

IOWA CONSERVATIONIST

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Lakeside Laboratory Provides Setting For Flora, Fauna Study

By DR. ROBERT L. KING
State University of Iowa

The Iowa Lakeside Laboratory is located on the west shore of West Okoboji Lake adjacent to Miller's Bay. The laboratory campus is a tract of about 100 acres and includes the entire shore line of Little Miller's Bay.

The Laboratory was established in 1909 under the leadership of Professor T. H. Macbride, and was the earliest attempt to provide a place where the rich fauna and flora of the northern Iowa lake and prairie regions could be studied and conserved on a non-commercial basis. For more than 30 years the laboratory has been operated as a field biological station. During the early part of this period the laboratory was financed by a group of alumni of the University of Iowa and interested friends of the station, and has been used by the Iowa State University to supplement the teaching of the biological sciences.

In May, 1936, the Iowa Lakeside Laboratory Association deeded the Lakeside Laboratory to the State of Iowa in trust, for the purpose of better insuring the perpetuation and fulfillment of the aims of its founders: "a station for the study and conservation of the water and of the flora and fauna of the State of Iowa."

By this transfer the Laboratory became in fact the "Iowa Lakeside Laboratory". A board of managers, appointed by the State Conservation Commission, State Board of Education, Iowa Lakeside Laboratory Association, United States Fish and Wildlife Service, and the State University of Iowa, constitutes the official governing body responsible for the maintenance and general policies of the Laboratory. Through state and federal agencies four new laboratories, a li-

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Conservation Second Only to War As Vital Problem of American People



By the improper use of the plow, the axe and the tiling spade, nations destroy themselves.

Fish Census Provides Basis For Program

By REEVE M. BAILEY

Leader, Iowa Fisheries Research Unit.

The basic need for the proper management of our fisheries resources is a thorough appraisal of their present condition. It is most illogical to attempt to cure an ill when the malady, if indeed there is such, has not been diagnosed. The day of the home remedy for fisheries problems is passing. If any body of water under consideration is producing well it should be left alone, but if there is a recognizable factor limiting production, suitable corrective measures may be applied.

In order to thrive and produce worthwhile recreation any species of game fish requires a suitable place in which to live, enough proper food, and facilities for adequate reproduction. Correction for improper habitat may involve conscious modification of the environment—lake or stream

improvement—or an effort to discourage the misfit species and encourage another better suited. Nutritive deficiencies may be offset by reduction of fish populations, including rough fishes which compete for food with game species, change of the environment to promote better conditions for food organisms, or introduction of food animals themselves (this is usually ineffective since it does not rectify the trouble permanently, but simply eases it). Reproductive failure or deficiency may be met by improvement of spawning conditions, or by stocking. It is entirely clear that stocking (a cure for inadequate reproduction) is not only useless but actually detrimental to a body of water in which an insufficient food supply is the limiting factor. Conversely, improvement of shelter and food is futile if natural reproduction is unsuccessful. No single method of management can

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History Shows Nations Decline As Resources Fade

Prior to December 7, 1941, conservation was the most vital single problem facing the American people. Since that date our most important problem is to thoroughly whip the Axis partners. This we will do, even if the task necessitates bankruptcy of our soil, timber, man power and all other resources. After we have beaten the Nazis, the Fascists and the Little Yellow Men, conservation will again rank as America's most important problem.

Conservation is often defined as the wise use of natural resources.

Non-renewable resources, such as coal, oil, and iron, we as a nation must use without waste, and when the supply is legitimately exhausted, our scientists will find substitutes for them. Renewable resources, such as timber, soil, moisture, and wildlife, we must also use wisely and no faster than they are renewed.

No great nation can long remain a great nation that wastes or dissipates its natural resources. Let us examine history to demonstrate this fact.

Shall we start at the beginning?

Most Bible students agree that the Garden of Eden was upon the Persian Gulf Coast. Eden is synonymous for great abundance. The cradle of Man is now a sandy waste. No apples, no fig trees, and scarcely even a serpent.

China, one of the most highly developed of all ancient civilizations—now splashed with arid wastes and deserts, the result of man's misuse. Famine and mud-

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Conservation

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colored floods are its annual reward.

Egypt, once heavily populated, highly civilized, and agriculturally productive. What's left? Sand deserts, the Sphinx and Pyramids, markers of a great and fallen race.

A trip to the Holy Lands reveals a desolate picture.

We come back to America and find in the western United States deserts surrounding the homes of our most highly developed aborigines.

The story is the same—man's occupancy, misused lands, and fallen civilizations.

Why this new World War? Why the first World War? What is every war of conquest for? In the final analysis they are for one reason alone—for natural resources.

Is it too much to ask the American people, even while we are engaged in a death struggle to save democracy for ourselves and our children, to think about the wise use of our God-given resources? Shall we fight to death for America and pass on to our children an Egypt, a Persia, or a Mongolian desert that would of necessity make aggressors of them? The answer is, "No, it shall not be." The answer for the past 60 years has been "no", and yet in that period of time 35 per cent of Iowa's top soil has been destroyed.

What will the next 50 years bring?

After thoroughly whipping the Germans, Italians, and Japanese, as we surely will, what would be the most certain way to eliminate these peoples permanently? Firing squads, gas, starvation? No. Races thrive on physical persecution. The Jewish race, persecuted century after century, is more tenacious than ever.

How, then, can we eliminate the menace of our enemies forever?

Destroy their soil. Not with bombs and gas, but with the implements with which all Iowans are familiar—the plow, the ax, and the tiling spade. By improper use of these tools nations destroy themselves.

Take the ax and remove all



HOW MAN DOES IMPROVE ON NATURE

forests of the enemy nations, and allow the woodland soils to dry out. Rain, unretarded directly and indirectly by the trees, would start small gullies in the dry soil. The gullies would grow and grow. Take the plow. Plow all the grass-covered, rolling country. Cause sheet erosion, and after the cohesive top soil washed into the bottoms and into the streams, gullies would start in the rolling hills. These gullies would grow and grow.

Take the tiling spade and drain every marsh, slough, and pond. Run the water into the creeks. Make them flood with each rain. Our drainage program would lower the water tables, and the surrounding land would dry out and blow better in the wind and wash badly with every shower.

Straighten every stream so rain would run off faster and faster and make giant downstream floods of mud-laden water and drown the folks on the lowlands. By these means we could destroy our enemies forever.

When Iowa was admitted to the Union in 1846, settlers found a country of abundance beyond their fondest dreams. The streams were clear and sparkling, and they abounded in fish life. Wild game and fur-bearers were plentiful. Virgin timber existed along the waterways. About one-seventh of the state was forest lands.

The prairies were covered with rich, native grasses, dotted with lakes and marshes, and filled with ducks, geese, and shore birds.

The development of Iowa was rapid. In order to secure more farm land, lakes and marshes were drained, often unwisely. The forests were steadily cut, often unwisely, to provide more agricultural land.

