IOWA
CONSERVATIONIST

VOLUME 4 | NOVEMBER 15, 1945 | NUMBER 11

FISH IN IOWA'S FARM PONDS

Multiple Use Includes Fishing for Food and Recreation

IOWA MUSKRATS IN 1945

By Paul L. Errington

IN preparing a summary of this year's muskrat situation, I am thankful for the convenient leeway made possible by the chap who invented the term "spotty." For the animals are abundant in some places and scarce in others, even in the same watercourses; and these variations seem less a matter of good or poor environment than they ordinarily do.

The more foodless and coverless and otherwise unattractive quarters still have the low or insecure populations they may be expected to have, but many fine-looking muskrat habitats are distinctly short of muskrats.

In view of the nearly ideal trapping weather of last November and the substantial fur prices, one need not be surprised that the muskrats were pretty well cleaned out locally. Then, too, a deadly liver and intestinal disease of muskrats totally depopulated certain habitats during the colder months. However, neither overtrapping nor disease had uniform effects on the 1945 breeding stock, and between May and June the "spottiness" in the population picture became still more clearly evident, not only on areas kept under regular observation in connection with a year-to-year investigational program, but also from reports of conservation officers over the state.

Our two main observational areas in northwest Iowa, Cheever and Four Mile lakes, west of Estherville, had sharply reduced breed-

(Continued on page 184)

The proper location of the farm pond site is of utmost importance. A good sod pasture with gentle slope and a watershed of from 8 to 12 acres for each surface acre of water is ideal in most locations.

So You Want to Trap a Fox

By Clayton B. Seagears

(Reprinted from "The Fox in New York" by special permission of the author.)

APPARENTLY the most productive device for trapping foxes known today is the dirt or bait-hole set. One single trap set properly by this method and in the right spot may take every fox in the area within two months. The same trap has been known to take three foxes in one night and as many as eleven in a single two-months trapping season!

Foxes habitually store bits of food by digging a small and comparatively shallow hole. The tidbit is then deposited and is nosed over with earth. Thereupon the fox approves the motion by the usual sign and departs. The dirt-hole set is designed to resemble this quaint vulpine caching custom. It even goes the fox one better because the scent used as an attractor is usually far more potent than even Reynard's personal versatility permits.

(Continued on page 180)

By E. B. Speaker
Superintendent of Fisheries

THE culture of food fish in small ponds was practiced by the Oriental peoples long before the dawn of recorded history, and man down through the ages has followed this ancient art with various degrees of success.

In Iowa, shortly after the impoverished wagon trains of the Mormons rumbled across the southern part of the state, the settlers of that region began to construct small ponds for watering livestock.

As early as 1880 there was much talk of the newly imported Asiatic carp, which had been introduced into the United States by way of Germany. Many European immigrants had settled in southern Iowa, and their memories of carp as a staple food spurred their desire to try their hand at aquaculture.

Young carp were provided for the asking by federal and later by state fisheries departments, and although these fish-raising ventures rarely added cash to the pocket of the early Iowa farmer, they did supply him with a certain amount of high protein food.

Most of these early farm ponds were constructed in ravines or ditches. They were rather poorly made and in a short time either filled with silt or the earth dams were washed out by spring freshets, and carp raising in most of them was soon abandoned.

Native Fish Stocked

Pond building continued to be a part of southern Iowa farming, and in later years many farmers stocked native fishes in their ponds. The bullhead and sunfish were most

(Continued on page 179)

Iowa Conservationist

Published Monthly by

THE IOWA STATE CONSERVATION COMMISSION

10th and Mulberry—Des Moines, Iowa

JAMES R. HARLAN, Editor

LOIS AMES, Associate Editor

F. T. SCHWOB, Director

(No Rights Reserved)

CIRCULATION THIS ISSUE.....22,250
Subscription Rate.....40c per year
3 years for $1.00

Subscriptions received at Conservation Commission, 10th and Mulberry, Des Moines, Iowa. Send coin, check or money order.

HONOR ROLL

★ALEXANDER, EDW.
★ALEXANDER, C. R.
★BAKER, MILFORD
★BERRY, REE M.
★BAER, KENARD
★BJORNSON, H.
★BOGGESS, N. R.
★BRILL, JOS. W.
★BUTLER, VAN
★CHRISTENSEN, C.
★COLBY, HUBERT
★COOPER, ROB'T.
★COOPER, WILSON
★FABER, LESTER
★FARIS, LYNDEN
★FINK, LAVERNE*
★FLICKINGER, V. W.
★GEE, RICHARD
★GRAVES, LEROY
★GRAESING, H.
★HARVEY, WALT
★HAUGSE, JOHN
★HEFTY, ALBERT
★HOFFMAN, G.
★HOFFMAN, M.
★HUGHES, DAVID
★HUGHES, DON
★HUSTON, TAYLOR
★JAGO, EARL
★JOHNSON, W. A.
★JOHNSON, H. C.
★KENNEDY, WAYNE
★KESTER, GEO.
★LEPLEY, CHAS.
★MADDEN, K. M.
★MAGNUSSON, H. K.
★McMAHON, A. E.
★MOEN, THOS.
★MORF, W. J.
★OLSON, HERMAN
★PARTRIDGE, W. F.
★PULVER, ROB'T.
★RECTOR, HARRY
★RECTOR, JAS.
★RIPPERGER, H.
★ROKENBRODT, F.
★RUSH, W. A.
★SEVERSON, B.
★SIMENSON, H.
★SJOSTROM, R.
★SLYE, EDW.
★STARR, FRANK
★STEMPLE, E.
★STUFFLEBEAM, D.
★SWEENEY, ROB'T.
★UNTERBERGER, RITA
★WHALEN, JOHN
★WILDE, MILTON
★WILSON, DON
★YOUNGBLOOD, M.
★YOUNGERMAN, W.

*Killed in action.

JUSTIFIABLE HOMICIDE

Speaking of pheasant hunting brings up a story having to do with a well-known Marion couple and the sport. The Mr. and Mrs. went out for birds one day, and did all right, but it was also a close squeak for the lady in the party. She was without a gun, just lending her presence and moral support. They were going through a field about ten yards apart, when suddenly a bird got up just ahead of the lady and veered off to her side of the field, leaving her in the man's line of fire. She shouted, "There's one!" He shouted, "Duck!" She answered, "It is not!" With even greater emphasis, "Duck!" Again she came back with, "Isn't either, it's a pheasant," and about that time he was thinking of an entirely different target.

—Marion Sentinel.

BRIEF ANALYSIS OF IOWA FISH AND GAME POLICY

RESEARCH, LAWS, ADMINISTRATIVE ORDERS, LAW ENFORCEMENT

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

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

The aim of research is to know the truth. Even unwelcome truth is better than cherished error, and the welfare of our wildlife resources depends upon the extension and diffusion of knowledge. The State Conservation Commission research program is designed to determine the facts upon which fish and game policies are based.

Iowa operates under a cooperative research program in which the State Conservation Commission, the State College, the Fish and Wildlife Service, and the American Wildlife Institute cooperate. Most of the work of this unit is devoted to what we may term as basic research, such as ecology and life history studies. This is augmented by the work of biologists in the conservation department whose function is to apply to specific problems the findings of the research unit, to maintain a perpetual inventory of wildlife populations and improve censusing techniques and harvesting methods.

Research is as important in wildlife management as it is in industry, agriculture or war. Enormously increased corn production through the use of hybrid seed is the direct result of research. No one questions the value of research in bringing the Japanese war to an end with the development of the atomic bomb. It is the only available means of keeping our fish and game program on firm ground and headed in the right direction.

The information thus gained by scientists and the plans developed by skilled technicians must then be placed in the hands of competent administrators whose judgment should be based upon the facts presented and upon their knowledge of the needs of the people.

Laws, Administrative Orders and Law Enforcement

What about law enforcement? The history of protective legislation to restore or increase fish and game populations is replete with failure. This is the oldest management practice known. It is effective only as it contributes to limiting wildlife harvests to the surplus. When legislation attempts to control the methods of harvest, it at once becomes fatuous. Here we encounter such absurdities as the law which allows a person to use two lines in fishing but prohibits him from putting both hooks on one line. He may troll from a rowboat, but to troll with a motor (a less effective means of taking fish) is prohibited. For five generations people in Iowa looked to law enforcement to solve their wildlife management problems and encountered only disappointment.

