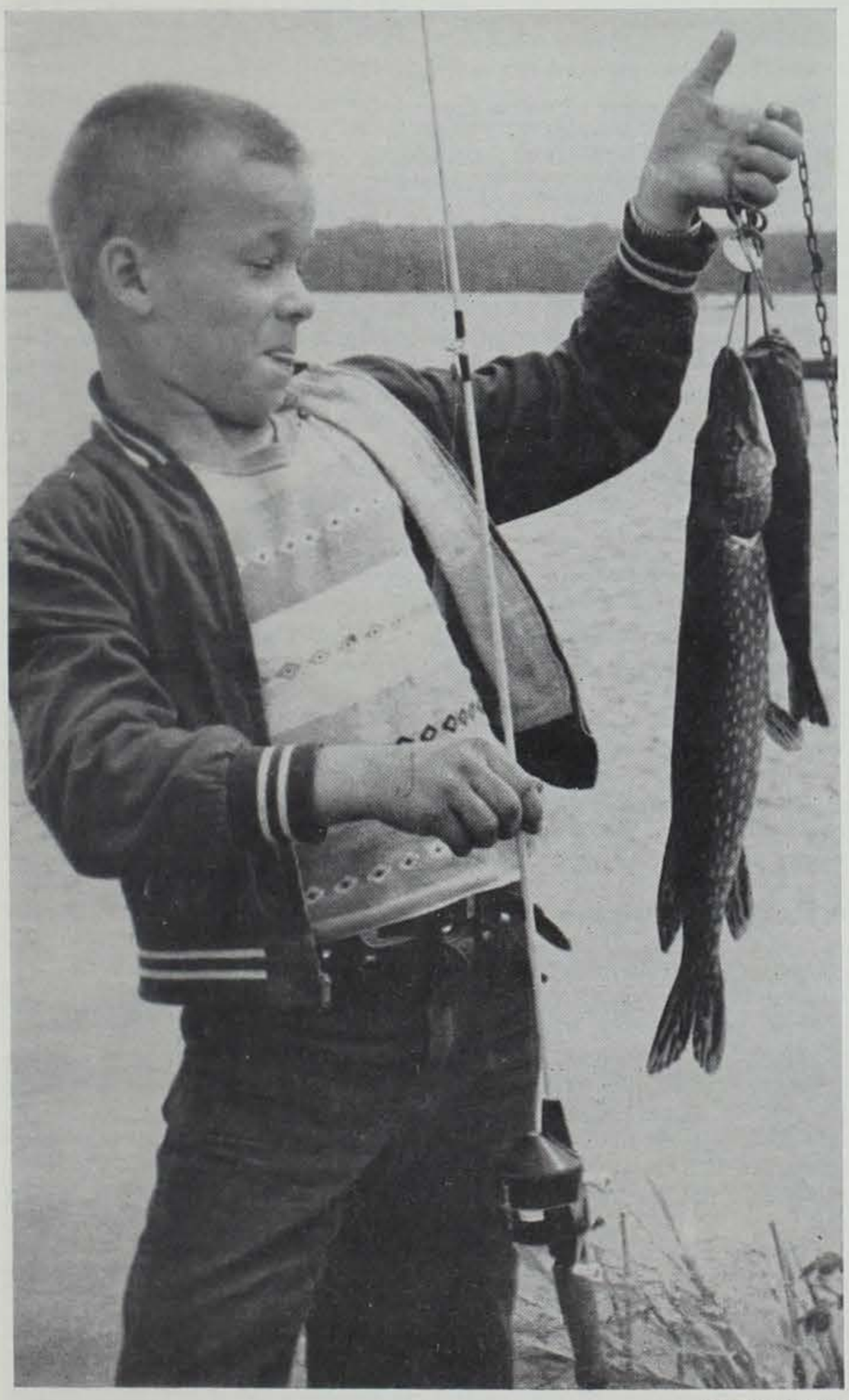
Iowa CONSERVATIONIST

Volume 25 April, 1966 Number 4

BE AN EARLY BIRD

. . . That's The Way To Catch Fish!



Jack Kirstein Photo.

A "bonus" northern teamed with a respectable sized bullhead is enough to make any man proud of this stringer.

Jim Mayhew
Fisheries Biologist

Just about this time of the year it is common to observe progressive changes in the emotional make up of people belonging to the great fishing fraternity. We all recognize the universal symptoms: extraordinary attention to catalogs, magazines, and brochures which display the newest model rods, reels, and lures; frequent time consuming trips to the nearest lake, stream or pond to check on ice conditions; and constant cleaning, fondling and sprucing up old tackle. It's like a rediscovered love affair, an itch that can't be scratched. Brother, you think you've got it bad, you should have been at my house the other day when I announced I was desperately in need of a new spinning rod. You would think I had demanded a trip to the moon, of which through fine finesse and a quick retreat I probably avoided. But the little woman has been immune to the fishing virus and hasn't quite been able to grasp the important things.