During the first World War soil destruction reached its maximum. Every available acre was put into grain crops. Hillsides that should have remained in grass and timber were cleared and farmed. More marshes were drained; river beds were straightened.

On the surface things were running smoothly. Our people enjoyed the highest standard of living in the world. We ranked first in the production of corn, oats, hogs, fat cattle, etc. We had the finest school systems and the least illiteracy of any state in the nation. We had 25 per cent of the Grade A land in the United States—truly a great state, a state to be proud of and a prosperous people.

Then came depression and seven-cent corn. We were jarred out of our self-satisfaction. We took inventory. We found that we had over-produced at the expense of our soils.

Of the original six and a half million acres of timber, we had about two million acres left, mostly in farm woodlots, which were heavily grazed and as a result had no natural reproduction of timber.

The abundant wildlife had become a mere vestige of its former plentiful supply, and natural homes for wildlife had been destroyed.

We now had severe floods in spring, and our rivers were almost dry in July and August. The drainage of lakes and marshes had seriously affected stream flow. In their original condition these lakes and marshes filled with water in the spring and fed clear water into our streams all summer long. They helped maintain normal stream flow and underground water that supplied our springs.

The Iowa Agricultural Experiment Station and the Soil Conservation Service discovered that something very serious was happening to our soil. They found that we had lost by erosion approximately 35 per cent of our rich top soil during the past 60 years.

Counties in the seriously eroded parts of the state were hard-pressed to maintain local government. When farms no longer support the farmer, he can no longer pay taxes. The businessmen in these eroded areas saw their businesses almost fatally affected. Not a pleasant picture for the finest agricultural state in the Union.

These things are facts and should impress upon everyone the importance of a sound conservation program. Everyone—farmer, banker, merchant, doctor, or laborer—must realize that conservation is his business.

Many may say, "These may be facts about some parts of the state, but my farm is still productive—my community is still prosperous." True. How important that it be kept that way!

How many know how long it takes to build back an inch of top soil? According to the best authorities, it takes from four to sixteen hundred years. There have been Iowa cases where land not properly farmed has lost six inches in a single year.

The next time it rains, go down to any creek. Take with you a fruit jar. Fill it with the muddy water and let it settle. See what you find. You will be surprised at the amount of rich top soil in the bottom of the container. Somebody's farm—in fact, your America in solution—is racing to the open sea in that muddy stream.

As the Commission studies the problem of providing recreation for the people of the state in the form of picnicking, boating, bathing, fishing, hunting, etc., it is

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Conservation

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convinced that the entire program depends upon the proper and wise use of the natural resources—the soil, water, forests, and smaller vegetation.

To improve fishing we must eliminate the industrial wastes and other pollution dumped into our streams. We must reduce the amount of silt which destroys the environment for fish.

To increase upland wildlife in Iowa the solution is restoration of cover on the land to provide wildlife suitable homes. Proper land use provides these homes. It is good business for farmers to plant and fence gullies that are eating back into their fields. Steep hillsides certainly should be kept in trees and grasses as an erosion control measure. Trees and grasses provide homes for wildlife.

Whether we have migratory waterfowl depends upon the lake, marsh, and water conservation program. Some may have the impression that our water situation is almost hopeless. This is not true.

The lake and marsh restoration program is under way. The State Conservation Commission is buying these marginal areas and restoring them as fast as funds are available from fish and game license fees.

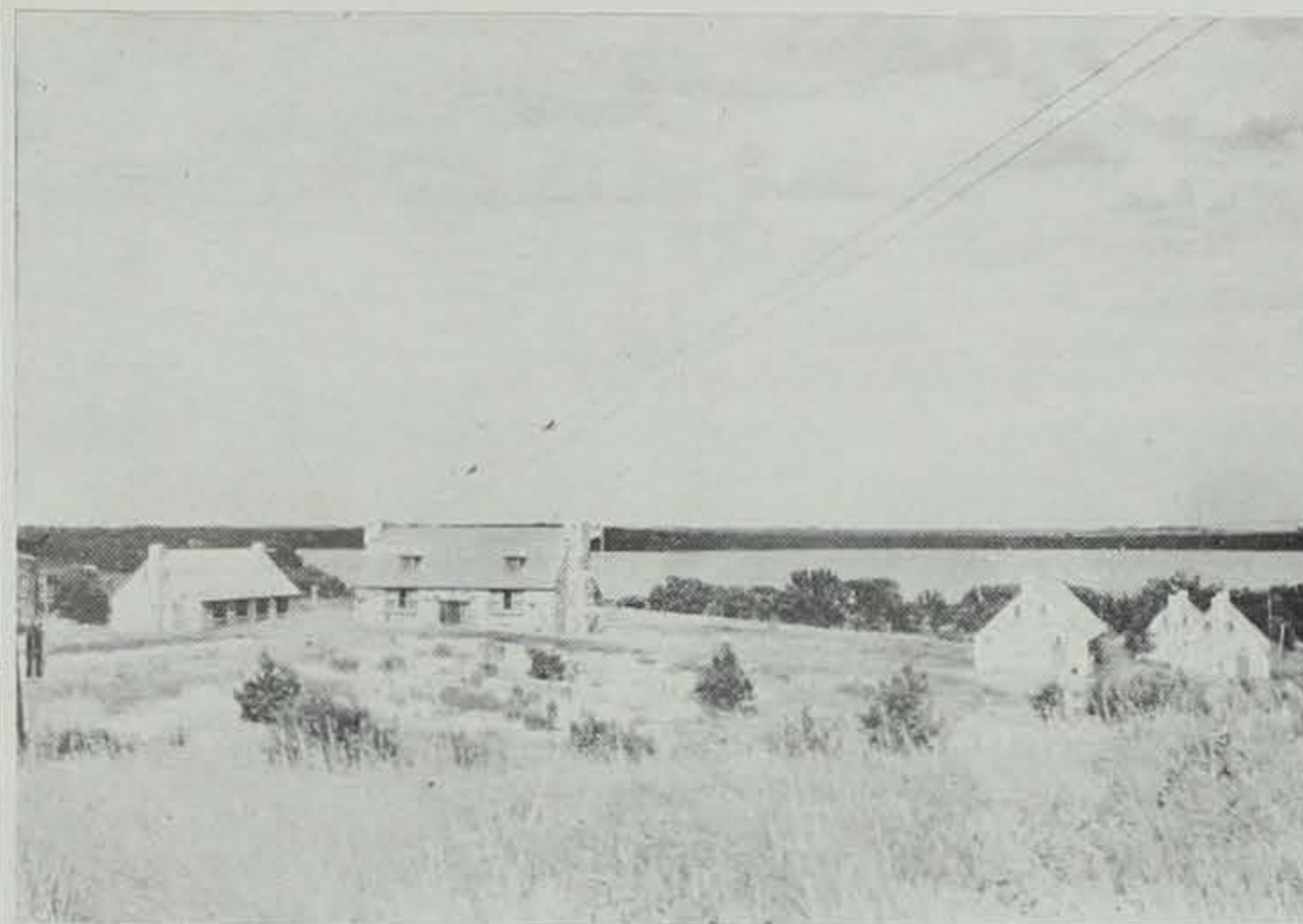
The soil conservation program is already producing results. Contour farming and the building of farm ponds for water conservation have definitely improved both soil and wildlife conditions in southern Iowa.