Let me repeat, **law enforcement is that part of wildlife management designed to limit the take of fish and game to the surplus and secure equality of opportunity for all.** When regulations become too restrictive or impose conditions upon the sportsmen that do not contribute to this end, they fail to accomplish their purpose.

Game law enforcement is that part of wildlife management designed to limit the take of fish and game to the surplus and to secure equality of opportunity for all.

Wildlife must be considered as a crop, and the surplus should be harvested each year in the same manner as a farm crop. No two seasons or localities are alike, and it is as difficult to regulate this harvest by legislative action as it would be to govern the harvesting of farm crops by laws passed as much as two years in advance. The farmer determines the method, time and quantity of his harvest by the conditions that exist at the time. This same principle applies to the harvest of wildlife crops.

Therefore, the State Conservation Commission is vested not only with the power to enforce the laws, but also the authority to make certain regulations. That this part of the program may be fully utilized as a means of management, it is imperative that the State Conservation Commission have at their disposal vastly more information as to population densities, carrying capacities, sex ratios and harvesting techniques than is now available to them. The following example is cited:

This winter the State of New York carried on a survey of the various states to determine the status of the pheasant in each. North Dakota, South Dakota, Wisconsin and Iowa, all bordering on Minnesota, reported pheasant populations to be in a favorable position. Minnesota had the poorest population since 1938.

That Minnesota cannot produce pheasants in numbers equal to South Dakota is the result of environment, but that Minnesota should have the lowest pheasant population in seven years while South Dakota had one of the best might be the result of improper regulation of the take.

At the North American Wildlife Conference held in Chicago last year, Dr. T. H. Langlois, Director of Stone Laboratory at Put-in-Bay, Ohio, made the statement that poor fishing in fertile waters was a result of over-population much more frequently than under-population. He strongly advocated the removal of all bag limits, size limits and seasonal restrictions. While this may be somewhat far-fetched, we find that several states have liberalized or removed entirely one or all of these restrictions with a result that their fishing has improved. Here we encounter the problem of determining the carrying capacity of the water. Primarily the differences that set the management of fish apart from the management of game are a result of biological factors that govern their growth.

Warm-blooded animals utilize upwards of 80 per cent of their food intake in the oxidation that maintains the body temperature at a uniform level either above or below the element in which they exist. Warm-blooded animals reach a certain average size at maturity and then cease to grow. Cold-blooded animals taking on the temperature of their surroundings utilize all the nutritive elements of their food either in growth or in replacing worn-out body tissues. For all practical purposes they continue to grow as long as they live, provided sufficient food is available. When that is lacking they cease to grow. A four-year-old black bass may vary in size from a stunted individual of six inches to an old hoosier of line-busting proportions.

Through findings of the research scientists we must come to know more about the various fish and game species in order to intelligently formulate the regulations under which they may be taken. Popular approval or disapproval will not alter the course of nature, and civil laws cannot abolish natural ones.

A given acre of water is capable of providing the requirements of just so many pounds of fish. Let's arbitrarily set 100 pounds as the

(Continued on page 184)

Most people have no conception of the vast poundage of fish that can be produced in fertile Iowa waters. Some idea may be given from this freeze-out picture at North Twin Lake last year, where an estimated one hundred tons of fish died from lack of oxygen.

Farm Ponds . . .

(Continued from page 177)

easily obtained, hence most extensively used. Bullheads flourished in the ponds, but since no carnivorous fishes were introduced to keep the population in check, the bullheads multiplied so rapidly they soon overcrowded the pond to such an extent that available food would not support normal growth. This condition resulted in a multitude of stunted fish.

About a decade ago two Alabama fisheries investigators, H. S. Swingle and E. V. Smith, following rather closely progressive fish hatchery techniques, proved that food fish could be raised to edible size in southern waters if the ponds were fertilized to increase production of natural foods, and if the proper species of fish were stocked.

Since large numbers of sunfish could be reared in fertilized waters, their problem was to find an acceptable predaceous fish to keep the sunfish in check. In their experimental work they found the largemouth bass most suitable for this purpose.

The food chain in this set-up is quite simple when analyzed: (1) Plankton (minute plants and animals) is produced in large quantities when fertilizer is added to the water; (2) bluegills feed on the plankton so produced; and (3) the largemouth bass consume the bluegills.

The work of Swingle and Smith has been given widespread publicity in nationally distributed popular magazines, as well as in scientific publications. Farmers and sportsmen have flooded the offices of federal and state fisheries departments for literature on farm pond fish culture and for fish to stock their ponds. A number of excellent bulletins are now available on farm pond fish management.

10,000 Iowa Farm Ponds

It is estimated that in the southern counties of Iowa there are over ten thousand farm ponds. So great has been the demand for fish to stock these ponds that the 51st General Assembly passed a law permitting the Conservation Commission to do so, providing the ponds are suitable for this purpose.

At the present time these farm ponds are being surveyed to determine suitability. Only those ponds which are reasonably sure of producing fish and holding them over the critical winter months will be stocked by the Commission.

Farm ponds eligible for stocking must:

(1) Contain a minimum of one-half acre of surface water (100 by 200 feet);

(2) Have a minimum of eight feet of water in the deepest area;

(3) Be fenced or otherwise protected to keep out wading livestock;

(4) Have a watershed sufficient to maintain pond level, yet not great enough to endanger the dam during heavy rains;

(5) Be located on uncultivated lands or in a locality where soil erosion is not excessive.

In addition to these physical requirements, the Commission requests that with the consent of the landowner reasonable use of the pond for fishing be granted with no fee for the privilege.

Obviously these small water bodies cannot function as general public fishing waters. However, state fishing licenses are necessary except for the owner and his family, and state fishing laws apply for all.

Contruction of the Farm Pond

In some sections of Iowa, farm ponds can be constructed with facility, while in other areas the soil is too porous and will not hold water. The Commission urgently recommends that anyone desirous of constructing a pond contact his local U. S. Soil Conservation Service office, U. S. Agriculture Department agent, county farm agent, or other similar organizations in the county. These men are familiar with the soil types and the mechanics of properly constructing farm ponds.

The proper location of the pond site is of utmost importance. A good sod pasture with gentle slope to insure maximum water area in relation to the volume of fill required in the dam is generally considered ideal for the drainage area. A watershed of from eight to 12 acres for each surface acre of water is considered good, although conditions will vary somewhat in different parts of the state.

Through the courtesy of the Missouri Conservation Commission, we are reprinting from their bulletin, "Multiple Purpose Farm Ponds," a typical cross-section through a farm pond dam. The best clay available should go into the core of the dam. Porous soils, sand and gravel should never be used. The dam should be built up in six-inch layers, and a good grade of clay used, especially on the water side of the dam.

In Iowa, the most common cause of earth dam failures is inadequate spillway capacity and insufficient freeboard. The spillway must be of sufficient size to release flood waters and prevent water from flowing over the dam proper. The freeboard is that part of the dam which is above the maximum flow level in the spillway, and its function is to hold the water in the pond until it can escape through the spillway.

Fertilizing the Farm Pond for Maximum Production

The purpose of fertilizing the farm pond is to increase the poundage of fish. On lands of low fertility this is necessary. On highly fertile watersheds, however, artificial fertilization of farm ponds is not necessary and may even prove detrimental. A large variety of fertilizers have been recommended by various fishery technicians, and a few of the most commonly used are listed here. On sterile or unfertile lands it is important to add enough fertilizer to insure an adequate food supply, but it is also mportant to stay within the recommendations so an excessive growth of objectionable blue-green algae will not occur.

Swingle and Smith recommend an application of 100 pounds of 6-8-4 mixed fertilizer (N.P.K.), plus 10 pounds of nitrate of soda for each surface acre of water. Since the war this fertilizer is difficult to obtain in Iowa. For those who wish to mix their own fertilizer the following ingredients are to be combined per acre of water:

40 lbs. sulphate of ammonia
60 lbs. superphosphate (16%)
5 lbs. muriate of potash
15 lbs. ground limestone

Additional applications can be made at intervals throughout the summer if necessary. Research in Iowa is not complete, but it is doubtful if more than two or three supplements would be necessary even on poor lands. This is perhaps due to the fact that most farm lands are rather well fertilized and a portion of this is washed into the ponds by rain.

An organic fertilizer consisting of 150 pounds of commercial sheep manure and 50 pounds of 20 per cent superphosphate per surface acre for the initial fertilization has been successfully used. This amount should be added each year for maximum results in ponds on unfertile lands.