Modern progressive fish management has given the ardent angler a real break. Not many years ago regulations restricted fishing in the early spring because of unfounded fears that populations would be over exploited. It is quite true that some species must be protected during inshore spawning movements to maintain high predator populations, but for most species of fish unrestricted harvest and seasons has increased the fishery value without being deleterious to the population. Most of us are able to go fishing all seasons of the year.

All fish are so-called "cold-blooded" animals. This means their basal metabolism or rate at which the body operates is controlled by environmental temperature. Body temperature of fish is always slightly above the water temperature. During winter and low temperature heart rate, breathing rate, digestion, and movement are very slow compared with summer metabolism. The quantity of food required during cold temperatures is also greatly reduced. As environmental temperature becomes progressively higher in the spring, metabolism increases and there is an increasing demand for food. This is the time that fishing becomes most productive.

During the winter most species of fish are located in the deeper regions of a lake or pond. Likewise there is a general accumulation of fish into pool areas of streams. This is because most fish are seeking the warmer stratum. Water becomes heaviest at 39.2° F. and being heavier is located in the deeper portion of the basin. The one exception to this is bull-

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CIRCULATION THIS ISSUE 56,271

COMMISSION MINUTES

State Conservation Commission Meeting Held in Des Moines, March 1 and 2, 1966

The Commission heard a proposal from Donald Brown of Cedar Rapids concerning the sale of property adjoining Lake Macbride. Rev. Olson of Des Moines and Rev. Chambers of Indianola met with the Commission to discuss the possibility of holding Sunday religious services for campers in State Park areas. Proposed guidelines for such services were presented and the Commission decided to ask the attorney general for an opinion on this use.

FISH AND GAME

Approval to exercise four options on land adjacent to Silver Lake Marsh in Worth County totaling 113 acres at a cost of $12,400.00 was approved.

The Commission discussed an appraisal of the Darby property adjacent to Lake O'Dessa in Louisa County.

Frank Collins representing the Army Engineers proposed a regulation to limit trespass on and near the Mississippi River dams.

The Commission asked for a report from the Chief of Fish and Game concerning a possibility of depth mapping of Iowa's artifical lakes.

LANDS AND WATERS

The Commission voted to retain the name Lake Anita rather than to select a new one for the lake being built in Cass County.

The Commission voted to exercise two options adjacent to Pikes Point in Dickinson County on West Okoboji for the purchase of .58 acre for $8500.00 and 1.2 acres for $3500.00.

Approval was given to bids for the construction of a concession booth, a double vault latrine and two sand point wells at Spring Lake in Greene County at a total cost of $10,352.16 to the Neal Lumber Company. The Superintendent of Engineering was instructed to re-advertise for bids on improving the bathing beach.

Approval was given to the construction of a bridge and culvert at Prairie Rose Lake by the K. S. Kramme Construction Company of Des Moines for $21,648.42.

Approval was given to a settlement of a condemnation appeal on the Scarlett Tract adjacent to Lake Anita consisting of 160 acres at a total of $36,000.00.

Approval was given to a motion urging the County Boards of Supervisors to keep certain County Roads open adjacent to new federal impoundments such as Saylorville, Red Rock and Rathbun in order to provide public access to these areas.

Approval was given to a resolution to express thanks to Governor Hughes for his efforts concerning approval of the work by the Corps of Engineers to protect areas for recreational use along the Missouri River.

Approval was given to immediate work on a road adjacent to Black Hawk Lake.

COUNTY CONSERVATION ACTIVITIES

Buena Vista County received approval for an addition to Linn Grove Park consisting of 1 acre of land at a total cost of $300.00 for the purpose of constructing a drainage ditch on the north side of an existing road.

Des Moines County received approval for the acquisition of 240 acres of land at a total cost of $27,000.00 for the purpose of building an artificial lake. This purchase to be spread out over a three year period from 1966 to '68 and located west of the town of Dodgeville.

Floyd County received approval for 8.63 additional acres of land at a total cost of $863.00 at their Colwell Park.

Jackson County received approval to acquire 12 acres of land at a total cost of $960.00 called the Camp Blackhawk Wildlife Area located 6 miles northwest of Maquoketa.