Many of the improvements necessary for upland game must be on privately-owned farms. The control of erosion by proper land use, the planting of vegetation and reforestation of steep slopes, if practiced by a majority of the landowners, would be of immeasurable benefit to wildlife and would be good business. The landowner who "wisely uses" surely stands a better chance of passing on to his son and daughter a farm on which the mortgage is paid and on which his children can live well, support a prosperous community and a prosperous America.

We will win this war. We will win this war if it necessitates bankrupting every one of our resources—but we must bankrupt our soil as a last resort. Otherwise we will win the war and lose America.

Brightly colored lures are easiest seen by anglers, but lures which are colored jet black are seen perfectly by fish, even during the darkest hours of the night. Try a black lure the next time a brightly colored one does not produce results, especially for bass.

Iowa Lake Provides Setting for Laboratory



Units of the Lakeside Laboratory with beautiful blue water, Okoboji, in the background

Laboratory

(Continued from Page One)

brary, a boat house and additional cottages have been built.

The Laboratory is ideally located in the immediate vicinity of a wide variety of conditions and habitats of interest to the naturalist as well as the biologist. Both deep and shallow lakes are readily accessible; a wealth of both plant and animal life finds a home in the lakes of the region which have a combined area of more than 13,000 acres and more than 80 miles of shore line. Since the Laboratory is especially designed to supply necessary facilities for the investigation of the fauna and flora of the area, a course of intensive study is offered for 10 weeks each summer.

This year the emphasis is being placed upon aquatic biology with special reference to problems of Limnology and Ichthyology. This includes a study of the interrelations existing between aquatic plants and animals and their surroundings, a qualitative and quantitative study of the physical and chemical characteristics of the aquatic environment, distribution, population and growth studies, and food cycles with special consideration given to the animals and plants included in the food chain of fishes.

Some study is made of the spawning habits of fish and the growth of the young fish after hatching, as well as the growth determinations of older fish by a study of their scales and bones.

A course in Protozoology is also offered for advanced students, as well as research work in various phases of Biology.

Oxygen concentration, temperature and light penetration determinations are being carried out as in previous years. A special study is being made of the immature stages of parasites

found in fish, aquatic birds and other animals.

Plant succession has been one of the important research activities at the Lakeside Laboratory since it was founded in 1909. Both high and low prairie which are in process of restoration from pasturing are found in the laboratory tract. These present a continuing project with other areas nearby available for comparative study.

Visitors are always welcome at the Iowa Lakeside Laboratory. Iowa Route No. 32 passes the Laboratory entrance and connects with U. S. Highway No. 71, north and south, and Iowa Highway No. 9 east and west. "Open House" will be held August 14th this year, at which time special exhibits will be available to the general public.

Conservation of Wild Life Aim of Lucas County Club

A little known group that has over 100 members and is doing a fine piece of work in the county is the Lucas County Conservation Club.

Conservation of our wild life is a comparatively recent thing. Many Lucas County hunters can tell stories of bringing in quail by the gunny sack and ducks by the boatload. Today wherever a soil conservation program is put in the landowner is also advised to stock his land with game birds.

It not only helps the landowner, but wild life also is a part of America we want to keep. We all like to see pheasants, ducks in the fall and spring, and quail erupting into flight. The fact

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Fish Census

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be expected to furnish a panacea for our fisheries problems.

The functions of a statewide lake and stream inventory are (1) to investigate and catalogue, for all waters in the state, those physical, chemical, and biotic conditions which bear directly or indirectly upon the fish, and (2) to bring into clear relief those deep-seated problems which require detailed long-time study, and provide the subjects for continued management research. Iowa lakes are so few that each can be studied individually. But the almost interminable linear stream miles defy, and indeed do not need, complete coverage. A sampling system, which involves recording of data from at least one station on each permanent stream and at intervals of every three to five miles on the longer ones, is adopted.

Station records include quantitative measurement of aquatic insects, crayfish, and other food organisms; character of the bottom and shores; width, depth, velocity, volume, and permanence of flow; presence and nature of pools, riffles, shelter and shade; temperature, turbidity, and chemical composition of the water—including pollution; abundance and kinds of aquatic vegetation; and, often most important, the kinds and relative abundance of different game, forage, and rough fish present.

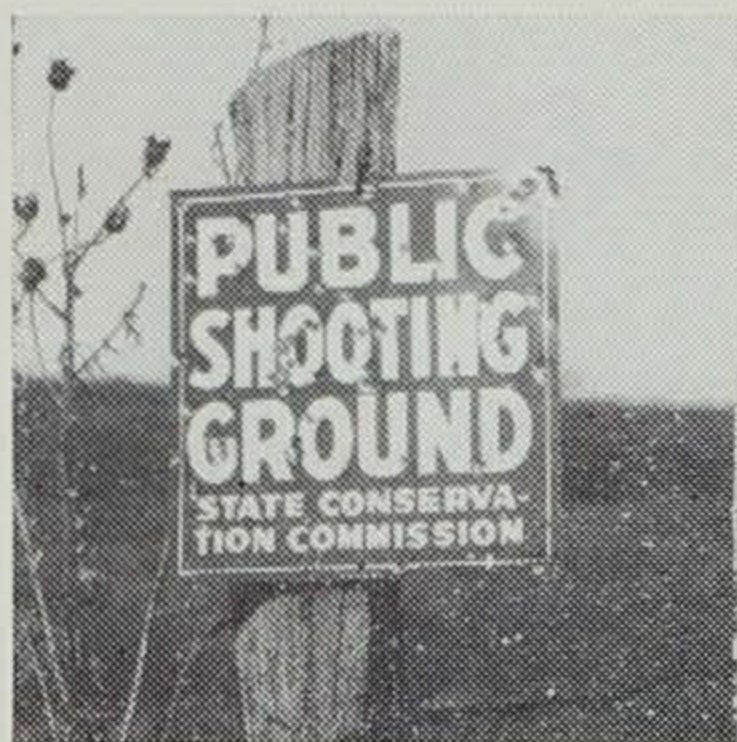
Especial attention is devoted to an evaluation of the effectiveness of natural reproduction of game species, since stocking can be eliminated where this is adequate. Fish collected in the survey provide laboratory materials for studies of food habits, age and growth, and parasites.