In recent years, other fertilizers have come into prominence. As yet little work has been done with new fertilizers in Iowa, and information will have to be secured from the manufacturers.

In some state and federal fish hatcheries, ground sheep manure and common barnyard manure are used to produce a maximum poundage of fish. Care, however, should be exercised in using any organic fertilizer because of the danger of production of excessive amounts of blue-green algae. This can be avoided in the fish hatchery by simply flushing the ponds with water from the main source of supply. In farm ponds, however, this cannot be accomplished since they are usually dependent upon rainfall for their source of water.

Stocking the Farm Pond With Fish

A great many kinds of fish have been used in stocking small ponds. In the past the bullhead has perhaps been most commonly used in Iowa. It is a good flavored fish and can be readily caught by the inexperienced as well as the expert

(Continued on page 182)

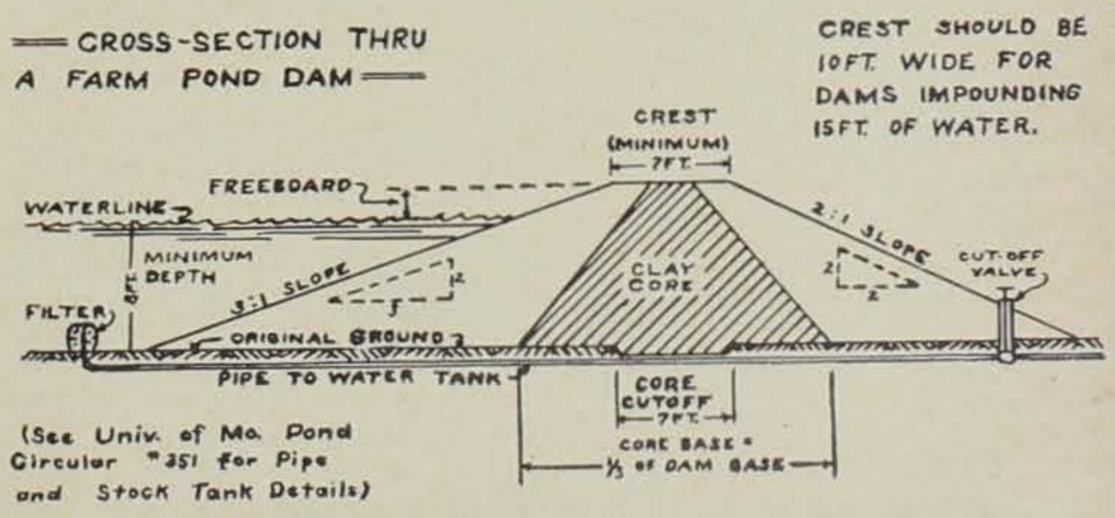


FIGURE 1

Typical cross-section through a farm pond dam, reprinted through courtesy of the Missouri Conservation Commission from their bulletin, "Multiple Purpose Farm Ponds."

One of the reasons the red fox, when not too abundant, is considered a beneficial predator. This red fox, while hunting, was being hunted. It had caught an even dozen meadow mice, which it mouthed and tossed aside before being killed. Like other predators, when not hungry the red fox sometimes hunts merely for the thrill.—Ecil Benson Photo.

Fox . . .

(Continued from page 177)

The Trap

The number 2 size trap with a jaw spread of about five and one-half inches is recommended. The type used, mainly because of its compactness, is the under-spring of which several designs are usually available. This trap can be buried with a minimum of ground disturbance. The spring **must** have a maximum quickness and strength of action because it must thrust up through its dirt covering and grasp the fox as high as possible. The fox springs with the trap. If the latter is sluggish—the fox wins and soon learns to shun every baited set. Therefore, a slow trap is much worse than none at all. Some trappers file the trigger notch to permit release under the slightest pressure. Others prefer to leave it alone. Some shorten the chain to a foot or so, contending that the less slack available when the fox jumps—particularly that invariable first jump—the less likelihood of pulling out. Some attach a sturdy wire spring to the stake end of the chain. However, thousands of foxes are caught with the original chain wired directly to the stake without even a swivel.

Treating the Trap

The trap should be de-rusted and otherwise deodorized. All the rust possible first should be removed from an old trap. The procedure is tiresome but it is presumed to be worth the effort. Boiling a half hour or so in lye helps. The trap is next boiled in water containing soft maple bark or twigs, hemlock, logwood chips or any similar staining wood. Boiling continues until the trap is "blued." Grease and rust particles will be on the surface. Therefore, the water should be poured off the trap, so that none of the boiled-off material will adhere when the trap is lifted from the container. This is important.

The trap is then hung outdoors or in a shed until ready to use. Some trappers maintain that the stained traps should be coated with paraffin or beeswax to prevent rusting. If this is to be done, dip in melted paraffin or wax — immersing the trap long enough to warm up and thus hold a thin coating. Some even paint the traps with good shellac, maintaining that the alcohol base odor departs in a few days. The preparation of traps is, therefore, much a matter of individual experience—whether they be waxed, shellacked, smoked, boiled first in lye before bluing, buried in a manure heap or even left hanging outdoors untouched from one season to the next. In any event they should be clean, as odorless as possible and of lightning action.

TRAPPING LURE

A good lure is most important for the fox trapper. It should be sufficiently appealing to make the animal turn from a straight course many yards away and go directly to the trap. Some lures have an opposite effect, especially if used in too great quantity, or they may merely make the fox roll on the set. The safest way is to buy tested scent from a reliable commercial specialist in trappers' supplies. This usually is compounded of materials not ordinarily available and does away with home experimenting and subsequent trial in the field. Enough to last the average trapper a year costs about a dollar.

Tracks in the snow tell the story of the fox's hunting habits. The meadow mouse in the foreground was caught in the grass clump at the bottom of the illustration. It was killed and the fox plunged a few steps farther and caught the second mouse. Mice and rabbits are the favorite food of foxes the world around.—Ecil Benson Photo.

Stakes and Wiring

Trap stakes usually are hard wood, or angle iron, long enough to hold, depending upon soil conditions (usually 10-15 inches), and sturdy enough to stand driving in frozen ground. However, many trappers use angle iron stakes, half-inch pipe, old mower blades or kindred materials. The trap chain is firmly wired to the blunt end, or it may be attached to a swivel. The wiring also helps prevent the splitting of wooden stakes from the hatchet blows. Incidentally, the wire used also is deodorized and blued—with the traps.

Making the Set

Having selected the site for the set, walk directly to the spot **after** presetting the trap. The spot preferably should be level (a six-foot square is sufficient) where the ground either is bare or has very short grass. There should be no nearby obstacles to arouse suspicion when the fox circles the set. Proceed as follows:

1. Put down the ground cloth, if one is used, and step on it. Don't walk around. Stand in one spot.

2. Reach over with spoon or digging tool and make a **slanted** hole approximately large enough to bury two hen's eggs, one on top of the other endwise. But don't use eggs. They're mentioned merely as illustration.

3. Merging with the slanted hole, make a flat excavation wide enough to handle the trap easily and deep enough so that the pan is not more than a half-inch below the original ground level. (See Nos. 2-3 of Figure 2.) Put the excavation dirt on the ground cloth, or throw most of it as far as possible from you.

4. Next drive the stake directly under where the pan of the trap is to be and coil the chain around out of the way in the depression. Set the trap down **solidly.** The trap springs should line up with the **slanted** hole. (See No. 2.) Thus when the fox approaches from the front to look into the hole and steps on the pan while doing it, the jaws will spring up on each **side** of the foot and **not** in front and behind. If they did, the foot might be kicked out of the way.

5. Now carefully replace some of the excavated dirt around and next to the jaws both inside and out. Be careful to get none of the dirt **under** the pan. Otherwise it obviously won't depress. Wool, duck feathers or similar soft water-resisting material can be placed under the pan to help assure free action. The jaws and the pan should be just level with the built-up dirt but should not be covered by it. (See No. 4.) In freezing weather do this filling with seed-less buckwheat chaff. If there are seeds, mice are likely to ruin the set.

6. Place the square of soft paper over the pan to keep the final screened-dirt covering from filling in beneath it. (See No. 5.) There now remains not more than a half-inch of filling to bring the trap excavation to its original level. At this point the trap should be steady and the footing firm all around except and **only** except directly on the pan.