Polk County received approval for an addition to Camp Creek Park consisting of 16.67 acres of land at a total cost of $3,125.00 located 16½ miles northeast of downtown Des Moines.

Woodbury County received approval for an addition to Little Sioux River Park of 113 acres of land at no cost by a transfer of County-owned land located 2 miles southwest of the town of Correctionville.

Worth County received approval for the acquisition of 45 acres of land at a total cost of $7,000.00 for the purpose of preserving a hardwood timber and developing wildlife habitat. The land is located approximately 8 miles east of Northwood and is to be called the Deer Creek Forest and Game area.

Worth County received approval for the acquisition of 164.6 acres at a total cost of $25,000.00 for the purpose of preserving a hardwood timber area and creating wildlife habitat called the Stime Timber.

Keokuk County received approval for the acquisition of two tracts of land under a 10 year lease to be utilized for farm game habitat.

Buena Vista County received approval of revised development plans for Buena Vista Park which would include road system, picnic area, winter sports, custodian house and service building.

Delaware County received approval of its development plan for Child's Wildlife and Timber Area which would include the planting of conifer and hedging plants.

Floyd County received approval for the development plan for Mather's Forest Area which would include reforestation, game habitat planning and construction of a road, picnic and camping areas.

Hancock County received approval for a development plan for Eagle Lake State Park to construct a picnic shelter, and a pole type steel covered structure for the storage of Park Maintenance equipment.

O'Brien County received approval for a development plan for Wall Park for use of Campers and Picnickers.

Woodbury County received approval for development plans for Little Sioux River Park which would provide roads, parking areas, camping and picnic areas and fishing access to little Sioux River, rifle range, horse corral, riding and hiking trails.

Keokuk County received approval for a development plan for two Farm Game Habitat Leased Areas.

GENERAL

Travel was authorized to the Midwest Pheasant Council at Bloomington, Illinois, and the National Rifle Association Meeting in Chicago.

A preliminary report was given by the Superintendent of Engineering concerning the Bear Creek Development Project in Story County.

Informational items included a report on tentative arrangements of the Corps of Engineers on access to the Red Rock and Rathbun Reservoirs, placement of a District Forester at Charles City and the possibility of the Indian Bluffs Development in Jones County.

Conservation Forum

Dear Staff:

The announcement of your Silver Anniversary in the last (February) CONSERVATIONIST says, "To some this reminder of the passage of time may strike a strong spark of nostalgia." It most certainly does.

Twenty-five years ago the Conservation Commission and its objectives were little understood by Iowa sportsmen. The value of research was only appreciated by a few, and anyone who owned a gun or a fish pole might be a self admitted authority.

The hoped-for objectives of the little monthly have been more than realized, and its promotion of the state is largely responsible for the great material developments of the later years.

Mrs. Addison Parker and I are the only ones left of that early Commission, but I am sure the voices from the Happy Hunting Grounds will join us in a "WELL DONE."

With most hearty congratulations, I am

Yours very truly,
Fred J. Poyneer
Commissioner '39-'51

Dear Editor:

. . . Why, though, are farmers expected to offer strips of their land for it (wildlife) when there are miles and miles of roadsides and median strips available on the county, state and interstate highways? . . .

E. H. R.
Moline, Illinois

Our Superintendent of Game says: *Your comments on wildlife cover are pertinent. Certainly every bit of cover available to our wildlife populations in the winter months is of great value.*

The program for planting shrubs around farm groves which we have advocated is valuable not only to our wildlife, but to the welfare of the farmstead since it is designed to improve the farm windbreak. Little valuable farmland would be utilized.

In Iowa, our State Highway Commission delays the mowing of roadsides each year until after July 1 in order to safeguard nesting pheasants and other wildlife. Highway officials, however, do not want heavy growth along the roads in winter since it serves as a snowfence and causes the highways to be clogged with drifting snow. Lands some distance from the traveled portion are normally left unmowed, and the Highway Commission plans to plant many of these areas to trees and shrubs to provide wildlife cover and to beautify the roadside.

IN THE DEFENSE OF NATURE

Is the "Balance of Nature" always right and proper? Is it "good" in moral terms? Is interference by man in the balance of nature an evil thing? Is any and all manipulation of nature by man bound to lead to nothing but disaster?

The assumption that the "Balance of Nature" is always right and proper is a fallacy which contains a large element of truth. For instance, indiscriminate and irresponsible use of herbicides and pesticides can have and has had various disastrous effects on the balance of nature and on man.

Hoeing a garden could be called interference with "the Balance of Nature." The planting of any crop is changing "the Balance of Nature." Certainly, these acts can't be condemned!