Analyses of field data for each body of water furnish the information necessary to determine whether or not it is in a state of biological balance and is producing a reasonable expectation of game fish. If not, proper remedial measures such as stocking, watershed control, or artificial improvement are recommended. Only on such a background of impartial factual information can we hope to manage our fisheries resources wisely for this and future generations.

It is gratifying to report that the Iowa Conservation Commission is now inaugurating a statewide lake and stream survey. Inventories of Iowa's trout waters have already been partially completed with highly satisfactory results. Plans for an expanded program, to be conducted by watershed areas, are in preparation.

It is anticipated that completion of this project will require several years. The length of time will depend upon available per-

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"Can I hit it?"

Of course you can. It's 12 inches square and can't move. You can walk right up against it before you shoot. So why waste a shell?

But you did shoot and you hit, and here are the results for all to see. That sign used to read "Public Shooting Grounds". It used to say in effect, "Here is a place for me to hunt without trespassing, a place that is partly mine, an area that I helped buy, I helped post."

This sign no longer reads so simply. You, unknown hunter, saw it change over your front sight as you pulled the trigger. As each shot struck, you saw a new legend written on that metal surface:

"A vandal passed this way. I am irresponsible. I make necessary 'No Trespassing'. I, good sportsmen, give you a bad name. I am Anti-Social."

Shame!

Lucas County

(Continued from Page Three)

that there is a shootable surplus each year also gives recreation and sport to millions of Americans.

It is these things that the local club is working to maintain, and they deserve commendation for the things they are doing. This spring quail cover was planted over the country, and last week a brooder was put in operation to raise quail chicks. The chicks are furnished by the state, and the local sportsmen raise and release them.

This didn't just happen, and it won't just happen if we continue to have quail in any amount. Cutting of hedges, fence rows, and other spots has seriously reduced our quail population. It hasn't been the hunter, but the landowner. Now comes an active organization to remedy the situation. Power to them.—Chariton Herald-Patriot.

Mid-day trout fishing will produce better results if the angler will devote his attention to strong currents and riffles or deep, spring-fed pools. In those sections of the stream the water is cooler and contains more oxygen, and the fish know it.



By FLOYD H. DAVIS

U. S. Game Management Agent

According to a recent news release by the Iowa Conservation Commission, a total of \$903,874.09



"FLICK"

was realized from the sale of 495,124 pelts of fur-bearing animals taken by trappers during the past open season. With the exception of mink and muskrat, the open season was 60 days. The mink and muskrat season was 30 days because of a decrease of these fur-bearing animals revealed by a state-wide census taken by conservation officers previous to the opening of the fur season.

According to records available, there are about 15,000 licensed trappers in the state, and a like number of trappers who do not require licenses (farmers and their children trapping on their own land), making a total of 30,000 trappers.

The average price received by the trapper per pelt was \$1.825. If each trapper received his proportionate share, he should have had \$30.13 for his season's work, providing he trapped all 60 days of the season. The average amount of fur taken each day during the open 60-day season was \$15,064.57, or about 50 cents per day for each trapper. Each hour of the open season there were approximately 343.8 pieces of fur taken, or each minute there were approximately 5.73 pelts taken. So far our figures are confined to the full 60-day season. More interesting are the figures on the mink and muskrat season, which consisted of only 30 days.

Approximately 30,000 trappers sold 295,657 mink and muskrat for a total price of \$572,986.74. Here we find a daily take of \$19,098.95, or an hourly average of \$795.81. There was an average of 9,855 pelts taken daily, or an average of 410.6 pelts taken hourly. Getting down to smaller figures, there was an average of 6.84 pelts taken each minute of the 30-day open season on mink and muskrat.

The above figures deal with 24-hour trapping days. When you stop to realize that most fur is taken at night and very small

Fish Shelter Provides Breeding Site



If some recognizable factor is limiting fish production in a given area, suitable corrective measures may be applied. Fish shelters, natural or artificial, such as this one is sometimes make the difference between productive and non-productive fishing waters. This brush and log shelter is now on the bottom of Lake Wapello under 18 feet of water.

amounts are taken during daylight hours, you could almost double the amount of fur actually taken during the trapping hours.

When the muskrat and mink season was shortened to 30 days last year, many trappers complained that the season was too short, that they wouldn't be able to pay for their license, etc. A trapping license costs \$1.00 for 15 traps, and 15 cents a trap for all traps used over and above the initial 15.

In driving along the highway in the fall of the year, many skunks are observed killed by automobiles. The average price paid for skunk pelts last year was \$1.80. Eleven of those skunks would have paid for a defense bond for someone. Those skunks were no doubt eating grasshoppers and crickets, as there are a few months during the fall that the greater percentage of their diet consists of insects. They cer-

Fish Census

(Continued from Page Three)

tainly have an economic value of no small consequence. sonnel, funds, and unforeseen factors conditioned by the war effort. A party under the joint supervision of the Iowa Conservation Commission and the Iowa Fisheries Research Unit will soon initiate field work on the Turkey River basin.

With the value of raw furs taken in Iowa amounting to almost a million dollars last year, it behooves each and every one of us to protect this valuable natural resource in every way we possibly can. With a higher price for furs in sight for the coming fall, trappers will be shouting for longer seasons, cussing and discussing the game authorities for not letting the bars down. This fur crop is a valuable asset. Let us all help to perpetuate and protect it.

State Conservation Commission
10th & Mulberry
Des Moines, Iowa

Attention: Mr. Ree M. Berry

Dear Mr. Berry:

I have your letter of June 16, 1942, for which I thank you.

It is very seldom that we hear anything about our lost birds, and we lose quite a few during our pigeon races. The bird you report, ECI3038, was the property of Albin Mikolajczyk.

It takes a great deal of work to train a good bird, and the cost is not small. It is bad enough that they must fight their way through storms and other natural hazards, but too bad that they must be shot at, too. We get many birds back badly shot up—some with legs off. I have one myself that had most of its breast shot away, but these birds come through even on one wing.

I am sure if the good people knew how badly Uncle Sam needs these birds, they would leave them alone.

Once again, on behalf of the whole club and for myself, I wish to thank you for your time and very considerate letter.

Very truly yours,
(Signed)

Thos. Kaczmarczyk, Sec'y
East Chicago Homing Pigeon Club



By HAROLD B. BJORNSON
Assistant State Forester

"To be without wood in time of war is almost as bad as being without bread." This startling statement was made not so long ago by a well-known army general.

On second thought this statement is not too difficult to believe. Analysis of the many uses wood is being put to by the army, navy, other branches of combat service, and by civilian industries which have substituted wood for metals in many essential war products, shows tremendous wood use. A full enumeration of wood uses would take pages. A few that quickly come to mind are: warehouses, rifle stocks, barracks, mess halls, hospitals, training planes, hangars, ammunition boxes, cargo vessels, trawlers, mine layers, patrol boats, mosquito boats, decking for warships, shipment crates, and a host of other uses.

