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NUMBER 1

REVIEW 1945 HUNTING AND FISHING

Wardens' Reports Show Hunting and Fishing Ups and Downs for Past Season

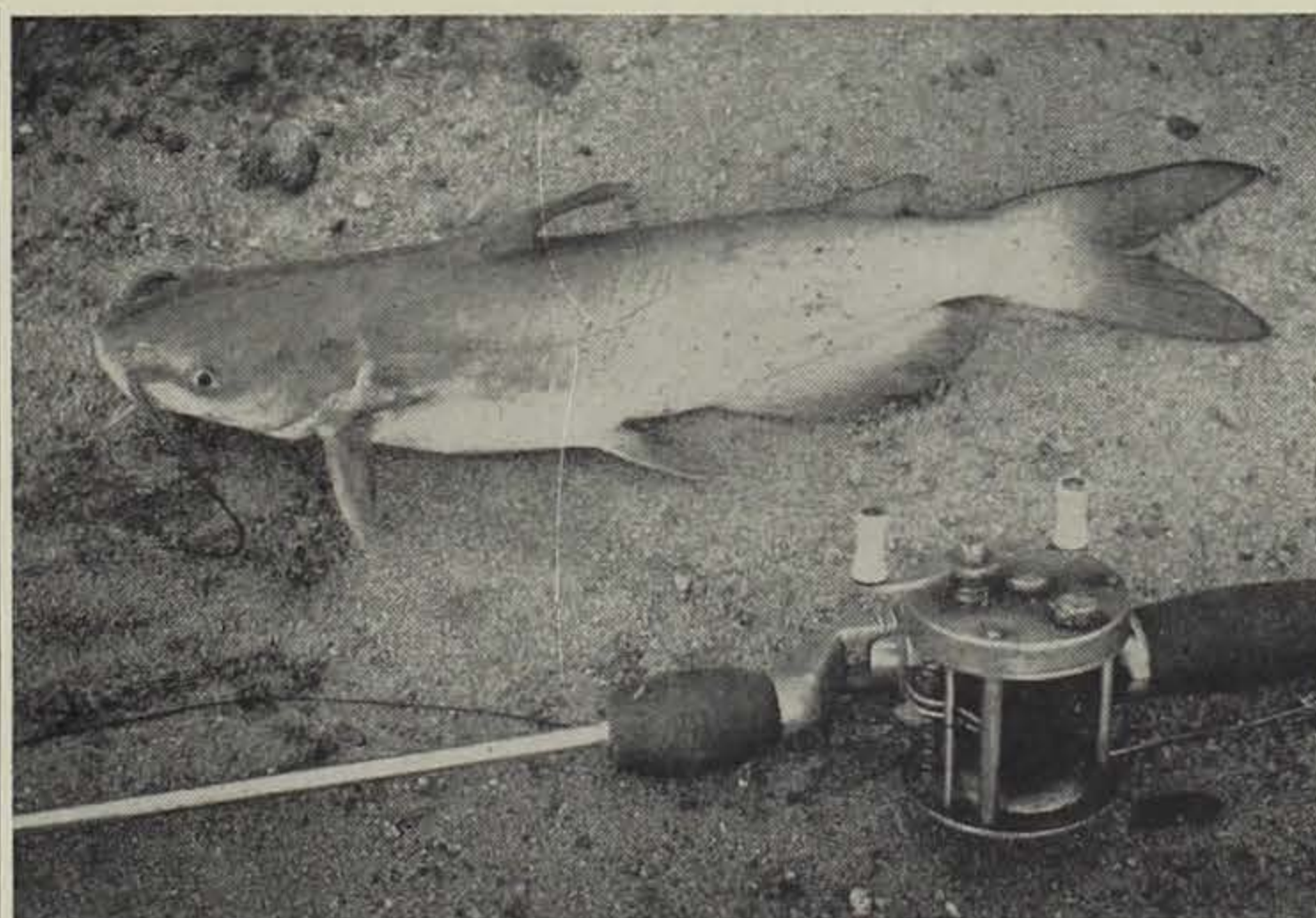
A QUESTIONNAIRE sent to all fish and game conservation officers at the close of the year reveals a great deal of factual information and explains why two hunters or two fishermen may disagree as to whether 1945 was a good or a poor year from the sportsman's standpoint. The reports indicate, as might be supposed, that the hunter who was fortunate enough to hunt where game was abundant had good luck, that the hunter who got "skunked" went to the wrong place, and that there were plenty of both kinds of places in Iowa during 1945.

Generally speaking, duck hunting and pheasant hunting were fair to poor. Smallmouth bass fishing falls into the same class. Squirrel hunting and most fishing, except smallmouth bass and catfish, may be classed as from fair to good. Quail and rabbit shooting and catfishing may be described as from good to excellent.

As may be expected, the improved gas and tire situation increased the over-all numbers of hunters and fishermen in the various territories, but the pressure did not reach prewar volume. The lack of equipment and transportation retarded to some extent the number of anglers and hunters in the field. Tires, gasoline and ammunition were most critical, with fishing tackle, guns and clothing having some effect. The scarcity of shotgun shells was somewhat relieved during the year, with only a few conservation officers reporting a critical shortage.

The officers report that the discontinuance of meat rationing was definitely reflected in the field. Fishing, before discontinuance of rationing, was an important means of conserving red points in '45. Game wardens reported definitely

(Continued on page 3)



Popularity of channel catfishing has multiplied many times during the past decade, and conservation officers' reports noted another increase in stream fishing during 1945. They also report a surprising increase in the number of women anglers.—Jim Sherman Photo.

Common Sense In Game Management

(Reprinted by special permission of the Missouri Conservation Commission.)

THE management or husbandry of wildlife resources deals with two major problems; one is the production or growing of wildlife, the other is the rationing and use of the surplus of each annual crop.

Our success with the second problem depends on how well we understand the first one. If we know how much wildlife is produced, we can tell how much to use. If we know how to increase wildlife, we shall be able to use more.

Production of wildlife is governed by natural laws, as distinguished from the man-made laws which govern the use or taking of wildlife. Natural laws are fixed and

unchangeable—enforced by such basic facts as birth and death and the need of living things for food, water, and shelter. We cannot re-make natural laws to suit ourselves; all we can do is to understand them and work with them. To work against them brings certain failure.

Understanding the laws of nature requires study and thinking. To hunters and fishermen and others interested in wild creatures, however, it is easy and pleasant study, as simple and logical as everyday arithmetic. As in arithmetic, we can start with something we know and go on from there.

One of the first simple things we know is that there is wildlife

(Continued on page 4)

MORE FACTS ABOUT FOXES

IF it were not necessary for the fox to eat, he would have no enemies and quite a few friends. If he ate only insects, wild fruit, waste corn and mice, all of which he consumes in quantities, he would have no enemies and his friends would increase. If his diet consisted only of game birds and songbirds, rabbits and poultry, all of which man has set apart for his own use, his enemies would become legion and his friends almost nonexistent.

It is because "sometimes he do and sometimes he don't" that the fox may be classed somewhere between saint and sinner, and it is for this reason that pro and con arguments have raged around Reynard for centuries and will continue for ages yet to come.

Most of the following fox facts bear directly on his food habits and are the result of careful studies by the Iowa Cooperative Wildlife Research Unit:

An ordinary red fox weighs about 10 pounds, a little more than a jack rabbit. It is neither exceptionally powerful nor exceptionally vicious for its weight. A large house cat is fully the equal of a fox in strength and killing ability.