What is our purpose when we defend "the Balance of Nature?" The preservation and betterment of our society is ordinarily our ultimate goal in what is usually called the "struggle for survival" or "the process of natural selection."

Defense of nature, the preservation of primitive areas, and the creation of outdoor recreation facilities are each important in achieving the goal of providing adequate and appropriate outdoor recreation opportunity. This opportunity is necessary to our society in order that we maintain our health, our mental welfare, and a good emotional balance. If we are to maintain and preserve a healthy society with a constructive purpose, nature must be defended.

—Jim Sherman, Superintendent of Public Relations.

GUEST EDITORIAL–

The United States government is currently pleading anew with its citizens to please, PLEASE not destroy the natural beauty of their national parks.

The fact that such a plea is needed, plus the apathy that has greeted President Johnson's program for highway beautification, prompts the glum conclusion that somewhere along the line in developing America the Beautiful we have become so accustomed to litter and ugliness that we now accept them as a part of modern living.

You have to see the abuse and destruction of our natural beauty to believe it could happen in an enlighted civilization. But happening it is, and to such an extent that it is both frightening and sickening.

There are a depressing number of odd-balls who are either too lazy, too sloppy, too selfish, too insensitive to beauty, or too contemptuous of the comfort and welfare of others to clean up their own litter, to extinguish their picnic embers or campfires, or to leave thing neat and tidy for the next fellow.

There are others even worse who are not only insensitive to beauty, but are impelled to destroy it by senseless vandalism.

These weirdies risk their lives to plaster their names in huge letters on scenic cliffs. They smear grease and paint on historic markers, they clog up geysers in national parks. They defile and mutilate statutes of American heroes.

How can we stop or at least reduce such wanton desecration of natural beauty which this year is attracting 100 million Americans to our national parks alone?

One simple way is for each of us to make sure we leave our picnic spot or campsite as clean and beautiful as we found it—or to report it to the proper authorities if we find it littered or unclean.

If enough of us do this, perhaps the litterbugs will get the message. They'll get it even faster, of course if more of them get the legal punishment they deserve.

Either we do this, or someone had better start composing a stirring new patriotic anthem, "God Help America, Land of Debris." *Reprinted from Democrat, Fort Madison, Iowa.*

BE AN EARLY BIRD

(Continued from page 25)

heads. They prefer the cooler isotherms immediately under the ice cover. Depth distribution studies have revealed 68 percent of the bullheads were found within 4 feet of the surface.

In the spring as surface waters are warmed there is a progressive movement of bullheads toward the deeper, cooler stratum, or toward the bottom of the lake. Therefore, early spring fishing for bullhead should be concentrated into the shallow waters until the surface is warmed and movement is toward the deep areas. It is common to see bullhead fishermen wasting their effort with customary long arching casts into the deep water when most of the bullheads are located literally at their feet. A good hint for becoming a successful bullhead fisherman is to utilize the shallow water by casting parallel with the shoreline instead of straight out. Of course there is no exact formula, but experimentation is the companion of success. Little can be said about the choice of bait since I know of no way to improve a worm.

Jack Kirstein Photo.

Spring pan fishing may test the angler's skill, but it sure can add some beauties to the yearly creel take.

Jim Sherman Photo.

Spring brings lots of natural food to the environment, so the fly fisherman has no trouble filling a stringer.

Reaction of such species as crappie, bluegill and perch to environmental temperature changes is downright fickle. Just when a fisherman thinks he has located a hungry school of big crappie a warm day, spring rain, or cold spell fouls up his system. Studies at Red Haw Lake have revealed a progressive movement of these species toward the warmer, upper strata as spring progresses. However, there is not an orderly, stable movement, but rather an unstable flucuating movement related to changes in water temperature. This is very important to fishermen.

All crappie and bluegill fishermen have their own system for locating the depth of a school of panfish. Many of them I know let their lure sink to a certain level by counting to a predetermined number and then retrieving the lure in a natural way. If no fish are caught the depth is increased by counting to a higher number. This is repeated until fish

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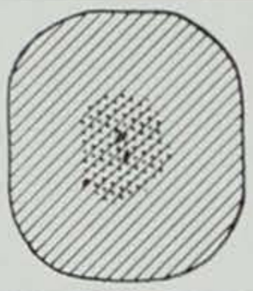
KEY: OPEN WATER / CATTAIL / BULRUSH			
WATER	SHALLOW	MEDIUM	DEEP
VEGETATION	DENSE	MODERATE	SPARSE
BIRDS	FEW KINDS MANY INDIV.	MANY KINDS MANY INDIV.	FEW KINDS FEW INDIV.
MUSKRATS	FEW	MANY	FEW

A simplified key to basic marsh management techniques.