Civilian demand for wood is heavier in wartime than during normal times. For instance, farmers have been asked to produce more food. This involves the construction of additional equipment. More hog houses, sheds, cribs, granaries, and poultry houses must be built to meet this demand.

All groups are using wood wherever possible to replace metals—metals necessary in the vital war industries.

These facts explain the recent appeal by Donald Nelson to the lumber industries to produce to capacity. They also explain his order freezing certain grades of soft wood lumber.

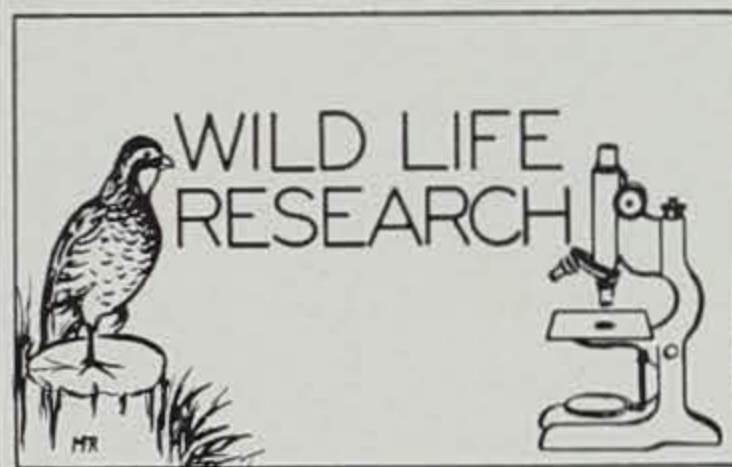
This is one of many times when the owner of a good Iowa woodlot considers himself fortunate. He may use the best materials from his woodlot stand for lumber for the new structures he needs to maintain or increase his production. He finds fence post materials to put his fences in better repair. He finds fuel in his ill-formed, diseased or dead trees, and in the tops of those he uses for lumber and fence posts.

Harvest your wood products wisely. Use inferior species, poorly-formed, diseased, and dead trees wherever they will fill the required need. Select the better trees for lumber. Cut stumps low and utilize all tops for fuel. Save the healthy, fast-growing trees of small diameter.

Muskrat Homes Dot Iowa Marsh



Not a flooded hay field, but a typical Iowa muskrat marsh with muskrat houses liberally scattered throughout. Many of Dr. Errington's muskrat studies have been carried on in marshes such as this.



By DR. PAUL L. ERRINGTON
Leader Project No. 498
Ecology of the Muskrat

Some Commonly Asked Questions About Muskrat

1. Question: How many young are in a muskrat litter at birth or soon after?

Answer: Iowa litters ranged in size from 1 to 11 young and averaged 6½.

How do we know? We have records on nearly 175 evidently complete litters of wild-living muskrats, including seven litters kept divided in separate nests.

2. Question: What is the sex ratio of the young?

Answer: About 55 males to 45 females.

How do we know? Our most comprehensive set of figures for a definite period shows 54.4% males in 878 young less than two weeks of age and 54.9% in 584 young of the year trapped in November and December.

3. Question: In what months are the young born?

Answer: Birth takes place from April to September in central and northern Iowa (perhaps also in other months in rare instances),

They are your future crop.

After analyzing war needs, this statement can be safely made without fear of ridicule: "To be without wood in time of war is almost as bad as being without bread."

principally from May to the middle of July.

How do we know? Intensive studies, begun before the breeding season and continued long after its end, were conducted on a number of marshes, and dates of birth of about 400 litters were determined.

4. Question: How many litters are born to a female in the course of a year and at what intervals do they arrive?

Answer: A breeding Iowa female has from one to four, and usually two or three, litters a year and these generally come about a month apart.

How do we know? On some parts of marshes kept under close observation under conditions favorable for accurate study, it has been possible to handle all of the litters born to certain fe-

males in a breeding season. Further evidence has been obtained through counts of the placental scars of clearly different ages to be seen in the reproductive tracts or carcasses of adult females examined during the trapping season.

5. Question: What are some factors influencing the number of litters born per female?

Answer: Litters per female tend to be fewer when muskrat populations are either very low or very high. In the first case, males may be too scarce or too haphazardly distributed for efficient mating; in the second, crowded animals may prematurely cease breeding. Moderate populations living in excellent environment and populations suffering heavy losses of young early in the breeding season both may prolong their breeding later in the summer, a higher proportion of females thus giving birth to four litters each. Severe droughts usually but do not always terminate breeding.

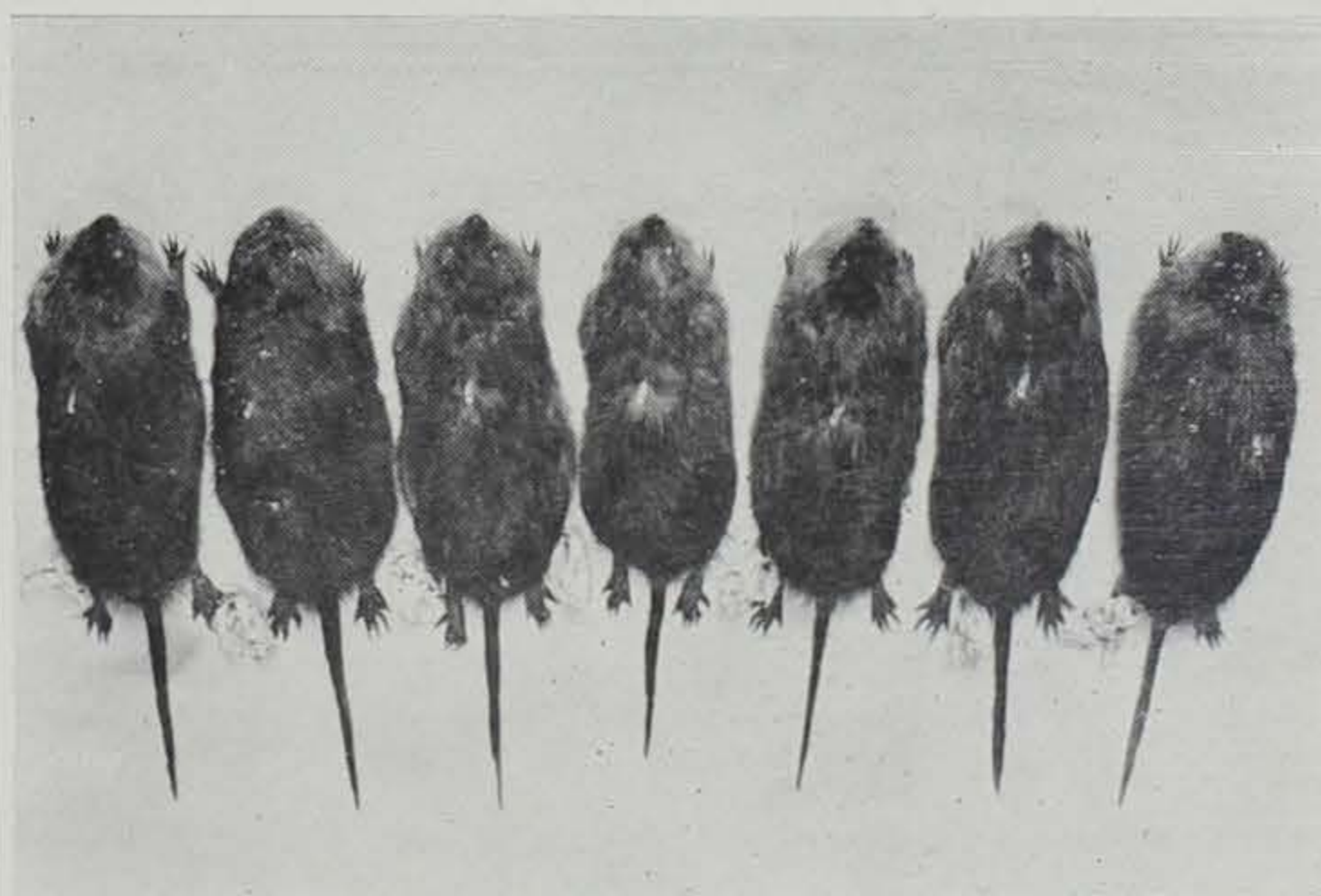
How do we know? Since 1934, ecological and life history studies of muskrats have been made along approximately 28 linear miles of water courses (not including minor windings of channels) and 2,250 acres of marshlands in upwards of 30 Iowa areas regularly observed for an average of five years; and, in connection with these studies, much information was acquired on rates of increase of known numbers of muskrats living under a wide variety of circumstances.