Foxes are like small wild dogs, and their way of living is exceptionally dog-like. They may have individual habits and tastes that vary, but their behavior conforms to a remarkably uniform pattern.

Young lambs and pigs, adult jack rabbits, half-grown turkeys,

(Continued on page 5)

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*Killed in action.

CRAZY, AIN'T IT?

If the reports I have had are any criterion, then the pheasant season which has just closed was not very disastrous to the pheasant population. Too much cover and too smart birds seems to be the general opinion. Some of the boys seem to think that when the Phi Beta Kappa keys are given out in the bird and animal kingdom, the quail will also be right up among the winners. They seem to have taken to treeing somewhat in the manner of the raccoon. Well, now you dog breeders will have to start crossing your pointers and setters with a good coon dog strain. How would it sound to say your dog was a pedigreed "set-toon," or a "pointoon." Crazy, ain't it?

—Frank Powers,
Cedar Rapids Gazette.

HUNTING MAY BE A SPORT FOR SOME, BUT FOR OTHERS IT IS A PAIN IN THE NECK

By A. B. Turnbull

NEVER again will I disparage hunting as an art and an accomplishment supreme after my one and probably my only experience with that utensil called a shotgun and that two-legged animal called a pheasant.

"Hunting!" I was wont to sniff in the days before I tried it, "Why, any fool can hunt if he has the strength to hold a gun and isn't cross-eyed."

But I am fairly strong and have two straight, forward-looking eyes, and I couldn't shoot one of the—well, one of those birds.

Fishing I can and have passed by all my lifetime, even when on vacation this summer and the better half of our family got up before breakfast and went fishing after he dangled the bait under my nose. But somehow this hunting business got under my skin. My husband says it was all because I saw some women going hunting, all togged out in most romantic huntress outfits, and I was just jealous because I didn't look that way.

One way or another I had an idea women were hunters for a good share of their lives and never had any special sort of outfits for the job. But the one I started out in for this pheasant hunt was colossal.

However, I am getting the hunt before the bird here. I haven't told you yet how I decided to go hunting. (It wasn't the women, frankly, but the men that got me started.)

They came into the office first boasting of getting their limits in a bare two hours. Even stories like that did nothing to make me envious until Jim Ford galloped in after the hunt one afternoon with four of the most beautiful birds that I ever saw. That did it. If Jim could get birds to come down out of the air like that for him, I figured I could do it. Of course I reckoned without a dog like Jim's, which he claims can embroider buttonholes.

So I worked on the other half of the family, nagging to go hunting until he took me.

We set out one beautiful morning with the sun a golden ball glimmering through the nearly leafless trees. I was wearing for the hunt a matchless fitting pair of gabardine slacks, a green blouse with a soft scarlet scarf knotted at the throat and a like colored scarf tied around my head. A warm jacket completed the ensemble. I would have forgotten the guns, the hunting licenses and all the necessary trappings but for my husband.

We did not have a dog. Once upon a time we owned a cat and he was fine at catching robins. But there is a great deal of difference between robins and pheasants.

Anyway, we no longer had the cat. So we started without helper, depending for help on each other.

Now I have never before flushed birds so someone else could shoot at them. But that is the job at which my hunting mate set me. Pretty soon I got tired of doing all the ground work while he had the fun buzzing at the flying birds in the air, and I staged a sitdown strike.

"Surely there is some way to get those birds into the air without this foolishness," I protested.

My companion offered gallantly to do the job for a change and let me take a shot at the birds. That was what I wanted all along, so I was really getting places.

Pretty soon he had a bird zooming across my vision as I squinted into the sun. I had taken one lesson on how to shoot that blasted gun, and now I let go with all I had. The ungrateful thing threw me to my—knees—while the bird went sailing away "into the blue."

My husband didn't actually say, "I told you so," but I have come to know that look, anyway. Meekly I flushed for an unending time until I was so sick of pheasants and guns and the smell of the outdoors that I made a vow not to mind if Jim Ford came in with a hundred pheasants some day. And then I thought with a nice comfortable feeling that no matter how good a shot he was, no matter how matchless his dog was, all the pheasants he could shoot in one day was four. And he had already dangled these under my nose.

The trip home was one of perfect contentment. I had hunted and found the sport wanting.

—Cedar Falls Record.

A HUNTING WE WILL GO

"A hunting we will go, heigh ho the derry oh!"—Now if we would just get back with the same gleeful tune after the pheasant hunt!

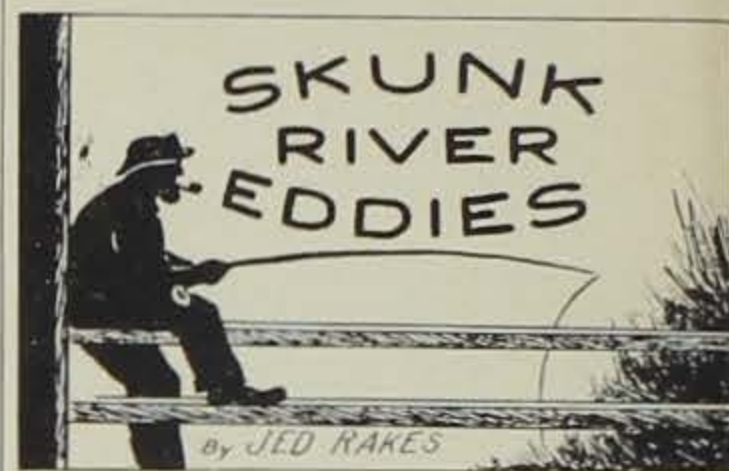
Of course, boys as well as adults want to try their luck at hitting the beautiful birds—and why not?

Some parents say they wouldn't let a child have a gun of any kind. If they don't learn to shoot, they never will. I doubt that. There just seems to come a time in every man's life when he wants to try his skill at handling a gun, hunting out the birds, and doing some "crack" shooting. When is it better to learn the knack of hunting than in youth?

But at the same time, one is literally playing with fire. The dangers of hunting should be pointed out to every young person, as well as the art of firing a gun.

Let us cooperate with the young people. Give them a chance to learn to hunt sanely. And even as adults, let's remember that no matter how much we know about the good and bad of hunting, a gun is always a dangerous weapon—not a toy with which to play.

—Laurens Sun.



(Editor's Note: "Skunk River Eddies," by Jed Rakes, will appear each month in the "Iowa Conservationist" during the current year. Jed in true life is Carl Stempel, a Burlington, Iowa, commercial photographer, whose sense of humor is equalled only by his passion for and experience in the outdoors.)

When your neighbor tells you to bring him a mess o' fish sometime, don't git him wrong; you leave the mess at home an' just bring him the fish.

When a feller's bin standin' in a blind about three hours in a cold wind, they ain't nothin' that'll give him a lift like findin' a couple o' peanuts in his coat pocket.

They ain't nothin' that'll make a feller's face red so quick ez to have a two-pound bass that he ketched out o' season an' hid in his lunch basket start to kickin' jes when the game warden's comin' along.

Whenever I see a telephone line that leans over a fishin' hole all festooned with corks an' hooks an' sinkers, I wonder what kind o' language is prevalent in that neighborhood.

Andy Gillam's wife says she'd git a divorce if she wasn't so fond o' catfish.

IT SEEMS TO US

Trapping beaver south of town has evidently not affected "our" colony in north Alton. They used poor judgment, however, on a big willow tree they tried to bring down. When the tree went over toward the river it fell on another tree. It is leaning there now and it's going to take a mighty big north wind to tip it off so it will crash where it can do the beavers some good.