Milton Weller Photos.

Rush Lake was drawn down in late summer of 1963 because it no longer offered suitable habitat to birds or muskrats.

Sun, winds and rain combined to make the exposed bed grow vegetative cover.

By last fall, Rush Lake was once more a paradise for waterfowl hunters and muskrat trappers. Intensive management efforts may keep it in this ideal state for many years.

MARSHES NEED REST!

Milton W. Weller*

"How's fishin' down at the marsh outlet, Jim?" "Marsh! What marsh? It's bone dry! I've been fishin' there for years and huntin' ducks in the fall and now it's gone; they've opened up the gates wide. What kind of conservation is that? Just tell me!" "You got me Jim, but we'll find out in a hurry; gim' me the phone."

"Yes, that's right," said the Conservation Officer, "the biologist said it had to be done and the managers did it. But, don't get too excited until you find out why. After all, you fellows are duck hunters and the biologist said we had to drain that lake for the ducks."

"Wow! Now I've heard everything. Next you'll be telling me this is the way to increase ducks and improve hunting!"

"Well," said the Officer, "as a matter of fact—that's right. Howd'ya guess? Say, maybe you'd like to join me on a trip over to see the Unit Manager; I've got to see him about some things anyway and he can tell you the whole story. Okay?" "Okay!"

This conversation has a familiar ring to many waterfowl managers and biologists. And it stems from the fact that we know so little about marshes; biologists are just beginning to learn something of the limits of marsh production. We've learned the hard way about the capabilities of farmland and we fertilize to maintain our harvests. Apparently, marshes will not produce ducks, duck food plants, duck nesting areas and hunter cover continuously. The marsh needs a rest, too!

Actually, we don't know very much about the whys of this marsh habitat like we do in cropland. Studies are underway here in Iowa as in other states to try and learn some basic facts about marsh production. We have been accumulating some general ideas of how the marsh "habitat cycle" works and how we may be able to help the marsh and help the ducks.

Here's the way it seems to work: A marsh is a certain combination of quiet, shallow water, rich soil, semi-aquatic plants and an infinite variety of animals which form an interacting community of living things. Sound complex? It is! And it will take considerable time and effort to decipher all its intricacies. But we know that a lush growth of cattails or bulrush in a marsh is as attractive to muskrats as it is to ducks. Muskrats are of great benefit to a marsh at times—opening up dense beds of vegetation and creating little potholes which are ideal nesting spots for Redheads, Ruddies and Coots and brood-rearing areas for most ducks. But like rats and mice, muskrats are rodents and increase rapidly—especially with a good food supply. Soon—without consideration for ducks or hunters (!)—muskrats may strip the marsh of vegetation and create an "open marsh" or lake. Robbed of food, the muskrats starve, move out or die of disease. The ducks must go elsewhere, or may not nest. Hunter-success usually declines. Thus, we lose two valuable resources, duck-hunting and muskrat harvest. But back to that later; how about the marsh?

We'd expect that cattails and bulrushes would spring up like mad the next year (Imagine all the organic matter from those decaying plants). A few surviving cattails on the shore struggle up—only to be chopped down by a hungry muskrat. So we wait . . . and we wait. A few plants may survive and spread out their runners and multiply—but this is a slow process. Action is needed to hasten the return of our duck marsh.

What kind of action? Well, as I said, we've lots to learn about marshes and we don't win every time, but we've got the pattern pretty well pegged and our best chance is a drastic move: draw it down!

Now, if you think about it a little, this isn't as unnatural as it sounds. In fact, isn't that what happens to shallow marshes when we have drought? And after each major drought, we see lush growths of cattails, a surge in muskrat populations and, a little later, **more ducks.** In some areas of the U. S., this natural **draw-down** happens nearly every year. In areas like Iowa, it's less common, especially in deep marshes. But where the State Conservation Commission has installed water control structures, we can do this any time good management requires it. This is a great way to help Mother Nature, the ducks **and** the hunter. The fisherman who likes to fish at the outlet of the marsh may miss a few years of fishing in that spot and the duck hunter **may** miss a year of hunting.

What happens to the marsh now? During the years when water covers the marsh and plants grow, it appears that some toxicity develops which reduces marsh production; drying the bottom corrects this. In addition, many marsh seeds don't germinate in deep water. The "draw-down" creates an ideal bed for germinating seeds of many marsh plants. Some, like cattail, form tall, dense stands which are select food for muskrats. These tall emergents also are good cover for

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*Assoc. Prof. of Wildlife Biology, I.S.U. and Leader, Federal Aid to Wildlife Restoration Research Project, W-105-R.