6. Question: Is the muskrat monogamous?

Answer: It seems to be loosely so.

How do we know? Males have been observed, at least on occasion, to take over some duties in

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—Photograph as reproduced in The Journal of Wildlife Management.

Ages and identities of these muskrats were proved by the numbered metal tags placed on their backs before they were weaned. Post-mortem examinations of these animals after they were trapped in the winter gave valuable information on rates of growth and sexual development.

Muskrats

(Continued from Page Five)

caring for helpless litters after death of the mother, and breeding is typically most efficient in wild populations having as many adult males as females. It is apparent, nevertheless, that much promiscuous or temporary mating occurs.

7. Question: When does a female with young accept a male for the next breeding?

Answer: Shortly after birth of a litter, as a rule—assuming that a male in breeding condition is present.

How do we know? The usual monthly interval between birth of litters to individual females is about the same as the gestation period indicated by, among other evidence, the researches of the U. S. Fish and Wildlife Service with captive muskrats. Many other familiar rodents also breed in this manner.

8. Question: Will a suckling litter be weaned before birth of the next litter?

Answer: Yes. Weaning as a rule is accomplished early in the fourth week after a young muskrat's birth, or several days before the next litter is due. Not only are the young then weaned but they are commonly forced to leave the "home" nest; if they persist in coming back, many may be killed by the savage attacks of the mother.

How do we know? An important phase of the investigations on certain marshes consisted of following the fortunes of the majority of families as long as the young could be kept track of. About 700 animals were marked at known ages so that their identity could subsequently be recognized.

9. Question: Do the young born early in a breeding season themselves have young during the same year?

Answer: Certainly not to any considerable extent, if at all.

How do we know? Post-mortem examinations of the internal sex organs of around 2,000 muskrats from two to 10 months of age revealed few indications of even early stages of sexual maturity before the eighth month. After studies of tagged animals for which ages were precisely known had furnished a tested method, it became quite easy to distinguish young of the year (taken during the trapping season) from the younger adults of 15 to 18 months. It is true that some young are as large at three and a half months as some adults ever grow to be but their sexual development isn't much farther advanced than when they were weaned; and, when they reach full adulthood in winter, a new annual breeding season is beginning rather than an old one ending.

Family Quarrels Keep Muskrat Population Down



—Photograph by Herb Schwartz.

This young muskrat got into trouble with one of its elders—possibly its own mother—was badly mangled, and died from the wounds received. Such happenings on a large scale are sometimes one of the most tell-tale symptoms of unbalanced muskrat populations.

10. Question: What are the "kits" frequently taken by Iowa trappers?

Answer: They are simply members of late-born litters of normally breeding females.

How do we know? In size and development they compare with mid-summer specimens known to have been 70 to 90 days old—in other words, are chiefly August young. Sixteen or about 4% of the Iowa litters were born this late in the summer, and about the same percentage of the young of the year caught in fall and early winter trappings and examined in connection with our regular studies proved to be classifiable as "kits".

Spinners that are more round than egg-shaped and that are made of light material are best because they require less force to spin them when they are trolled through the water.

Small-mouth bass like fast water, but to fish for them it is necessary to sink the bait or lure deep most of the time. The fish are to be found near the bottom, where the current is not too strong and where the bass can more easily hold its position while looking for food.

Artificial flies for walleed pike must be moved through the water at a very slow speed. Natural bait likewise must go deep.

The red or fox squirrel prefers open pasture-like timber to deep woods, while the gray squirrel likes tall trees and dense forests.

State-Owned Game Areas Provide Breeding, Hunting Grounds

By PRIVATE LESTER F. FABER

At the time of its formation in 1935 the State Conservation Commission adopted the policy that all state-owned areas controlled by the Commission be developed for maximum game production. The fact that more than 95 per cent of the land in Iowa is farm-managed, and of this amount 93 per cent is in crops or pasture, makes it essential that intensive game management be practiced on state-owned areas suitable for this purpose.

These game areas, which are scattered over the state, are of two main types, wildlife refuges, which offer protection against hunting and trapping, and public shooting grounds, which are open to public hunting during open seasons. The areas are posted with 12 by 12 inch square signs which designate the type of area. The refuges are marked with white signs and black lettering, while the public shooting ground signs are green with white lettering.

In the management of an area the first objective of the Iowa Game Management Plan is carried out, this objective being to produce a suitable environment so that wildlife seed stocks will have a reasonable chance of producing an annual surplus game crop.

The areas are developed to afford concentration points where wildlife will be able to find more ideal conditions usually not present on the greater portion of adjoining farm-managed land. These areas offer cover for thousands of birds and mammals during the winter months when protection is badly needed. They also fulfill the natural mating, nesting, and rearing requirements of the different types of wildlife.

As an area is developed, the holding capacity is increased until populations reach a saturation point; then the overflowing surplus supplies the surrounding territory with game. Then, under favorable conditions, numbers increase until a shootable surplus exists on the surrounding farm-managed lands.