7. Place a couple of small squares or bits of the bait at the bottom of the hole. (See 3.)

8. Now for the final covering. Use either (a) the dirt originally excavated or (b) the special ant-hill dirt (in which particles have been well separated by the ants) from the container. This granular composition helps retard freezing,

FOX UP

Read more about the fox in forthcoming issues of the "Iowa Conservationist," under these titles: "The Bounty and Fox Control," "Ding, Ding, Here Comes the Fox Hunter," and "More Facts About Foxes."

especially if this earth has been thoroughly dried out in advance. In any event, spoon the dirt into the sieve and carefully sift it over the trap until all is well but not deeply covered. (See 6.) A quarter to a half-inch is about right, depending on the quality of the covering. It should be thick enough so that rain won't wash it away and expose either the jaws or the pan cover. That's why the set should be reasonably level. Water also should drain from the trap base into the hole to prevent possible frozen action. If buckwheat chaff or dried horse manure has been used for the filling, care should be taken to cover it thoroughly but not deeply. The bait, also, should be slightly covered. (See 3.)

9. Next place **two** or **three** drops only of fox lure at the top of the hole away from the trap. If the lure is thick and won't pour, dip a twig in the bottle and drop it on the hole. But **don't use much lure,** otherwise the fox is very likely to roll in it and spring the trap. A few long guard hairs in the closed jaws next morning will tell the story.

10. When completed the set will look something like No. 7 of Figure 2. In other words it's supposed to resemble a naturally-dug food cache. Some trappers even go so far as to imitate claw scratches.

11. All this time you have been standing in the same spot or on the ground cloth. Make sure that all excess dirt is thrown some distance away and that no pebbles or sticks are where they might delay the trap action or get between the jaws. See that all tools are back in the pack basket, then walk straight on over the set and away. Don't stand around and

(Continued on page 181)

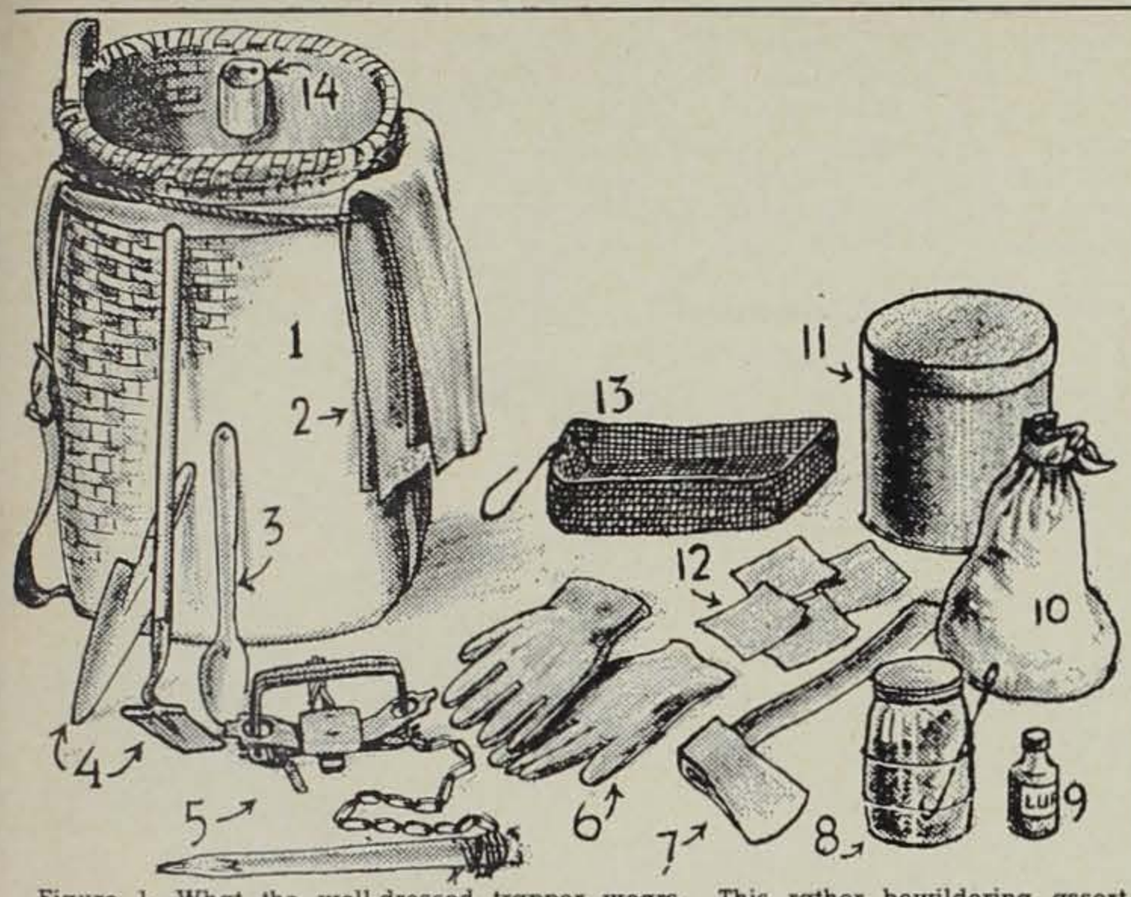


Figure 1. What the well-dressed trapper wears. This rather bewildering assortment represents all the accessories necessary for making the productive dirt-hole set. (1) Pack basket, (2) ground cloth, (3) spoon or (4) trowel or cut down hoe, (5) underspring trap and stake, (6) gloves, (7) heavy hatchet for hammering or for chopping frozen ground, (8) jar of bait, (9) lure, (10) bag of chaff (for freezing weather), (11) can of specially treated dirt (in case mud prevents sifting), (12) paper for trap pan and (13) sieve. Each item has a special place in the operation. Individual trappers use variations, of course.

Fox . . .

(Continued from page 180)

admire the work. All should be as natural as possible, even your own line of travel.

12. Be sure to line up the **exact** position of the set. Write it down in a note book if necessary.

13. Don't set another trap nearby unless there's a special reason. A half-mile or even a mile away usually is near enough. A dozen fox traps properly placed will do a far better job than 100 in the same general area. Foxes soon associate the same scent with traps, especially if the sets are clumsily made or a fox has had his toes pinched.

14. Many trappers warn against smoking or chewing during the rounds of the traps.

15. Add new scent every four or five days. If it has rained, it will be necessary to renew it immediately. Fresh bait may be added occasionally.

When You Catch a Fox

When you catch a fox, you'll see him soon enough, particularly if he's red. This species seldom quits. A gray usually sits quietly. Sometimes a gray can be removed from a trap and carried away alive with nary a struggle. They're funny critters—those grays. The killing should of course be immediate and it should be humane. A sharp blow at the base of the skull is efficient, but a blood clot may be harmful to the pelt unless the latter is immediately removed. **Never** shoot a fox in a trap. The blood and powder smell will drive other foxes away.

Many trappers place a foot carefully on the fox's fore ribs and press heavily and quickly down and toward the rear. The fox never knows what happened. It's bloodless and over with in a moment.

Put on trapping gloves. Remove the animal from the trap and reset without pulling the stake. Pay no attention to the torn-up circle the fox has made. He has left plenty of natural scent to help lure the next customer, and remember that a fresh-caught fox is easier to skin.