THEY'RE EASY TO CLEAN

Having trouble getting the little woman to care for the fish you bring home? Or do you do it yourself because you feel it's a job that shouldn't be wished onto your worst enemy? If that's the attitude around your house then read on, because the drawings and accompanying instructions are designed to take the mess out of cleaning fish.

Basic to the operation is careful washing and rinsing of the fish, followed by a thorough drying. (Paper toweling works well for this.)

Now, place the fish on a cutting board (figure 1) and make a shallow cut on both sides of the dorsal fin, extending it from the head to the tail.

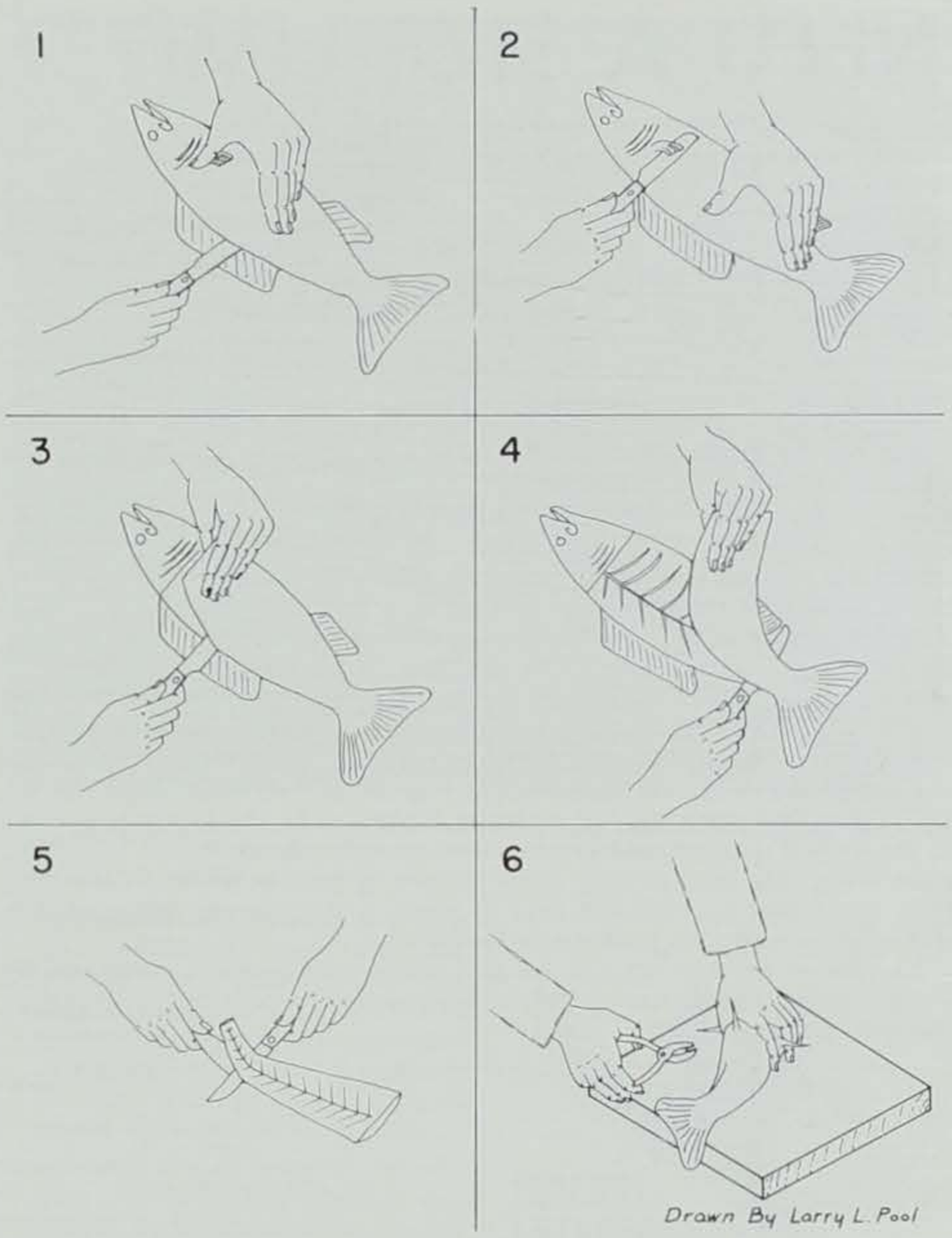
Secondly, cut the fish in back of the head to, but not through, the backbone (figure 2).