They are working again on a big cottonwood that is more than a yard in diameter, but it looks like a big job and appears problematical that they will ever succeed in getting it down.

—Alton Democrat.

See, Winter comes to rule the varied year,
Sullen and sad, with all his rising train—
Vapours, and clouds, and storms.
—Thompson.

'CONSERVATIONIST' INDEX

Two years have passed since an index has been compiled for the "Iowa Conservationist." We are working on one now covering 1944-45 and expect to have it completed about March 1. Many of our readers are planning to bind their "Conservationists," and an index will be valuable. If you will mail us a card requesting the new index, it will be sent to you without cost when completed.



Some of the southern Iowa reservoirs furnished the best bass fishing in recent years, with big fish common. This 8-lb.-oz. largemouth was caught by Waldo B. Mus in the upper reservoir at Centerville.

Review . . .

(Continued from page 1)

ess pure meat hunting on the part of the shotgun artists about the time the hunting season rolled around.

As to be expected, the officers found a continually increasing number of servicemen in the field, many of whom were first-time hunters or fishermen, and many non-resident servicemen took advantage of the free license extended to them.

Farmer-Sportsman Relationship Improved

The farmer-sportsman relationship during the past year was the best in the memory of the older enforcement officers. This improvement particularly is welcomed because of several widely publicized "incidents" of the previous season which brought home to the sportsmen the danger in disregarding landowners' rights.

The wardens in their reports give sportsmen a pat on the back for their cooperation in this matter. Twenty-one of the wardens found an important increase in the number of hunters asking permission before hunting on private land, nine could see no change, and not a single officer reported an increase in trespassing. All remarked on the decrease in the number of trespassing complaints. Consideration of the landowner's rights was reflected in the number of "No Hunting" signs posted throughout the state during the year. Of 33 reports, 20 found fewer signs, with 13 reporting no change in the number.

Pheasant Hunting

Breaking the questionnaire down into a little more specific information, pheasant hunting success was considered fair in 14 territories, poor in nine, good in two. In comparing the season to '44, not a single officer reported better pheasant hunting, five found hunting the same as the year before, with 18 reporting hunters had poorer luck.

The reasons for failure of hunters to secure birds in the order of their importance were: scattered birds, heavy cover, fewer birds.

In most territories seedstocks at

the beginning of the new year were considered good and most officers believe that poaching of hen pheasants was not extensive.

Duck Hunting

Duck hunting success was considered poor in 16 reports, fair in 12, good in three, and excellent in only one. Twenty-four reports believed duck hunting poorer or the same compared to 1944, six found better duck hunting, and 25 out of 30 reported fewer ducks present than in 1944. Nineteen conservation officers reported more geese killed in their territories than the year before, with 13 the same or less. Of an estimated 2,021 geese killed, 424 were blue geese, a species absent in the state in the fall until within the past few years.

Quail Hunting

Quail hunting was brighter than other game bird hunting, with 10 reporting fair success, four good, two excellent, and one poor. Only two officers reported better quail hunting in '44 than in '45, and all questionnaires indicated more quail present during the past season than the year before.

Reasons given for failure of hunters to secure quail in the order of their importance were: scattered birds, heavy cover, poor marksmanship, lack of dogs, and few birds.

Squirrel Hunting

Except for a band east and west through the central third of the state, squirrel hunters had much better success than the previous year. In many territories nut and acorn failures (crop estimated at 10 per cent of normal) caused heavy concentrations of squirrels along cornfield margins and in locations where nuts were abundant. Lack of winter feed may jeopardize squirrel populations in many areas and be reflected on the 1946 squirrel season.

Rabbit Hunting

Reports on cottontails give a bright picture of the bunny situation, with 17 reporting good to excellent hunting, 10 fair, and only three poor. Fifteen found more rabbits present than the year before, nine the same, and four less. With the close of game bird seasons, rabbit hunting is rapidly gaining its old-time popularity, with reports indicating that the tularemia scare of 1939 is no longer seriously affecting the number of hunters who enjoy this winter sport.

Stream Fishing

Stream fishing as a whole when water was normal during the year was good. For the most part, high water during the early part of the season cut down the number of stream anglers. By mid-summer, with normal water levels, most of the officers reported better stream fishing than the year before, except for smallmouth bass.

Catfishing has evidently "legitimized" itself in the past few sea-

sons. Catfishing a few years ago was the sport of the tobacco-chewing chap who lived in a shack near the bridge and of a very few dyed-in-the-wool catfishermen. Catfish have now become the darling of both sexes, young and old, and almost every warden reports a "large increase in the number of catfishermen along the streams." Many note "a surprisingly large number of women and children included in their numbers."

Many reasons are given for the new popularity of this fish. Wardens believe the three most important reasons are: "An abundance of catfish in the streams," "The know-how of catfishing is beginning to be common knowledge among the anglers," and "The widespread use of professionally prepared artificial baits has eliminated much of the time-consuming task of seining or catching natural baits."

Except for a few streams, wardens report catfishing excellent during normal water periods.

Although a few locations, principally below dams, provided good crappie, northern pike and wall-eye fishing as in the past, good stream fishing for these species was the exception rather than the rule.

Lake Fishing

Lake and reservoir fishing, according to the consensus of the field men's opinions, was fair except for bullheads and largemouth bass, which in the majority of the better lakes was good to excellent. Reservoirs in the south part of the state produced exceptionally fine largemouth bass fishing, with many of these fighters tipping the scales at eight pounds or more.

The major natural lakes in northwest Iowa provided spotty fishing, with no reports indicating outstanding fishing for any species over an extended period of time. Walleye pike, perch, bass, crappie, bluegill, silver and yellow bass all contributed their share of good days in making an over-all "average season" for the natural lakes.

WARDENS' EXAMINATIONS IN EARLY SPRING

Under the provisions of the statutes, all employees of the State Conservation Commission whose duties are to enforce the laws, rules and regulations of the Conservation Commission are known as conservation officers. These include all personnel formerly known as deputy game wardens, park custodians and lake custodians.

The law also states, "No person shall be appointed as a conservation officer until he has satisfactorily passed a competitive examination held under such rules as the Commission may adopt, and other qualifications being equal, only those of the highest rank in the examinations shall be appointed."

At a recent meeting of the State Conservation Commission it was decided to hold examinations early in the spring. Applicants may secure an application blank for this examination by writing to the State Conservation Commission, 10th and Mulberry, Des Moines.



The 22 rifle has furnished more sport than any other kind of gun, but it is not a toy. It is a real gun and must be treated with respect.

YOUR CHRISTMAS 22

THE 22 rifle has furnished real sport to more people than any other kind of gun. But the 22 rifle is not a toy—it is a real gun and must be treated with respect. There are several simple things you must remember in playing safe!

First, last and always, treat your rifle as if it were loaded, even when you feel sure it is empty. Keep it empty and wherever possible with the action open except when you are ready to shoot. Do this whether the rifle is in your hands or in a car. And at home, be sure to keep it empty and out of the reach of small children.

Whether your rifle is empty or loaded, always keep the muzzle pointed away from anything you don't want to shoot. No real sportsman will ever point any empty gun at another person, nor wrestle or engage in horseplay with anyone holding a gun.

Before you pull the trigger, know what you are shooting at. Shoot against a solid background—never into the sky or through brush where your bullet might hit someone or something you do not see.