Development and management of an area is similar to farming, except that the crops planted are selected specifically for their game producing values. The ground must be prepared the same as for a crop of corn. These plantings are then cultivated until they are able to overcome competition of other plants. Nesting and roosting cover crops and food producing plants are planted and cared for much the same as field crops.

Thousands of suitable cover providing plants, such as trees

Wildlife Areas Plainly Marked



Wildlife refuge signs are printed in white and black. Hunting and trapping on these areas are prohibited. Under favorable conditions wildlife increases to the saturation point on such refuges and overflows into the surrounding territory.

and shrubs, are planted each year. Some of the seed needed for reseeding and sowing of new areas is raised and harvested. Fences must be built and maintained. Feeding stations are built and kept in order. Predator control must be done when necessary. Noxious weeds must be controlled. Erosion control and prevention measures are practiced, and many other soil building and conserving practices are carried out.

Partial farming on some of the areas has proven to be beneficial to game production. This type of land is rented on a crop share or cash basis. Revenue derived from this source is used for further development of the area. Part of the grain produced is used in emergency winter feeding of wildlife during critical periods.

Along with the actual developmental work done, research on the areas is carried on to determine such facts as: what types of cover and food plants are most suitable for the various forms of wildlife, amount of actual use derived from each during the various seasons, numbers present, causes and amount of predator damage, and other factors which will lead to the provision of more ideal conditions. Many old areas are being redeveloped. New ones are being acquired and will be developed when it is possible to obtain the necessary labor and materials.

When you next hunt on a public shooting ground or see a ref-

(Continued to Page 7, Column 2)

Flowering Shrubs Dot Iowa Landscape

By ARTHUR E. RAPP

There is a very general impression that Iowa does not have many attractive flowered native shrubs. That is probably because Iowa is not a brushy state, as are those having a much higher percentage of woodland or those so moist and humid that even a wasted peanut begins to sprout in the second day.

We do have three shrubs, or rather small trees, that belong to the three-star class, namely our native crabs, redbuds, and Juneberry or Amelanchier. The Iowa crab, with its rugged horizontal branches covered in spring with the lovely pink blossoms, was made for a prairie state. Unfortunately, the redbud in Iowa is native only to the southern reaches of its eastern and western river valleys, but the Juneberry, with its light and airy blossoms, is at home to Iowans.

Often a tree can be located when yet unseen by the hum of bees that come and go incessantly when the bloom is on. Iowa has a number of Vibernums. *V. pubescens*, or the downy arrowwood, prevails at the Ledges. The blackhaw, or *V. prunifolium*, is sparingly found through the central and eastern part of the state, with probably the heaviest stand at Eagle Lake State Park, near Britt. There are probably still occasional clumps of the high bush cranberries in the northeastern part of the state, and here also the red-berried elder can still be found.

Farther south on clay soils, the yellow blossoming *Hypericums* grow, while in the lower counties of the state, the fragrant sumac with its yellow blossoms covers the hills of many a homestead that is no longer being farmed.

Evidently Jersey tea, or red-root, once covered large portions of our prairie lands, to judge from the number of future statesmen who supported their widowed mothers by plowing under the long red roots when breaking sod. It still blooms in midsummer, and its light, frothy, greenish-white flowers look better at a distance than close at hand. Look for it along a dry roadside bank or on a steep hillside that has been closely pastured.

I might go on and tell you about the bladdernut, the toothache tree, or the button-bush, all of which are natives of Iowa, and by all means you should know about the prairie rose, or *Rosa setigera*, which compares with many of our best cultivated varieties. You should also know that in a survey taken a number of years ago, specimens of a great many varieties were found growing in different parts of the state.

Dogwood and Button Bush Make Lovely Show



This flowering dogwood belies the general impression that Iowa does not have attractive flowered native shrubs.



The moisture-loving button-bush receives its name from the appearance of its fruit.

—Photos by E. B. Speaker.

These specimens indicated that our natural conditions are such that we can grow a much wider range of shrubs and flowering plants that we now do.

Unfortunately the impression has sometimes been given that native plant material will only grow under the general conditions that prevail where it is found growing naturally. This is not always quite true. Native plant material should not, however, be collected until, after careful study, you feel that you know what the conditions are under which you find it growing naturally, and also what conditions you can provide for it in its new home.

Marked Areas

(Continued from Page Six)

uge sign, look carefully and you will see that it didn't "just happen", but that it is a unit in the carefully planned game management program in Iowa. The ultimate goal of game management in Iowa is to increase and perpetuate all species of wildlife and to increase hunting opportunities in all parts of the state so that eventually each hunter can enjoy annually good sport, satisfactory open seasons, bag and possession limits for each particular branch of sport in which he may be especially interested.

Biologists say a catfish can taste with any part of its body.

New Ponds Aid Wildlife In Great Plains Region

Besides supplying needed livestock water, properly managed farm ponds often afford a home for wildlife which otherwise could not exist. Where streams and natural lakes are few—such as on the Great Plains—protected water vegetation feeds and provides cover for migratory waterfowl and other wildlife of economic value.

Great Plains farmers co-operating with the Soil Conservation Service reported last year that mallard, blue-winged teal, pintails, and ruddies were nesting and rearing their young on small ponds constructed in Colorado, Texas, and New Mexico. Cinnamon teals, redheads, canvasbacks, coots, grebes, avocets, phalaropes, and killdeers nested around other ponds in the area.

Muskrats often become established, and one Great Plains co-operator regularly takes up to \$150 in muskrat pelts each year from four small ponds.

To effectively provide game cover, at least a part of the pond must be fenced so that livestock will not trample out the aquatic plants. Some co-operators fence a narrow lane down to the water, and others fence the entire area

and pipe the stock water through the dam.

The Soil Conservation Service suggests to co-operators that they build ponds at least one to two miles apart, so that concentration of livestock will not cause over-grazing about the watering places.

Federal, state, and local agencies are co-operating in building more ponds on the Great Plains. The Soil Conservation Service has constructed 2,126 ponds on 1,120,000 acres—or a pond to every 527 acres.—Washington Journal.

If bait dropped in a certain spot in a stream fails to bring a strike, move it—but not too far. A matter of three or four feet may make all the difference in the world. A bass lying on one side of a big rock would only accidentally see bait dropped on the opposite side of the rock. The fish do not always come to the bait. Usually the fisherman has to keep the bait moving around until he spots the hiding place of the bass.

Small lakes and ponds often become over-populated with fish in relation to the natural supply of food.

In trolling, move the lure just fast enough to keep it from snagging on the bottom. Lures that move slowly and go deep catch the most fish.

WARDENS' ❖ TALES ❖

SHOP TALK FROM THE FIELD

Conservation Officer Jim Gregory was telephoned late one evening by a farmer living along a stream in northwest Iowa. He asked Jim to come out to his farm the first thing in the morning to see some crop damage. Jim arrived early and was led to a bottom field that had been flooded and was now a flat stretch of soupy silt and nothing else.

