7 a.m. and 4 p.m. to 6 p.m. are the best. For fishing in deep water, any hours between the above.

HOW: Use a small minnow, and

either a cane pole or a casting rod. Determine the depth and keep minnow about 6 to 12 inches off the bottom. You must locate a school to have good perch fishing, so if fishing is not productive where you are, move on. Rock piles, reefs, points and weed beds may all be good.

Many anglers, particularly in the late summer and early fall, prefer the white meat from crayfish tails for bait.—Iowa Fish and Fishing.



Soon after settlement our largest game bird, the wild turkey, vanished.

WILD TURKEY

When great-grandad first came to the Iowa territory, he found vast woodlands that were wild turkey range. Soon after settlement and lumbering off of these turkey ranges, our largest game bird vanished.

Several times over the years there have been attempts to re-establish wild turkeys in Iowa, not with much hope for it as a game bird, but as a part of a living museum.

Partly because it requires fairly large, and wild timbered tracts, the turkey could not become established. Attempts at stocking have been tried in the Amana Colony, Ledges State Park, and Lacey-Keosauqua State Park and other areas but with little success. To further complicate the situation, it was found that wild turkeys soon wearied of wild competition and sought out farms, to which they were decoyed by domestic turkeys. Almost as fast as the birds were stocked they wandered off to farms and became domesticated.

Even states with much adequate turkey range, one of the main management problems has been that of producing a really wild bird and keeping it that way. Even a hint of the domestic strain seems to result in a bird that will either seek out the easy life or will perish in the wild because of undeveloped wild instincts.

An excellent dryfly dressing can be obtained from the anal oil glands of a common barnyard duck. It can be diluted with naphtha to make it go further and make its application more simple. It is such an excellent waterproofing that no duck is ever without it.—J. M.