Remember that a 22 will carry up to a mile, and that a bullet may glance off at an angle from flat hard surfaces, twigs or water. For the same reason it is best never to shoot at bottles or other hard objects.

"SAFETY FIRST—ALWAYS!"
Make that your motto.

CALIFORNIA ASKS \$12,600,000 FOR GAME PROGRAM

The California Fish and Game Commission, according to the Sportsmen's Service Bureau, recently asked Governor Warren of that state to request the legislature to appropriate \$11,000,000 for a fish and game building program, the money to come from the postwar employment reserve fund. He was also asked to schedule an additional support and construction budget of \$1,600,000 to come from the State Fish and Game Preservation Fund, this to supplement the budget approved by the legislature at its regular 1945 session.



Whenever you find any species of wildlife, you know that it is finding the food, water and home that it needs. Otherwise it would not be there.—Milton Hurlburt Photo.

Common Sense . . .

(Continued from page 1)

in Missouri. It is here naturally; we did not "produce" or make it.

The next fact is that wildlife, like all life, must eat, drink, and find shelter in order to live. It must find a place to raise young. Wherever you find any species of wildlife, you know it is finding the kind of food, water and home that it needs. Otherwise it wouldn't be there.

Only the wild creatures that find enough of the right kind of food, cover and water will live. The rest must either starve, because they cannot eat, be killed because they cannot hide, or they will die off because they cannot raise enough young to replace their losses. These are natural laws.

These natural laws are the basis for one of the important principles of wildlife management. This principle is called carrying capacity.

Carrying Capacity

Carrying capacity is the amount of quail, rabbits or other wildlife which any piece of land can support or "carry" at one time. The amount and quality of the food, cover and water which determine carrying capacity are in turn determined by (1) the kind of soil and its fertility, and (2) the way the land is used.

Fertility is the richness of the soil—the kinds and amounts of food elements like iron and calcium and nitrogen contained in the soil in forms that can be used, first by plants and in turn by animals. If there isn't enough lime or phosphorus in the soil to grow bones and teeth and to make good blood, the wild animals that live there will be few and unhealthy. The same is true of domestic animals. If there aren't enough vitamins forthcoming from the soil, the animals will be diseased and will fail to bear enough healthy young.

The best land use is that which

produces the greatest benefit for the people while conserving the soil. Some land may be used chiefly for grain while other land, which cannot be cultivated without erosion, must be kept in pasture or meadow. Still other land, unsuited either for cultivation or grazing, will grow valuable timber. In many parts of Missouri the pattern of land use must be greatly varied—a tract here in cultivation, a strip there in grass, a hillside or waterway in trees. Wildlife, and the food, fur and recreation it yields, may be a valuable by-product. We Americans have made many mistakes of land use. We have over-cropped our fields, over-grazed our pastures, over-cut our timber, wasted our soil, silted our streams, destroyed the homes of wildlife.

Good Wildlife Management Is Good Farming

Fortunately, soil fertility can be built up or conserved, and land use can be changed for a better balance with nature. Doing this



By spring there are always fewer quail than there were at the beginning of the winter. For this reason there is nothing gained by not hunting. Hunting is simply a means of taking for a useful purpose some of the birds that could not get through the winter, anyway.—Thos. G. Scott Photo.

is profitable to the farmer and beneficial to his domestic stock, and it helps wildlife by increasing the carrying capacity of the land for it. Therefore, carrying capacity for wildlife can be increased by the same methods which help the farmer improve his land and crops. Good wildlife management is just good farming.

The fact that carrying capacity can be increased wouldn't mean much if it were not for another natural law. This law is the power of wild creatures to produce young in numbers far greater than needed to keep up the population level, if all of them lived. One quail hen will lay an average of 14 eggs; if all should hatch and the young should live and reproduce at the same rate for five years, the total number of quail resulting from this one bird would be 65,536.

Actually, under present conditions in Missouri, each pair of nesting quail raises an average of only about four young to maturity. Missouri hunters bag two million quail in an average year, and about four-fifths of their take consists of young birds of the year. Imagine how much better hunting would be if each pair of bobwhites could raise five, or perhaps six of the young they hatch to maturity.

The increase in the number of young reared successfully, and the better hunting that would result, can be secured by improving the carrying capacity of the range during the nesting and rearing season. Specifically, this means increasing the amounts and quality of food, cover and water which, according to the natural laws, determine how many young quail live and how many will die before the hunting season.

Hunting Is Harvesting

Carrying capacity works in the winter months, too, through the same factors of food, cover and water. These things grow scarcer and harder to find as winter goes on, and of course the number of birds gets less and less in proportion, so that by spring there are always fewer quail than there were at the beginning of the winter. For this reason, there is nothing gained by not hunting; hunting is simply a means of taking, for a useful purpose, some of the birds that couldn't get through the winter anyway.

The wildlife conservation lesson in all this is plain. People cannot produce wildlife, only nature can do that. We can help nature only by understanding and abiding by its laws.

It would do no good, for example, to raise 50,000 quail in hatcheries or twice that many and release them where several million wild-hatched birds perish every year because they cannot find adequate food, cover and water.

We can increase wildlife by helping nature increase the carrying capacity—by restoring soil fertility and by wise farming and forestry

Outdoor Oddities

BY WALT HARVEY

THE HORNE LARK STARTS NESTING AS EARLY AS FEBRUARY, AND THEIR NEST AND EGGS ARE SOMETIMES FOUND IN SEVERAL INCHES OF SNOW.



practices which will provide more and better food, cover and water for wildlife and at the same time provide better living conditions for people and livestock.

Nature, through her amazing power of reproduction, will stock the new wildlife homes as fast as we can provide them.

DUCK TALE

Heard a good tale the other day about a visiting duck hunter who was in a blind in the Lake Odessa area in company with several others. He imbibed too often in "the stuff that cheers" (and numbs) until he became so intoxicated that he wouldn't keep quiet or stay down out of sight when ducks were coming in. So the crowd loaded him in the boat



"Even a poor shot could kill a duck out of a big flock like this!"

and moved him over to another blind. Presently a lone duck decoyed to the blind occupied by the crowd and after the fusillade the duck was still flying. It whizzed past the blind where the offending brother was stationed and he, with the timing and speed of a champ, ups and kills it.

"Nice shot!" they yell at him, "You must have sobered up a lot to shoot like that."

"———!" he replied, "Who couldn't kill a duck out of a big flock like that?"

—Blaine Hawkins,
Wapello Republican.

Cold autumn, wan with wrath of wind and rain.—A. C. Swinburne.



Still-hunting of foxes should gain in popularity. It is a clean, exacting sport and worthy of much more attention than it has been getting in Iowa.

More Facts. . . .

(Continued from page 1)

Adult domestic chickens and pheasants commonly represent the upper size limits of fox kills, although Reynard often feeds upon larger animals as carrion.

In feeding, the fox is governed more by availability to prey than by choice. On the whole prey appears to be taken very nearly in proportion to the ease with which it may be caught and handled.

Judging from observation and from tracks in the snow, a stealthy approach is employed by the fox for capturing certain kinds of prey. Generally the stalk is terminated by a final rush or leap.

The farmer's chief loss from foxes arises through predation on poultry, which may be severe if conditions are just right. The heaviest losses are suffered in mid-summer when young chickens are often allowed the run of the countryside. Poultry predation diminishes as the birds become older and as the attractions of the fields are outweighed by the advantages of the farmyard during the colder months.