Third, cut flat along the backbone and at the same time gently pull and cut the flesh from the rounded rib cage (figure 3). When you free the last of the meat from the ribs, extend the knife (figure 4) and finish the cut to the tail. Repeat steps two through four on the other side.

Step five involves the skinning of the fillet. Make an initial cut between the flesh and the skin. As soon as enough skin is free, grasp firmly in one hand while continuing to cut the fillet from the skin **and** scales.

Figure six shows how one holds a bullhead or catfish to avoid injury from the three sharp spines surrounding the head. Skinning is accomplished with the aid of pliers.

If your catch is made up of smaller panfish that won't yield good fillets, you can still get good eating without the bother of scaling. To do the job, wash and dry each fish, skip step one, making only the cuts around the head as indicated in figure 2. Using a pair of pliers, peel the skin **and** scales from the fish. Break off the head, remove the entrails, clean and cook! It's not only **the easy way**, but many people say the flavor of a skinned fish is much sweeter than those that have only been scaled.—J. H.



MARSHES NEED REST!

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hunters. Some plants like duck potato, various sedges, smartweed and millet, are ideal duck foods. Flooding them can make a real duck haven if you can slog out to get 'em!

What we get in plant growth depends some on what time of year the draw-down takes place, how long it lasts, and what seeds are available. Sometimes we get "weed" species like willow trees (which **can be** good duck nesting areas as well as good hunter cover) and we must do some carefully planned research projects so we can better predict our results. Whatever we get, it usually is better for ducks and duck hunting as well as muskrats and muskrat harvest than a wide "open-marsh" condition. In most cases, we probably increase our harvest enough to compensate for the losses during the draw-down.

In experiments to date, we can point to some good and some not-so-good results, but, nevertheless, some progress toward the answers we desire. At Rush Lake, in Palo Alto County, we pulled down the water for nearly two summers before we got regrowth of vegetation. (When the technique is perfected, less than one year may be enough). But then, **boom!** Ducks, marsh birds and muskrats galore in one year's time. Sometimes it takes several years for water levels and muskrats to produce these ideal situations, but this one was an immediate success because of the ideal interspersion of cover and water (see photo). In the spring, when the area was just reflooding, there were hardly any muskrat houses to be seen and few muskrats in evidence. By fall, where almost no muskrats had been taken in 1964, there were 375 muskrat houses in early winter and some 600 rats were harvested. It should be better for both ducks and muskrats next year and, with a little management, it may last several years—until the marsh needs a rest.

"Still more management" you say? Yes, still more! Each marsh is a special problem. Each has its own value and productivity. Each undergoes its own cycle of vegetative growth, muskrat and waterfowl populations. Each, therefore, must be managed as we would manage different farms. And it isn't easy. A general formula of management events is this:

1. Draw-down.
2. Germination and regrowth of vegetation.
3. Reflood gradually to avoid floating-up new plants.
4. Allow growth of muskrat populations—restricting harvest if necessary.
5. Begin intense muskrat harvest **before** they cut-out a major proportion of the emergents (perhaps at ¼ open water).
6. Hold water levels low enough to induce vegetative growth and high enough to attract ducks. Maintain strong program of rat-trapping.
7. Lower water levels when muskrats have removed ⅓ to ½ of cattails and bulrushes; trap muskrats intensively. A semi-draw-down may be necessary.
8. Maintain balance of muskrats, water levels and vegetation!

Theoretically it might be possible to keep a marsh going in its ideal state forever (about 50 percent open water, 50 percent emergent vegetation)—if we can control the interaction of muskrats, plants, and water levels. But, man rarely controls natural systems to that degree and the balance of nature usually swings one way or the other. In addition, problems arise in flexibility of trapping seasons, fur styles and trapper rewards. Moreover, we're still not sure about the chemistry of the marsh bottom, marsh plant production in relation to muskrat utilization, and a host of other complex factors.

Given a little time—and some patience—we may find the answers. And you never know, even the fishing may be better!

BEGINNER'S BASIC

The barrel of a gas-operated gun has a gas port at a given point to allow the escape of sufficient gas to operate the mechanism for extracting and ejecting the empty case and reloading. Openings near the front end of the receiver and bolt are called **gas escape ports** or **vents,** sometimes referred to as **orifices.** These permit the gas due to a pierced or blown primer to escape. Gas can also escape around the wads in a shell or through a split shell. Gas that is contained by the receiver could conceivably back up towards the shooter's face, damage parts of the action, or even burst the receiver.—*From THE WINCHESTER PROOF.*

When buying a canoe paddle, here is the rule: stand the canoe paddle on end, if it is a bow paddle, it should reach your chin; if it is a stern paddle, it should reach your eyes.