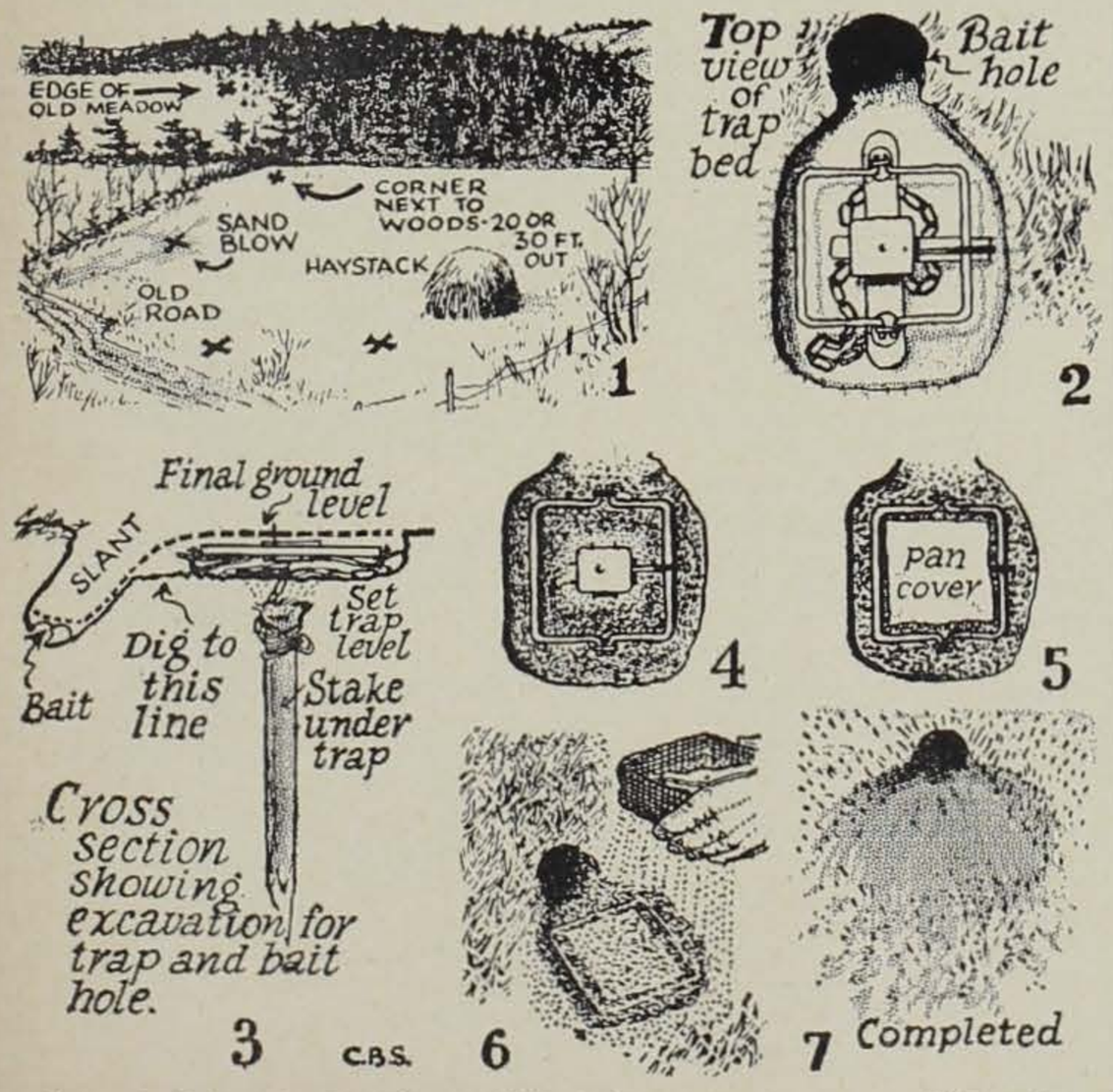
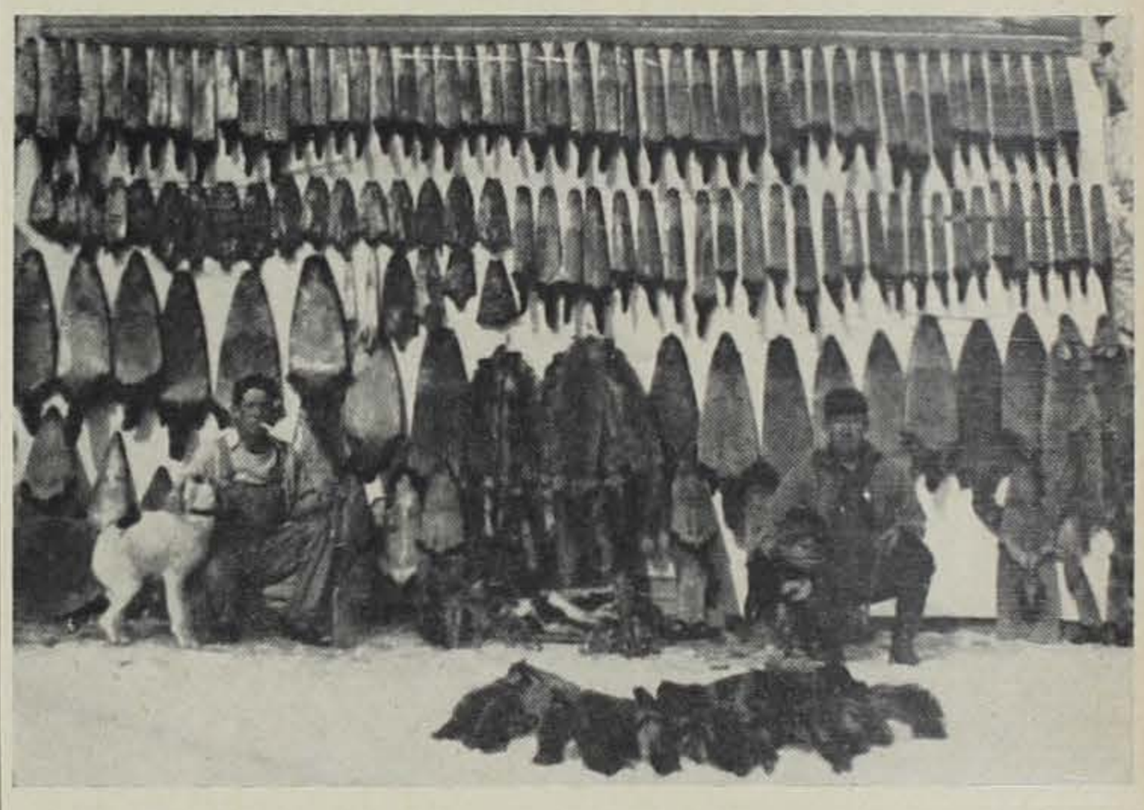


Figure 2. Making the dirt-hole set. (1) Typical trap sites for red fox. (2) Top view of trap in place and outline of excavation. (3) Cross-section. (4) Trap showing dirt built around jaws to make solid footing. No dirt should be under the pan. (5) Pan cover in place. (6) Sifting dirt over trap. (7) Set completed.

IOWA CIVET WORLD LEADER

Iowa trappers need not apologize for the quality of the pelts they offer their fur buyer if the animals are trapped when prime and are then properly handled. Several kinds of Iowa furs rank right at the top of the quality heap when competing with the finest furs of their type, regardless of where the competing furs were taken. For instance, Iowa muskrat, skunk and raccoon are not out-classed when compared with the best quality offered. Iowa civet cat are the finest in the world. This latter fact was recognized in the European fur markets before the war, and particularly in France where the term "Iowa civet" meant the finest civet cat pelts that money could buy. Fur buyers paid accordingly for them.

Speaking of paying for raw furs, Iowans sold $4,952,876.49 worth of raw furs during the last two trapping seasons, 1943-44 and 1944-45, not as much, of course, as was paid for Iowa corn, hogs or cattle, but a sizeable hunk of long green nevertheless.



Iowa trappers need not apologize for the quality of the pelts they offer their fur buyer if the animals are trapped when prime and are then properly handled.

Training for a bird dog should start when it is eight or 10 months old. Dogs are like children, and if you want a youngster to learn baseball, you let him go out and handle the ball and try to hit with a bat. Then he is so enthusiastic that he will learn the finer points of the game eagerly. The same holds for bird dogs. After a pup has had a taste of the field and has had some experience with birds, it learns the rules more quickly than if it never saw a bird.—Outdoor Life Encyclopedia.

AIN'T IT THE TRUTH?

The owner-publisher-editor-printer of one of Georgia's coastal county newspapers was a great fisherman. As soon as the weekly paper was out on Thursday night, it was his habit to make for his favorite spot and indulge in his beloved pastime until the first of the following week.

Came a week end, however, when the moon, water and bait were just right and the fish were biting so fast and furiously that he just couldn't tear himself away on Sunday, or Monday, or Tuesday, or Wednesday—until finally on Thursday afternoon he awoke with a start to the enormity of his sin. Here it was press time and not the first lick hit on the paper. Frantically he threw his tackle into the car, speedily drove back to town, his mind racing as fast as the motor all the while.

Then out of bleak desperation flashed a brilliant idea. The forms of last week's paper were still on the press. It took but a moment to set the line which he inserted above the head on the front page: "REPRINTED BY REQUEST."

—The Iowa Publisher.