If a sow farrows away from the farm buildings or raises her litter under semi-wild conditions, foxes take what they are able to get until the pigs grow enough to be out of danger. On most Iowa farms pigs are not very accessible to foxes and losses are likely to be slight.

Many of the small lambs and suckling pigs found at fox dens are known to represent stock dead at birth or shortly after and later thrown out by the farmers. This is also true of poultry. It is customary on Iowa farms to put the carcasses of chickens on a manure pile and spread the latter during mild weather. Thus large numbers

of carrion poultry become available to foxes.

The best insurance against poultry loss to both human and vulpine predators seems to be a well-trained dog, which every farmer should have.

Sportsmen are traditionally divided into two camps on the subject of foxes—the bird hunters and the fox hunters. The air turns blue at a meeting between the two groups, yet the findings of game research scientists suggest that there really may be less cause for division than sportsmen think, for it is conceivable that fox populations may be kept at a level satisfactory to both groups.

Scientific research has failed to show how the relative scarcity or abundance of foxes has made any difference so far as population levels of the bobwhite were concerned. Instances of heavy predation of foxes upon quail have been recorded, but these in analysis proved to represent only the increased pressure of predators always to be expected when large numbers of birds are weakened as by hunger or when they overpopulate their habitable environment.

On an observation area carrying five wintering foxes per square mile, bobwhite loss rates for the season were nearly identical with similar areas not hunted over by foxes.

The objection of bird hunters to foxes on the grounds of pheasant predation seems to be in keeping with the facts. This does not mean we cannot have foxes if we are to have pheasants, for many instances can be cited where pheasants and foxes abound in the same localities and have for years. It seems that we have pheasants in the majority of places where living conditions are favorable whether foxes are present or not, although the fox may at times kill considerable numbers of the birds.

Contrary to prevailing opinion, the fox does not exert greater pressure upon hen pheasants than on cocks. For example, of 299 pheasants of known sex found at



Using its sharp teeth like scissors, the fox often shears many of the feathers from the larger birds it uses for food. These pheasant feathers were found where Br'er Fox had recently dined on a ringneck rooster.—Thos. G. Scott Photo.

fox dens, 98 were cocks and 201 were hens. This ratio of one to two corresponds very closely to the sex ratio of pheasants as they existed at the time the study was made.

Experiments with caged adult red foxes indicate that about one pound of food is eaten at a feeding. Mice are ordinarily bolted entire, whereas unless more than one fox is feeding, part of a cottontail is left.

It is believed that when young foxes first begin to hunt by themselves they subsist chiefly upon the most easily caught prey available, such as grasshoppers, crickets, beetles, frog, snakes, some mice and some other small or young mammals in addition to fresher grades of carrion, certain vegetables and fruits.

Foxes at the present time are unusually abundant. They may be expected to decrease and increase periodically as shown by records of the Hudson's Bay Company dating back more than a hundred years. The Conservation Commission definitely recommends increased hunting during the winter months when fur is prime and salable. Still-hunting of foxes should gain in popularity. It is a clean, exacting sport and worthy of much more attention than it has been getting in Iowa.

HARD ON THE FISH

Officials of the federal Fish and Wildlife Service have come forward with an expression of concern that the Navy's planned tests of the atomic bomb might destroy large numbers of commercially important fish.

Elmer Higgins, chief fishery biologist, says: "It is assumed that the atom bomb explosion will be the most potent that ever has occurred in the sea. In addition to the concussion, it is likely that radioactivity started by the bomb will be deadly to the fish."

Fears for the fish will not cause the Navy to call off its experiment, but considerations such as this probably will result in the test being conducted in some remote ocean spot where fishing is impracticable. After all, earthquakes in the ocean bed are constantly occurring. They probably destroy more fish than any explosions that man could devise.

Had the United States possessed the atomic bomb at the beginning of the war in the Pacific, the Japs could have been starved out by bombing the oceans surrounding their homeland and depriving them of an important source of food. But several dozen dropped on the homeland would have destroyed all interest the Japs might have had in food.

—Davenport Democrat.

Now there is frost upon the hill
And no leaf stirring in the wood;
The little streams are cold and still;
Never so still has winter stood.
—George O'Neill.

CHINKY CHINK

THE Chinese pheasant that we know so well was introduced into Oregon in 1880. Since then, thanks to state legislation, restocking programs, conservation laws and the natural hardiness of the bird, they have become one of America's most numerous game birds. It is estimated on good authority that in South Dakota alone, a million pheasants a year are killed by sportsmen.

One would expect that such a slaughter would make irreparable inroads into the species and soon would blot it out altogether. Quite contrary to the Dodo who gave up under adverse conditions and soon became extinct, Mr. Pheasant has merely enjoyed a sharpening of his wits. No longer does he fly up in the air squawking as he goes. Such an ignorant, stupid bird is still cured of his longing to show off by being stuffed first in the hunter's bag and later into his stomach. The wily one, of course, escapes.

Thus by a simple evolutionary process the species of the royal ringneck becomes more and more able to survive. Today he runs through the weeds and corn, stopping not till a comforting "No Hunting" sign hangs over his head. Although some skeptics doubt the pheasant's ability to read and maintain that he only listens when the sportsman reads aloud, the general opinion is that he not only reads the signs, but even posts them himself. Without doubt he knows when the Sabbath rolls around, for on that day he disappears as completely as the magician's rabbit and comes to life only with the approach of evening's protecting hour.

When due to superior numbers or other strategy the regal bird is forced to fly, think not for one instant that he lofts himself high in the air as he did in days of old. Instead, with a terrific whirring he flies off through the tops of the cornstalks, frightening even veteran hunters as he goes. As he makes his spectacular getaway he never fails to insult his enemy with all the ingenuity at his command.

Doubtless if we continue to hunt and each year kill off the stupid pheasants, the time will come when we develop a super bird that eats the hunter's own lunch from his limousine while the sportsman vainly scours the countryside. Pheasant will become more and more of a delicacy as it becomes harder to get until at last the license fees alone will be sufficient to maintain a home for aged hunters, their widows and orphans. There of course will be great need for this home, since the cost in time and money of hunting the gorgeous king of game birds makes him pound for pound the world's most expensive luxury.

—Primghar Bell.



At the present time many thousands of dollars of sportsmen's money are spent in fish rescue work which at its best succeeds in returning to permanent waters but a small fraction of the fish that are stranded in overflow waters each year.

BRIEF ANALYSIS OF IOWA FISH AND GAME POLICY

FISH RESCUE AND REMOVAL, ARTIFICIAL AERATION, WINTER FEEDING, SOCIAL FACTORS

By Bruce F. Stiles
Chief, Division of Fish and Game

(Editor's Note: This is the final article of four analyzing the various phases of the Iowa fish and game policy.)

SINCE time immemorial, periodic floods have carried fish back into oxbow cutoffs and low-lying lands, and as they receded left to perish in stagnant pools countless millions of fish that were picked up as feed by birds and animals, or left to decay and contribute to the fertility of the rich alluvial river bottom plains. At the present time many thousands of dollars of sportsmen's money are spent in fish rescue work which at its best never succeeds in returning but a small fraction of these fish to suitable waters. Whether such expense is commensurate with the results interpreted in terms of increased fishing success is debatable. Has this not been one of Mother Nature's means of preventing overpopulation? And has she not already provided fish with reproductive capacities fully sufficient to compensate for this loss? Further, we find that for the most part this loss is made up of undesirable species, and the game species that predominate, like bullheads and crappies, are chiefly those with the highest reproductive capacity.