"Look at that potato field, nicely in blossom before it was flooded—and now just look! I'll settle for \$400!"

Startled by the farmer's last statement, Jim asked what had happened.

"Well," said the farmer, "When the river came out, the carp came out with the water and ate all the tops off those potatoes and ruined the field."

After catching his breath, the conservation officer explained that the state could not pay claims for damage done by wildlife.

"Well, I thought I'd try, anyway."

—WT—

"Wednesday Walt Aitken and I were looking over the rearing ponds at Mount Ayr. At one pond we found a throw-line with 11 hooks, baited with chunks of raw pork. Someone was a little previous. Fish in this pond are two weeks old." — Conservation Officer Elden Stempel.

—WT—

"I have had a number of funny incidents with fishermen dipping bullheads when they congregated at the inlet of Spirit Lake. I was in the brush along the grade near the paddle wheel late one night, when a car stopped and someone said, 'Goodbye now.'

"As I watched the paddle wheel, a figure passed and went down to the inlet. The man had just started taking bullheads illegally when something frightened him, and he ran up the grade and down the road. I took out to run him down, and about a block farther on I was within inches of getting him by the collar when he suddenly turned, one of his feet striking one of mine and upsetting us both on the gravel road. I found myself sitting on the fellow's chest.

"He said, 'Mister, you got me. I'm guilty.'

"I felt a little ridiculous holding court sitting on that fellow's chest in the middle of the road in the moonlight."—Conservation Officer Rae Sjoström.

"Louie Gausto was fishing near Guttenberg and caught a four-pound northern in a very peculiar way. He had several crappies on a stringer and thought they were acting pretty lively. He pulled them out of the water. A big northern had ahold of the last crappie and was pulled into the boat. He called me and asked if I would believe him. No one else would."—Conservation Officer Bill Morf.

—WT—

"Workmen along the banks of the Mississippi near the Lansing Fisheries Company noticed an unusual commotion out in the river. It was soon apparent that a 'sea battle' was in progress. Two large catfish were attacking a third and chasing it in large circles over the water. Soon the attacked fish was weakened and was only able to swim weakly on the surface. The two attacking catfish continued their attack from below viciously, sometimes bumping their luckless victim entirely out of the water. A boat was launched and the weakened catfish captured. It proved to weigh more than nine pounds."—W. E. Albert, Fisheries Supervisor.

—WT—

"While you are soberly plodding through your morning mail, it may be that a ray of sunshine will filter through the gloom as you peruse this attached letter. It may also be that you will want to deposit this rare gem of Missouri River literature in the archives of the state to be preserved for historians who, at some far distant date, may wish to write of Iowa culture.

"The enclosed is an exact copy of a letter received from ———, who lives on some Iowa land on the west side of the Missouri River near ———, Nebraska. This area, comprising about one-half of a township, is known as ——— Island. It has probably 50 or 60, more or less, transient inhabitants, many of whom are Negroes, and all are squatters except ———, who claim they have a deed to their land."

———, Nebraska.
Dec. 1941

Mr. Game Warden Dear sir,

We wer in ——— Iowa & seen County Attorney they stole about 200 two hundred pounds of fish from us, here in Iowa. & ——— said wed hafta get you, we had one guy arrested in ———. but they turned him loose because the fish wer taken in Iowa, they stole our fish the 23of Nov 1941, at about 8 or 10 o'clock at night, & this feller sold fish sunday night & monday in a taveren & they are no fishermens, and they have no Licons to catch fish or sellem so wer going to try to get the Nebr Game Wardn, to tie them up, if he cant do nothing, because the fish wer taken in Iowa, we'd like for you to be

End of the Trail



MAURICE M. BAGGS

(Photo Courtesy Storm Lake Pilot-Tribune)

Employees of the State Conservation Commission were shocked and distressed at the accidental death by drowning in the Little Sioux River at Cherokee, Iowa, July 4, 1942, of Conservation Officer Maurice M. Baggs. Maurice, a popular, hard-working officer, was appointed to the Buena Vista, Cherokee, Pocahontas territory May 19, 1941, and from the beginning his work in the department was outstanding.

His death occurred the evening of July 4, when he was swept off the dam at Cherokee into the swollen waters of the Little Sioux River. He was able to remove the hip boots he was wearing but was unable to reach safety.

Conservation Officer Baggs was buried at Hardy, Iowa. He is survived by his wife, who wishes the editor to express her appreciation for the kindness and consideration shown her by the Conservation Commission employees and friends in her bereavement.

there. if we have a trial we do farming & Commerchinell fishing. & we are Iowa & Nebr' Licones fishermen of the Missorie river, this is in Mills-County Iowa, about 3 one half Miles South East of ——— Nebr'. these guys told a party they caught those fish with a tramel net, in the Missouri river. they had a hull wash tub full. that Sunday night, selling them, so if the Nebr' Warden wants you for help. because the fish were taken from Iowa waters. we'll let you know. this thieving, un Licons fishing -aught to be stoped they stole the fish from the shore of our farm, I wrote the Nebr Farmer & allso the Wallaces farmer & Iowa home stead. in regards of this fish theivery, on the Missorie river.

From ———
Nebraska

Suggestions For Handling Fresh Fish Helpful

To help anglers enjoy their sport and get full use of their catch, the Conservation Commission has offered the following suggestions for the handling of fresh fish:

First, get your recreation and sport without feeling that you have to take all you can get. Perhaps your food requirements don't demand that you take your full limit every time you go fishing.

Second, keep your fish alive and fresh by use of a live-stringer, live-bucket or sack, until you are ready to clean them. A fish should not be left in the water after it is dead.

Third, clean your fish as soon as possible. Many experienced fishermen clean fish as soon as they are caught and pack each fish between layers of moss, wet grass or fresh aquatic vegetation, such as watercress. Fish packed this way will keep in good condition for several hours.

Fourth, if fish are to be shipped or transported for some distance, clean and dry them thoroughly, salt well on inside of fish, wrap fish separately in waxed paper or cheesecloth, and pack in ice.

The most popular method of storing, of course, is deep freezing or cold storage. As flesh decomposes rapidly after thawing, the frozen fish should be thawed out in the process of cooking.

Some kinds of fresh water fish may be successfully preserved by pickling in brine. Smoking of fish is becoming more popular and is a reliable way to preserve them.—Missouri Conservation Commission Release.

Over-grazing timber land prevents trees from reproducing.

Bass are seldom interested in any kind of a surface lure if the water is more than six or seven feet deep. But they may be caught in water only eight or 10 inches in depth. The best water for bass bugs and similar lures is from two to four feet deep.

Although the black locust often will grow to post size in 10 or 15 years, older trees containing more hard wood make more desirable posts.

Adapt the casting rod plug to the depth of the water that is being fished. A surface plug is all right in not more than four or five feet of water; otherwise use an underwater or diving lure.