Gov. J. Howard McGrath, of Rhode Island, is determined to stamp out pollution in the rivers and harbors of his state. He has recently offered $50,000 of state money for a pollution study if industry will match the amount.

—National Wildlife Federation.

Farm Ponds . . .

(Continued on page 179)

fisherman. Although it is used extensively in stocking larger lakes where fishing pressure is heavy, it has not proved to be a good fish in most small ponds when stocked alone. It is a prolific fish, and without competition soon overpopulates the pond until stunting occurs. When this happens, the entire population suffers, and three- and four-year-old fish are less than six inches in length and unfit for table use. Used in combination with largemouth bass, bluegills and crappies, however, the bullhead has proved very satisfactory in lakes of 25 acres and up.

A combination of largemouth bass and bluegills appears to give best results in small ponds (five acres or less. They should be stocked as fingerlings, if possible, and using the proportion of 100 bass to 1,500 bluegills per surface acre of water.

Missouri has found that combinations consisting of 75 bass, 25 crappies, and 1,200 bluegills, or 75 bass, 25 bullheads, and 1,200 bluegills will yield satisfactory results also. Since these combinations have not been thoroughly tested in Iowa farm ponds, the Commission will continue to use the bass-bluegill combination as recommended by Swingle and Smith, except in experimental ponds.

It should be clearly pointed out that all other fishes, even minnows, must be excluded from farm ponds if maximum results are to be obtained. Those interested in angling for walleyes, channel catfish, smallmouth bass, yellow perch, trout and other game fish should content themselves to fish in waters which are suitable for the growth and reproduction of these species. Certainly they have no place in the small farm pond program.

Aquatic Plants

The status of aquatic plants is not agreed upon, even by experienced fishery technicians. A point of mutual agreement, however, is that cattails, water lilies, water hyacinths and other plants which are apt to cover most of the water area of the pond should be avoided. One school is a firm believer that aquatic plants will furnish oxygen, a certain amount of food and good cover for young fishes. Other scientists will agree with these values, but point out that when using only bass and bluegills, the young of the bluegill must be readily available for the bass as food at all times, and that water plants afford too much protection to make this possible.

While we do not recommend aquatic plants in the farm pond, if used at all, they should be planted sparingly and kept under rigid control to prevent their wide spread.

Marginal plantings are quite a different story and should be encouraged. These plants are introduced along the shore, particularly at the upper end of the pond, and tend to check silt from entering the pond and erosion caused by wave action to the pond banks. Certain cover crops of the grasses, spikerush (**Eleocharis palustris**), arrowhead (**Sagittaria latifolia**), pickerelweed (**Pontederia cordata**), sedge (**Carex comosa**), wild millet (**Echinochloa pungens**), and even some of the bulrushes can be used to good advantage.

These plants may encourage muskrats, and a certain amount of control may be necessary during the open trapping season if the dam of the pond or dykes are endangered.

Harvesting the Crop

The biggest problem of the farm pond program is harvesting the crop. If the pond has been properly constructed, fertilized where necessary, and stocked with fish, the owner should experience little difficulty in raising a crop of fish to maturity. Most authorities agree that from 100 to 225 pounds of fish can be removed per acre of water each year. **Since it is improbable that over 50 per cent of the fish can be removed by hook and line, it is necessary to fish the pond extensively to keep it in balance.** Here is where the difficulty lies. Most farmers are pressed with other duties and have little time to spend at their ponds fishing. Then, too, the fine art of angling is not always clearly understood, especially in the taking of bass. The usual equipment—willow pole and worm—is less productive than other items of tackle. It is not necessary to purchase a fancy flyrod and all the regalia of the "purist," but artificial lures and a variety of live baits, including grasshoppers, minnows, frogs, hellgrammites, etc., are more apt to fill the stringer than the proverbial worm securely held to the bottom of the pond by half a pound of lead. Remember, too, there are from 50 to 100 or more small fish in the pond to every fish of legal size.

Extremely small hooks should be used in fishing for bluegills—never larger than No. 6 and preferably No. 8 or 10 for most live baits. Small grasshoppers or crickets fished on or near the surface or bits of angleworm are good live baits for bluegills. If you like to flyfish, the ordinary trout fly, either wet or dry, in sizes from No. 6 to No. 12 is very effective.

Since bass, and for that matter bluegills, too, usually bite best early in the morning or in the evening, perhaps you will have more time to fish than you think.

After the initial stock of fish has been received, the Commission's obligations cease. From here on it is up to the owner. Except in rare cases farm ponds will not be restocked with fish, since there should be ample natural reproduction to replace the fish removed by hook and line. The bluegills and bass will mature in Iowa in about two years (one year after they are stocked as fingerlings). They should be allowed to reproduce their kind once before fishing starts. Once they have reproduced, the pond should be fished as hard as possible if it is to be kept in balance.

Farm Pond References

Additional farm pond information relative to construction, fertilizing, stocking, and general management may be secured from the following sources:

1. Management of Farm Fish Ponds. Bulletin 254. Alabama Polytechnical Institute, Agriculture Exp. Station, Auburn, Alabama.

2. Multiple Purpose Farm Ponds. Bulletin 15. Missouri Conservation Commission, Jefferson City, Missouri.

3. Aquatic Plants for Multiple Purpose Farm Ponds. Bulletin 16. Missouri Conservation Commission, Jefferson City, Missouri.

4. Management of Small Artificial Lakes. Vol. 22, Article 3. Illinois Natural History Survey, Urbana, Illinois.

5. Fish for Food From Farm Ponds. Farmers Bulletin 1938. U. S. Department of Agriculture, Washington, D. C.

6. Techniques of Fishpond Management. Miscel. pub. 528. U. S. Department of Agriculture, Washington, D. C.

7. An Outlet Gate for Farm Fish Ponds. Fishery leaflet 65. U. S. Fish and Wildlife Service, Dept. of Interior, Chicago 54, Ill.

8. Fish Farming (4227a. Mimeographed by Lawrence V. Compton, 1942). U. S. Soil Conservation Service, Washington, D. C.

9. Cooperative Farm Pond Development. Ohio Division of Conservation and Natural Resources, Columbus, Ohio.

10. Fish Management Guide for Oklahoma. Oklahoma Game and Fish Commission, Oklahoma City, Oklahoma.

HUNTING, FISHING TOP SPORTS OF VETERANS

By Harry Grayson

Polling returning veterans the American Legion Magazine finds that 70 out of every 100 want to go hunting. And 62 of every 100 rate fishing next to hunting as their favorite recreation.

Here's the score on the survey, percentage-wise:

Hunting	69.33
Fishing	61.87
Swimming	56.04
Baseball	43.01
Football	32.29
Camping	31.61
Motorboating	29.58
Trapshooting	26.87
Skating	26.05
Golf	22.52
Hiking	19.54
Bicycling	15.47
Flying	14.52
Sailing	11.26
Skiing	9.36
Badminton	5.97
Archery	4.61
Basketball	4.21
Riding	2.31

Outdoor Oddities

BY WALT HARVEY

A score or more other sports are mentioned.

A magazine survey indicates that in the next few postwar years more than 26,000,000 people will hunt and fish, and that their annual expenditures will be something like $3,025,485,000.

There is nothing new or surprising about these figures. Several years ago a magazine interviewed 5,000 representatives of various economic groups from all sections of the country to ascertain that they preferred hunting or fishing to watching sports events of all kinds combined.

The Dayton Miami valley outdoor program was conceived last spring when the Dayton Journal-Herald found that 90,000 people checked in at a lake 50 miles from Dayton on the same Sunday that the Reds performed before 9,000 persons in Cincinnati, 50 miles away. On the same day, there were turnouts of 65,000, 32,000 and 48,000 at other adjacent lakes. These figures did not include bank fishermen on five streams flowing throughout that part of Ohio.

It is frequently said that baseball and other sports are overpublicized at the expense of fish and game columns. That may be true, but it's up to the fish and game columnists to make the stuff readable.—Sioux City Journal.

PENNSYLVANIA COMMISSION MAKES RECORD LAND PURCHASE

The Pennsylvania Game Commission has announced completion of the largest single land purchase in its history—the acquisition of the 39,921.5-acre property of the former Philadelphia and Reading Coal and Iron Company near Harrisburg, at a price of $64,465.58. Several small refuges of 200 to 500 acres each will be established, but the major portion will be open to public hunting and fishing. The area is said to provide good hunting, especially for deer. There is a trout stream on the property.