Certainly of major importance in this program is the careful selection of the water in which these species are placed. In fish rescue work where the rescued fish were placed in waters known to have high carrying capacities

and low populations the work would be beneficial; but to place them in waters already over-populated or with low-carrying capacities might be detrimental. For the most part our fish rescue work in the past has been based upon inadequate knowledge or guesswork and carried on primarily because of public pressure. This phase of fisheries activities is deserving of considerably more research work and careful thinking.

Rough Fish Removal

Rough fish removal operations are a part of habitat improvement and have probably contributed more to the improvement of fishing in our natural lakes than any other single activity completely within the jurisdiction of the Commission. These fish might be designated as weed fish, as they have exactly the same relationship to waters as weeds do to cultivated fields. The definition of a weed might be said to be **any plant out of place**. We see that morning-glories cultivated in the garden are not weeds, but when found in corn-fields, they definitely are. Volunteer sprouts of corn in a tomato patch are weeded out along with the crab grass and cockleburrs. Adult black bass would be definitely detrimental in a walleye pike rearing pond and should be removed. Regardless of the status of the buffalo fish in nature, it is competitive with game fish in certain stages of its growth for food. While we know little about the tolerance of most species to crowding, whatever that tolerance or intolerance may be, the buffalo fish competes for space. When lakes are sealed over with ice in winter, the buffalo fish compete for oxygen. Carp are competitive in the same way. Vegetation is an essential part of the environment of fishes, and it is known that when carp populations become large, vegetative growth decreases or entirely disappears.

High populations of carp and buffalo and good crops of game fish in the same water are as incompatible as heavy growths of cockleburrs and abundant yields of corn.

The spawning grounds, the destruction of the nests of fishes and the injury to game fish in rough fish removal operations are as nothing compared to the benefits derived, and the abandonment of these operations has no more justification than to abandon corn plowing simply because an occasional hill of corn is up-rooted or that an occasional root system is severed by the passing of a plow blade.

Artificial Aeration

Iowa has many shallow lakes that in winter become sealed with a heavy coating of ice and snow. A heavy drain is then placed upon the oxygen content essential to the survival of fish life. Numbers of these lakes have in the past and will continue to freeze out. The methods that may be used to prevent this are exceedingly limited or non-existent. Not alone this state, but many others, have gone to great expense cutting holes in the ice, agitating the water with outboard motors and other devices, pumping air under the water by means of large pumps, pumping the water out on top of the ice to return through different holes, and many other devices. Oxygen penetrates cold water very slowly. At the best only a small area next to the operation can be affected. As yet no known effective method has been devised to replenish the oxygen supply in ice-sealed water areas where it has been depleted.

Artificial Winter Feeding

In undertaking the winter feeding of pheasants, let's consider the following. The best estimates of game technicians in Iowa place our present summer population of

pheasants at about two million individuals. After the hunting season, where bag limits and seasons are designed to harvest the surplus, we should come through the winter season with about this same population, minus the winter mortality expectancy. Assuming that a pheasant will require one-half pound of feed a day, we see that these birds consume a million pounds of food each day. Just think—two hundred regular railway cars of feed per day! During a protracted three-day February blizzard, God help them. Certainly our puny little feeding program will not. The above estimates of either populations or feed requirements may be cut in half or multiplied by two as the fancy of the individual dictates. The final result still adds up to our utter inability to even scratch the surface.

The value of winter feeding is a parallel to a man attempting to save his field of corn from drouth with one bucket of water. It is evident that without rain the crop is lost. He may, however, by judicious use of the little water he has save just one hill of corn and carry that over as seed for his next crop.

Artificial winter feeding may at times have a definite place, but as an effective means of management it is of but little value.

Social Factors

The primary duties of the State Conservation Commission deal with biological factors that have a bearing upon wildlife species and their habitat. There is, however, another function of the Commission that deals with the social factors having a bearing upon the sportsman's likes and dislikes and his ability to take game. Under this heading comes the Commission's present and very important program of acquiring marginal lands to be developed as public shooting



Weed fish (carp, buffalo, quillback, gar, etc.) have exactly the same relationship to angling waters as weeds do to cultivated fields. Hundreds of tons are removed annually by state seine crews to improve game fishing.—Jim Sherman Photo.



Winter feeding may be compared to a man attempting to save his field of corn from south with one bucket of water. Without rain the crop will be lost. He may, however, by judicious use of his pail of water, save one hill of corn and carry that over as seed for his next crop.

rounds and areas along our lakes and streams to provide public access for fishing. Upland game or the most part may be hunted upon private lands with little difficulty. However, because of the very limited marsh areas in the state of Iowa, our bottleneck in providing duck hunting lies in our present inability to furnish sufficient desirable areas in which our 41,000 duck hunters may hunt. Under such conditions management to increase the production of migratory waterfowl is of much less importance in Iowa than in providing a place in which to hunt. Other problems of management that are sociological in their nature include the regulation of hunting in public shooting grounds, the

taking of rough fish from inland waters by individuals, the setting of the migratory waterfowl season, and many other regulatory practices.

There are today in the State of Iowa 219 conservation groups. These range from small or inactive groups to large and efficiently functioning organizations. Only seven counties (Butler, Calhoun, Grundy, Ida, Union, Washington and Worth) are without conservation clubs or organizations. It is of importance to our fish and game program that these groups continue to function and increase their activity. They serve as a means of keeping the Fish and Game Division on its toes. Without them we are in danger of be-



In many shallow lakes and overflow bayous fish are doomed to die during the winter, for no known effective method has been devised to replenish the supply of oxygen in these waters once it becomes depleted.

coming complacent and self-satisfied. Properly directed and well informed, they can be of inestimable value.

We can't, however, escape the fact that for obvious reasons the public will continue to be years behind in their knowledge of development in wildlife management practices. It is human nature to resist change, and our program can advance only as rapidly as the public is ready for it. Wildlife management is dynamic, not static, and change in practice is continual. As in medicine, the things we learned yesterday must be unlearned tomorrow. Conservation leaders throughout the state must recognize this and be willing to delegate to the Conservation Commission the responsibility of adjusting and developing fish and game programs based upon known facts and new information. Then and only then will our programs advance with maximum efficiency.

GIB LOOKS AT THE PHEASANT SEASON

THERE are almost as many opinions on the past pheasant season as there are hunters in the county.

The majority of shooters believe there was a big shortage of birds this season, the most noticeable shortage since the big storm in 1935-36 which wiped out so many pheasants.

We don't know of a single hunter who killed as many ringnecks in 1945 as he did in 1944, chiefly because he didn't have the chance. After the first few jaunts, you soon learned you could tramp for hours in what used to be good pheasant territory and fail to kick out more than a bird or two, if that many.

Fewer birds were seen along the roads as well as in the fields. There are many complaints that there are hens around but the roosters have been badly thinned out through too many seasons limited to rooster shooting.

Other hunters revised their opinions after enjoying good luck the last week of the season. These same shooters got little earlier but last week connected for good bags without too much walking.

What happened in 1944 happened again this year, one of them told us. After the weather turned into winter, more cornfields were picked, we had a snowfall and the birds bunched up and were easy to find.

There are spots in the county where ringnecks are still numerous, if you can believe (and we do) what some of the farmers report. A farmer who has invited us to hunt in his fields the last two years told us pheasants were as thick as ever on his "home place," and even thicker on a nearby eighty which he owns.

The opening day we kicked up many birds on his farm but didn't try the eighty. We saw at least 50 birds, although his corn was still standing, and it was not difficult to get the limit.

Before the weather changed on Thanksgiving, we went back to his farm. The corn was still standing and the cover was still heavy. Where pheasants had jumped up all around us before we failed to flush more than two after a full afternoon of hard walking. And this farm hadn't been hunted much.

The next day we went to his eighty on which nobody had hunted—to his knowledge. This field had been picked, and our friend recalled there had been all kinds of birds there in the spring when he was planting corn.

We covered that field with our dog and failed to get up a pheasant, and there were no boot tracks or dead shells lying around indicating anyone had been in there ahead of us.

Where were the birds? Your guess is as good as ours. Certainly the birds the farmer had seen in the spring when he was planting corn were old pheasants which carried over from the 1944 stock. There weren't any of the 1945 brood running around in early May when he got his corn in just before the heavy rains came.

We didn't get a chance to try his fields after the weather turned. But we believe if we had we would have found birds.

The wet spring and summer were rough on the 1945 hatch, but from what we hear the brood stock is still intact. With conditions as they were this fall, the ringneck casualty list must have hit a new low this year.

We also believe the Iowa Conservation Commission heartily disapproves what we have heard some of its employees refer to as the old-time "three-day murder." Meaning the seasons we used to have which were restricted to three afternoons.

It is claimed more birds actually were killed in the intensive mass hunting that took place in the three-day seasons than are bagged during a 30 or 40 day hunt.

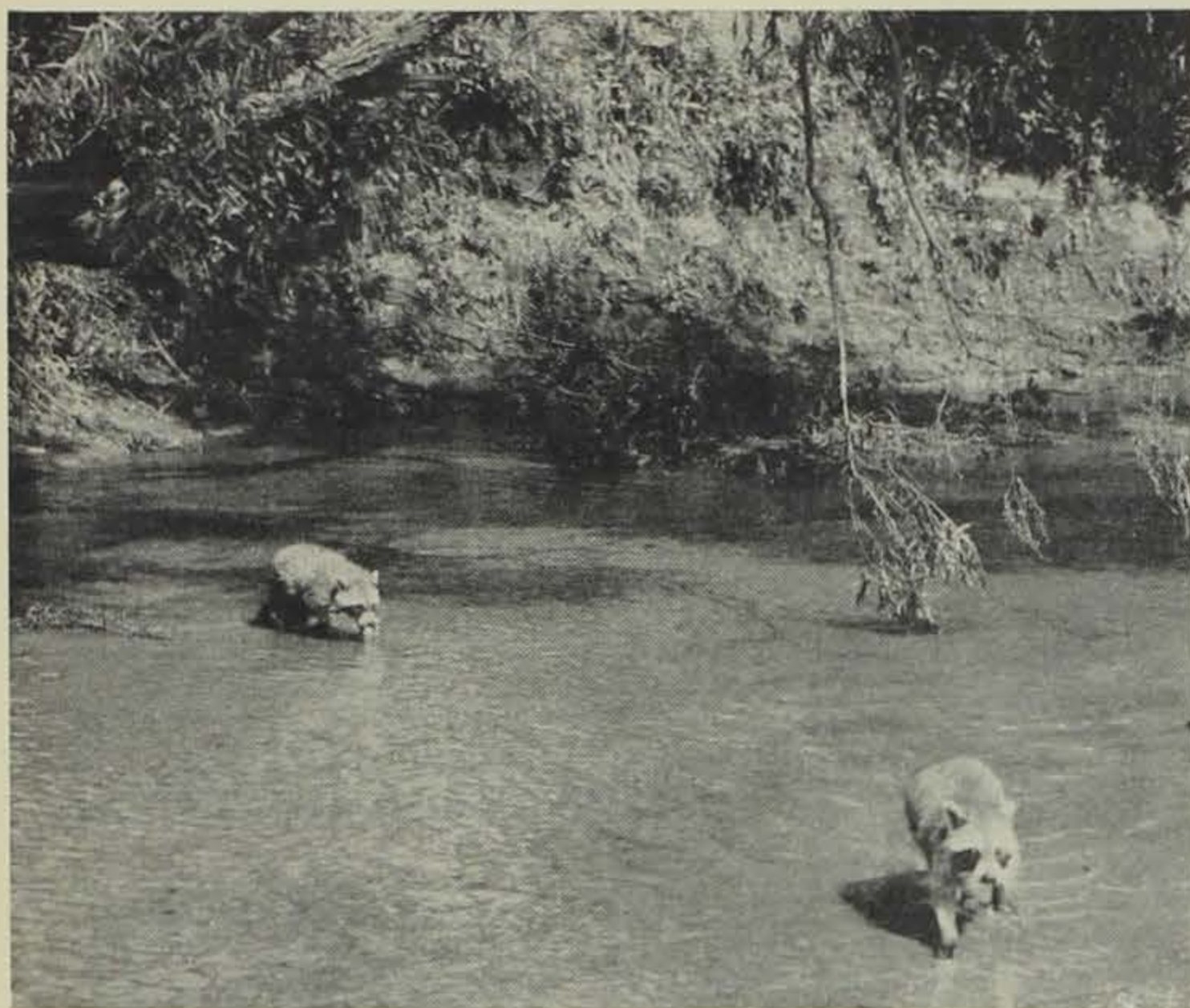
It is believed one good summer's hatch would bring the pheasant population up to where it was when it was easy to get your limit almost any place.

With plenty of birds believed left this fall, we have heard it said a good hatch next spring would be the answer. A moderately dry spring and early summer are required for a successful hatch.

If all these surmises are true, there may be plenty of birds to go around next fall if the winter isn't too tough and the spring favors the hatch.

In that case, it won't surprise us if the Commission authorizes another 30-day shoot in the fall of 1946. We are guessing the Commission will not again revert to the mass slaughters of the old days. We think it will either be a long season next year or none at all.

—Gib Knudson, Jr.,
Emmetsburg Democrat.



Thousands of raccoon are trapped annually in this state. A small part only are used for food. The accompanying raccoon recipes are tried and found good. Try them next season.

TRIED AND TRUE COON RECIPES

By Anna Margrethe Olsen

AS a result of experimental raccoon cookery, the Iowa Cooperative Wildlife Research Unit recommends the following recipes for raccoon:

Fried and Braised Raccoon

$\frac{1}{2}$ to $\frac{3}{4}$ raccoon, dressed
Salt
Pepper
 $\frac{1}{2}$ to $\frac{3}{4}$ cup flour
 $\frac{1}{2}$ to $\frac{3}{4}$ cup fat
2 to 4 tablespoons water
1 tablespoon chopped onion
 $\frac{3}{4}$ cup stock or water
 $\frac{1}{2}$ cup rich milk or tomato juice

1. Clean raccoon carcass; remove fat if strong and dark in color, and cut out any kernels or glands. Wash thoroughly. If diffused with blood and gamy, soak overnight in a salt solution; rinse and drain. Disjoint and cut into pieces for serving. If large, use legs and thighs for frying and braising; use remaining pieces for patties, meat loaf, stews or casserole dishes.

2. Sprinkle pieces with salt and pepper and dredge with flour. Fry in hot (not smoking) fat for 10 to 15 minutes in heavy frying pan or Dutch oven, turning pieces to brown on all sides. Add 2 tablespoons water, cover tightly and bake in slow oven (300° to 325° F.), or simmer, for 1½ to 2 hours, or until tender, turning meat several times to cook evenly; add water as needed to steam meat. Remove meat to hot platter and keep hot.