COTTONWOOD TIMBER

By E. T. Wellberg

Cottonwood has been used in farm construction with some differences of opinion as to its quality. "Cottonwood is as good as any lumber available at any time for sheathing and siding," I was told recently by Marve Vanness, a farmer living in southeastern Keokuk county. We were looking over a tract of bottomland timber that was ripe for cutting, and the comment was brought up while we were examining some large cottonwood trees.

This farmer told me how his father had cut timber from their land back in the 90's and then had the logs sawn into material for specific uses in farm building construction. He showed me some very serviceable farm buildings that he had helped build at that time.

The barn, about 30 feet by 36 feet in size, had sills made of white oak; the studdings and rafters were of ash and maple; the floor was oak. In the interior construction they had used maple and elm, and the exterior siding had been made of very wide inch-thick cottonwood boards, placed vertically.

Most of the cottonwood siding boards were from 16 inches to 22 inches wide, and despite the intervening years of weathering, with never as much as a dab of oil or paint, the walls were in very good shape and individual boards had a very limited amount of checking and cupping. This barn and many others that have been seen are certainly excellent examples of the high grade utility of native timber in construction and the durable qualities of native lumber even under adverse conditions.

Many of the cottonwood trees in the bottomland averaged from 1,500 to 2,200 board feet of lumber per tree and from all indications would saw out high quality lumber. Upon examination of the rate of growth of several trees, it was apparent that a fully stocked stand of cottonwood could be expected to yield 1,000 board feet of growth per acre per year. A nearby bottomland field had been abandoned a few years ago because of excessive flooding, and here the farmer and I found thick reproduction of cottonwood with some elm and black birch in mixture. All of the young trees were veritably reaching for the ceiling, as their density gave them no opportunity to become limby from side growth. Of course there had been no grazing in any part of these different stands or the tree growth conditions would not have been as good.

Cottonwood has not only been found highly satisfactory in farm construction, but during the war it was also found to be very desirable for veneer material, boxing and crating, and for pulpwood. The long, clear boles and quality of growth of cottonwood trees have contributed to the desirability of this species for use in veneer. Thousands of board feet of cottonwood veneer logs were shipped from Iowa during the war period. The market for pulpwood brought about a closer utilization of the trees as material could be marketed down to three inches in diameter.

The rapid growth of cottonwood and its adaptability to very good growth on bottomlands makes it one of Iowa's most valuable and promising timber production trees. The versatile uses of cottonwood timber make it certain that it will always have a ready market, whether on the local farm or to supply industry.

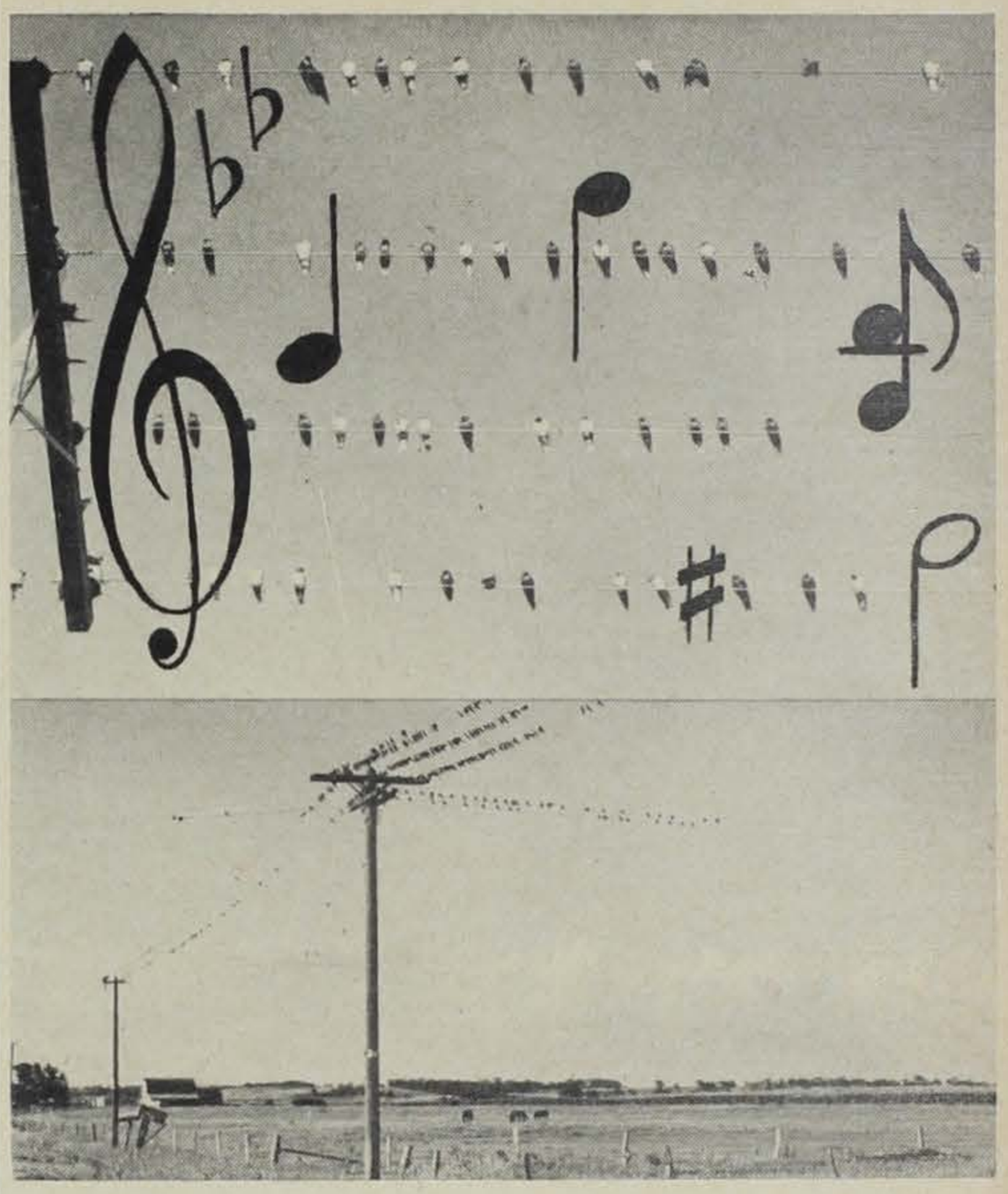
WHY DO BIRDS GO SOUTH?

Before long the birds will be going south. Why do they migrate? Not because the weather gets too cold for them, says Ludlow Griscom in his book, "Modern Bird Study."

Birds aren't little creatures. They are tough. Most feathered vertebrates are far better adapted to withstand extremes of temperature than are mere men, or frogs, or woodchucks. They don't have to put on woolly underclothes and overclothes, or to hibernate. As long as they can get food, they can take the cold. Supplies of suet at feeding stations, Mr. Griscom says, have kept orioles and mocking birds alive all winter—even down to 20 below—in Massachusetts, and such birds normally go south.

Food has something to do with it. But food supply doesn't explain why some birds every year migrate from the Arctic to the Antartic and back again, why West Indian birds migrate to South America, or why others summer in cool Canada and regularly winter in the hottest tropics. Why shouldn't a hummingbird be content on the Gulf coast instead of insisting on two annual 700-mile non-stop flights across the Gulf of Mexico?

Elaborate experiments in Canada prove that increased light stimulates birds' reproductive organs and suggest that migration is related to the reproductive organs and suggest that migration is related to the reproductive cycle. But Mr. Griscom, an old tropical researcher, points out that a lot of our summer birds winter on the equator, where there is no change in the length of daylight hours throughout the year, and start north before the spring moult and before the reproductive modifications begin. They actually move into regions of colder temperatures and less daylight. Meanwhile other birds which live all year in the tropics go through the reproductive cycle without migrating.



Everyone is aware of the fall migration of birds. Flocks of swallows such as these may be observed lining telephone wires each fall. They are responding to the song of the southland—but why?

Then there is the glacier theory: That migration is an atavism, kind of racial memory of the eons when northern birds had to move south to get away from the glaciers. It doesn't quite make sense; and besides, as Mr. Griscom sourly remarks, there is no way of proving it. Migration remains a mystery. Mr. Griscom stoutly maintains that birds are pretty dumb, but he admits that in 25 generations or so they sometimes learn something. Just what the process of racial learning is remains a bit of an evolutionary secret.