3. Make gravy from drippings in pan, onion, remaining flour, stock or water, and milk or tomato juice. Season to taste, adding a few drops of Tabasco sauce or ½ teaspoon prepared mustard, if desired. Serve in hot bowl.

Breaded Raccoon

$\frac{1}{2}$ to $\frac{3}{4}$ raccoon, dressed
Salt
Pepper
 $\frac{1}{2}$ to $\frac{3}{4}$ cup flour
1 egg, beaten slightly
1 tablespoon water
 $\frac{1}{2}$ to $\frac{3}{4}$ cup sifted dry bread crumbs
 $\frac{1}{2}$ to $\frac{3}{4}$ cup fat
2 to 4 tablespoons water

1. Clean and cut up carcass as for braising or frying.

2. Sprinkle pieces with salt and pepper, dredge with flour, dip in egg and water mixture and drain slightly; roll in crumbs. Drop pieces in hot fat and fry at moderate heat 10 to 15 minutes, turning to brown both sides. Add 2 tablespoons water, cover tightly and bake in slow oven (300° to 325° F.) for 1½ to 2 hours, or until tender and well browned, turning pieces carefully to cook evenly and to keep crumb coating intact.

3. Arrange pieces on hot platter, garnish with parsley or water cress. Serve with baked stuffed green peppers, glazed turnips, tossed green salad, cranberry jelly and Southern spoon bread or Johnny cake. Makes 6 to 8 portions.

Raccoon Patties

1 pound raccoon meat
 $\frac{1}{2}$ medium onion
1 stalk celery
 $\frac{1}{2}$ teaspoon salt
Dash of black pepper
Dash of cayenne
Dash of sage
6 slices bacon
2 tablespoons butter or other fat, melted

1. Cut meat off bones of pieces less desirable for frying; grind twice with onion and celery. Add seasonings and mix well.

2. Shape into 6 cakes about 1 inch thick. Wrap a slice of bacon around each and fasten with small skewers. Brush with fat and broil or panbroil, turning and basting to brown both sides. Allow 30 minutes to cook thoroughly and crisp

bacon. If desired, place a slice of tomato or pineapple or a stewed apricot or peach half on top of each, brush with butter and broil 5 minutes longer to brown lightly.

3. For outdoor eating serve between chive-buttered toasted buns with a platter of crisp fresh scallions, radishes, carrot sticks, celery and cauliflower flowerets. Makes 6 patties.

Roasted Raccoon

1 raccoon
Salt and pepper
6 to 8 cups stuffing
 $\frac{1}{2}$ to $\frac{3}{4}$ cup flour
3 cups stock (heart and liver) and water
4 tablespoons sour or sweet cream

1. For roasting choose a young raccoon, well conditioned and weighing from 12 to 20 pounds, or 6 to 10 pounds dressed. Skin, remove entrails and clean; cut out any kernels or glands and remove excess fat, leaving a thin layer over outside to baste meat during roasting; wash thoroughly. Store in cold place several days to ripen or age. If diffused with blood or too gamy, soak overnight in a salt solution. Rinse, drain and dry inside with a cloth or paper towel. Rub inside with 1 tablespoon salt and sprinkle with pepper.

2. Prepare your own favorite stuffing for turkey or chicken.

3. Fill cavity with stuffing and sew edges together. If carcass is too large for the oven, cut in half crosswise and fill each half, holding stuffing in place with cheesecloth. Place, underside down, in greased large baking or broiler pan and truss to fit into pan. Rub salt and pepper over surface and sprinkle with flour. If lean rub with bacon drippings or other fat and cover with cheesecloth dipped in fat.

4. Roast in slow oven (300° to 325° F.) for 2½ to 4 hours, or until thoroughly done and surface is crisped and browned. Allow 20 to 25 minutes per pound. Baste every half hour with drippings in pan or with additional fat, sprinkling lightly with flour after each basting for crisp surface. If cloth is used remove each time for basting and do not replace the last half hour of roasting. When done the flesh shrinks slightly from the bone and the legs are easily moved in sockets when twisted.

5. Remove skewers and stitchings and place on heated large platter or metal tray and keep hot. To make gravy use about 4 tablespoons of the fat drippings and 6 tablespoons flour; brown and add the stock and water, stirring

until smooth and thickened. Add the cream or juice and season to taste. Serve in a hot bowl.

6. Garnish platter with celery leaves or parsley and serve with candied sweet potatoes, mushroom-stuffed tomatoes, broccoli, wild grape and elderberry jelly, and toasted garlic-buttered bread or cornbread sticks. Makes 8 to 12 portions.

Raccoon Loaf

1½ pounds raccoon meat
2 ounces salt pork
1 small onion
1 stalk celery
1½ cups bread cubes
 $\frac{1}{4}$ cup milk
1 egg, slightly beaten
 $\frac{1}{2}$ teaspoon salt
 $\frac{1}{2}$ teaspoon black pepper
Dash of cayenne
 $\frac{1}{2}$ teaspoon thyme or marjoram
1 teaspoon Worcestershire sauce

1. Use ribs and the pieces less desirable for frying. Cut meat off the bones and grind with onion and celery twice if coarse. Soak bread in milk ½ hour; add with egg and seasonings to meat and mix well. Fry small sample; add seasonings as described.

2. Shape into loaf in greased pan, or pack into greased ring mold. Bake in slow oven (300° to 325° F.) for 1½ hours, or until browned and loaf shrinks from pan. If desired brush with a mixture of ¼ cup ketchup and ½ teaspoon mustard several times during baking.

3. Unmold loaf on heated platter; garnish with parsley and arrange browned potato balls and buttered snap beans or broccoli around meat; unmold ring on heated large chop plate with vegetables around and in center of ring. Serve with a highly-seasoned egg sauce or any other savory sauce, choke-cherry preserves, rolls and a tossed salad. Makes about 6 portions.

Jugged Raccoon

2 to 3 pounds raccoon
1½ to 2 teaspoons salt
 $\frac{1}{4}$ teaspoon pepper
 $\frac{1}{2}$ cup flour
 $\frac{1}{2}$ to $\frac{3}{4}$ cup fat
 $\frac{1}{2}$ cup chopped celery tops
 $\frac{1}{4}$ cup chopped parsley
 $\frac{1}{2}$ cup rice
2 to 3 cups water
4 to 6 whole cloves
2 to 3 medium onions
 $\frac{1}{2}$ teaspoon thyme
 $\frac{1}{2}$ bay leaf
2 tablespoons ketchup
 $\frac{1}{2}$ lemon
2 tablespoons butter

1. Disjoint cleaned raccoon carcass and cut in pieces for serving; use legs and thighs and other meaty pieces.

2. Dredge in seasoned flour. Fry in hot fat for 10 to 15 minutes, turning to brown both sides. Remove meat to large bean jug or casserole.

3. Saute parsley, celery and rice in drippings, stirring to brown rice evenly. Add 2 cups water, bring to a boil and boil 10 minutes; pour over meat in jug. Stick 2 cloves in each onion; place in jug; add remaining seasonings, sliced lemon and water to cover, if necessary; cover tightly.

4. Bake in slow oven (275° to 300° F.) about three hours or until meat is very tender, adding hot water as needed. Thicken with roux of butter and remaining flour, or 2 tablespoons flour; season to taste. Makes 6 portions.



The raccoon, like other game animals, can be the principal ingredient in delicious game loaves.—Iowa State College Photo.