Chimney swifts have, in three centuries, completely abandoned their aboriginal hollow tree nesting sites. In pre-Columbian days there were, of course, no barns for barn owls or barn swallows; they learned to like barns. Sparrow hawks, and even duck hawks in Montreal, have adapted themselves to skyscraper life. The shy wild turkey in Texas runs about freely within sight of the Houston-Brownsville trains, but keeps away from the automobile highways. The European starling, introduced to the east coast of this country in 1890, has proved itself "hardier than the Pilgrim fathers" and has already reached Mexico.

Bird lore is full of contradictions. For example, crows do not like New York City and are seldom seen in its parks. Over in Boston crows stroll about the Common every day and nest on Commonwealth avenue. Why?

Mr. Griscom believes in bird species there are tribes, "populations" he calls them, which have different memories and habits. But it is merely a theory.

He isn't even sure what is a species. Scientists used to have neat definitions but none of them seem to fit precisely. Like the rest of us they aren't very certain about anything any more.

—Council Bluffs Nonpareil.

The largest single element in the endeavor to preserve nature and primitive wilderness is public enlightment.

—National Parks Magazine.

Administrative agencies unfortunately cannot conduct management strictly on the basis of the needs of the creatures involved, but have in addition the problem of managing the hunters—just as important and often more difficult than managing the birds. Without public support the soundest restrictions are likely to fail.

—Albert M. Day, Assistant Director, Fish and Wildlife Service.

Wall Lake in north central Iowa furnished excellent trapping last year, and the experimental refuge set apart for breeding stock did a fair job of repopulating the trapped-out parts during the spring of 1945.

Iowa Muskrats . . .

(Continued from page 177)

ing populations—partly in consequence of environmental changes in addition to close trapping. Failure of a dam at Four Mile Lake in 1944 resulted in drying out of much of the marsh, which (even in a year classed as a wet one!) is not the sort of thing to make muskrats thrive. The opposite extreme, continued high water, eliminated some of the best stands of food plants on Cheever Lake, which didn't help the muskrats either. On the other hand, the privately owned low lands in the vicinity of Cheever Lake were in the most attractive condition for muskrats that they had been for years, and this tended to offset, from the standpoint of the neighborhood's fur production, the deterioration of Cheever Lake itself as muskrat habitat. As yet, the liver and intestinal disease has not been recognized in the Cheever and Four Mile areas.

Wall Lake, in north-central Iowa south of Clarion, furnished excellent trapping last year, and the muskrats wintering on a part of the marsh set aside as an experimental refuge for breeding stock did a fair job of repopulating the trapped out parts this spring. Despite loss of vegetation in the deeper waters, extensive growths of reeds and rushes show "sign" of goodly numbers of muskrats. We have no satisfactory basis for estimating the early fall population, but if we had the figures in hand, it would be hazardous to predict how many muskrats would be there by the trapping season in November. The threat of the liver and intestinal disease is particularly disquieting, for Wall Lake is less than twenty miles from the sites of our most carefully studied epizootics; and if the disease got started, it very conceivably might sweep the marsh. The place seemed essentially disease-free up to the middle of October.

To the south, at Goose and Little Wall lakes, near Jewell, the disease has already demonstrated a few of its tricks, and the latter include some that are quite special.

Hundreds of muskrats died at Goose Lake in the fall and winter of 1943-44; and no sign of any remaining alive was detected when the ice went out in the spring. Newcomers died almost as fast as they appeared until the epizootic seemed to have run its course by summer. The population had built up somewhat (mostly from animals drifting in) by late summer and early fall, 1944; then the contagion "flared" again and swiftly cleaned out half of the marsh without noticeably affecting the other half. Trappers reported poor 1944-45 catches from a once productive drainage ditch to the west, which poor catches they attributed, probably correctly, to the same disease. In 1945, the half-dozen or so breeding pairs and their young, living at Goose Lake, got along well until early October, when the disease once again started up in a very business-like manner.

The disease was not known to have appeared on Little Wall Lake prior to October, 1944, regardless of the fact that a heavy population had been inviting it for at least a year—with Goose Lake three miles away! It started as something of a climax to months of severe mortality from non-pathologic causes, which followed dying of great stands of cattails from high water and the fighting and readjustments of actually thousands of muskrats finding themselves increasingly out of balance with their environment. It just had time to kill the muskrats of a short stretch of shore line before the opening of the trapping season. Unquestionably, prompt reduction of muskrats through trapping interfered with the spread of the disease (the trappers caught in a couple of weeks around 1,400, mostly shore-zone animals, on a marsh of less than 300 acres), but during the winter the disease managed to get around among the animals surviving the trapping until about half the marsh was infected. The circuit was completed in May, 1945, and Little Wall Lake became all but depopulated of muskrats. By midsummer following, it was apparent that the vanished cattails of previous years were being replaced by splendid growths of rushes and sedges and that the marsh was regaining the aspect of an attractive muskrat habitat. But only in three breeding territories had successful reproduction been noted, and in a few places could "sign" be seen of living muskrats. More muskrats appeared in the fall, but the population was still far below "normal."

The 1944-45 trapping on central Iowa streams left practically no muskrats in whole sections of land left muskrats of other sections almost unexploited. The muskrat occupants of such out-of-the-way quarters as roadside ditches and field ponds—notably those adjacent to fields of corn or soy beans—seemed to winter exceptionally well and the spring drifters from these of course helped to fill in trapped out vacancies in the main streams. At any rate, the regularly observed stretches of Squaw Creek, Skunk River, Keigley's Branch and associated ditches and tributaries had general breeding populations close to what the records indicate to be "saturation densities" of muskrats for the time of year. High waters occurred on several occasions during the 1945 breeding months, but these did not compare with the 1944 floods and seemingly did not drown many helpless young. Here the liver and intestinal disease has behaved more unpredictably than on the marshes. Specimens from the fall of 1944 proved it to be very well distributed indeed along the central Iowa streams; nevertheless, with two known exceptions, no really wholesale annihilation of stream-dwelling muskrats seemed to take place in the areas investigated.

Summing up the evidence as accurately as I can, I would say that the streams of the state should afford the best all-round muskrat trapping for the 1945 season. The prospects also look favorable on some marshes, though exceedingly poor on others.

The biggest uncertainty between now (this article went to press in late October) and the fur harvest would seem to lie in the disease, of which the chief manifestations in specimens are either or both pus-like spots on the liver (resembling spots of tularemia on rabbit livers) and reddish or purplish blotches on the large intestine that presses up against the stomach. Dead animals floating around lodges, in burrow entrances, or washed up on shore may be considered with justifiable suspicion, as may those that crawled on a bank or a lodge to die, especially when showing a bloody discharge from the anus. Although we don't know whether the disease is dangerous to man, anyone handling specimens dead from undetermined causes may be advised to take reasonable measures in disinfecting knives, clothes, hands, etc., and in disposing of remains.

Iowa's Policy . . .

(Continued from page 178)

carrying capacity of one surface acre of water. We have long recognized that these may be either game fish, rough fish or a combination of both, and for that reason we carry on our rough fish removal program. With some unusual exceptions where the area used and the food required is unavailable to other species, this limit remains at the same 100 pounds. By the same token we may have in that theoretical acre of water 400 one-quarter-pound game fish, 100 one-pound game fish, 20 five-pound game fish, or a combination of the three.

Fish are exceedingly prolific, and if the environment factors are favorable enormous populations are built up in an unbelievably short period of time. Small fish are of little value for sport fishing; and populations under these conditions must be continually and effectively reduced in order to provide sufficient food for those remaining to maintain a satisfactory growth rate. It is then seen that overpopulations of game fish provide little or no sport fishing and can under these circumstances be as detrimental as rough fish. On the other hand, exceedingly large fish exert a tremendous pressure on the environmental requirements. It is well known that these big lunkers are hook-wary and hard to catch. The time to harvest fish is when they will bite, and this applies both as to seasons and size.

(Continued next month)

SEVEN TONS OF RABBITS FROM 10,000 ACRES

More than seven tons of rabbits from only 10,000 acres of typical Orange County, New York, farmland were bagged during four consecutive seasons by hunters on one of the Conservation Department's experimental game areas, according to a report by the Bureau of Game. In the four-year period, 5,753 rabbits were reported taken. Averaging approximately 2½ pounds per rabbit, the total weight was over 14,000 pounds or nearly two tons per year.