At one time, single prairie dog villages stretched for over a hundred miles and more than 400,000 of the little animals inhabited these villages.

Standing dead trees, exposed to the wind and sun, make good firewood. And when it is cut down it usually breaks up and saves a lot of axe and saw work.

The gray fox is the only fox that is apt to climb trees. When pursued by dogs it sometimes leaps into the branches, bounces from limb to limb and then hides quietly in the thick foliage.

NEED A SIZE LIMIT??

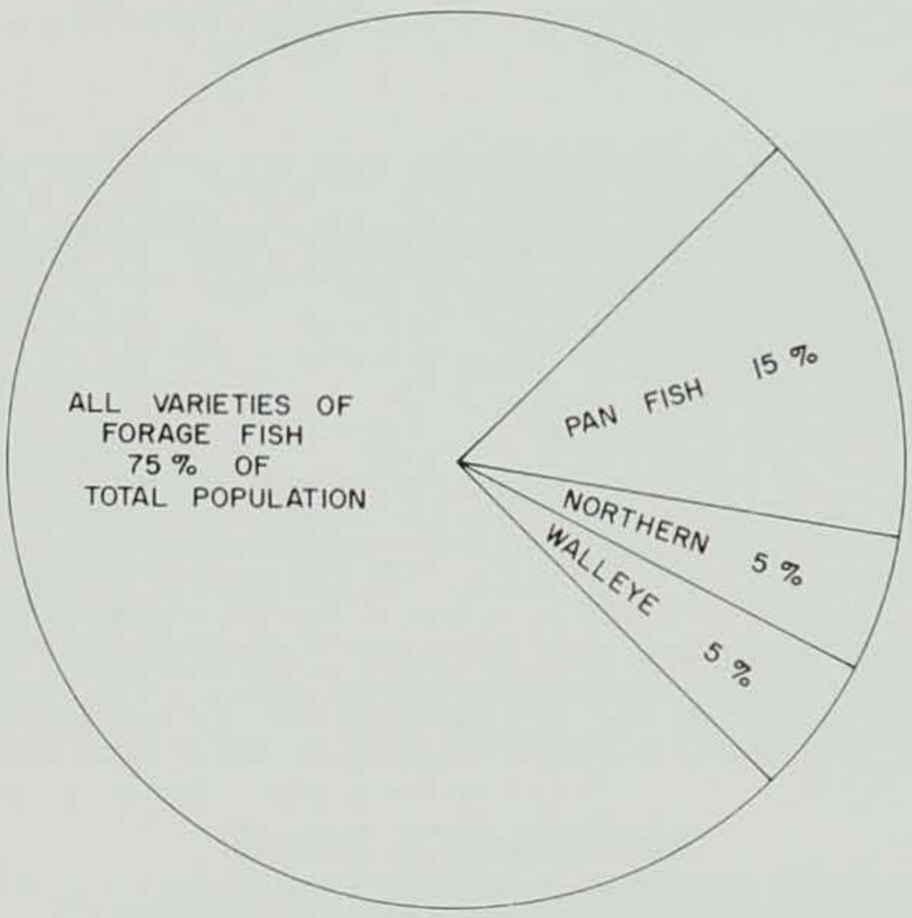
Harry Harrison, Superintendent of Biology

From time to time fishery biologists are asked to explain why we do not recommend or even insist that minimum size limits be put on certain species of game fish. To a great many fishermen it seems logical that the small walleye or northern pike returned to the water this day may be caught as a walloper at a later time. As is often so in nature, we have here another instance where perfectly good logic falls far short of actually being the case. In fact, the hammer handle size fish that you see going on the stringer may very well make the next fish you catch a bigger one.

How is this possible? Our answer is really quite simple and easily understood, but should we attempt to prove it, we would find ourselves involved in a maze of complicated natural phenomena that are quite academic and not of general interest. So for the purposes of this article we will confine our remarks to a few rather simple, pertinent biological principles and proceed from there to show why we see no need for, or value in, having size limits for any fish.

Of fundamental importance is the fact that each and every body of water has its individual combination of basic characteristics which determine the kind and amount of fish that can live there. In fisheries circles, terms such as: carrying capacity, species composition, fertility, size distribution, population dynamics and many others serve to explain the things involved. In plain words, with all of the chaff removed, we are saying that each body of water is limited as to the kinds or species of fish it will support and for the total pounds of fish it can maintain. Essentially this tells us why some species of fish do better in one lake than in another or why fish held in small containers do not grow but will when placed in a sufficiently larger one.

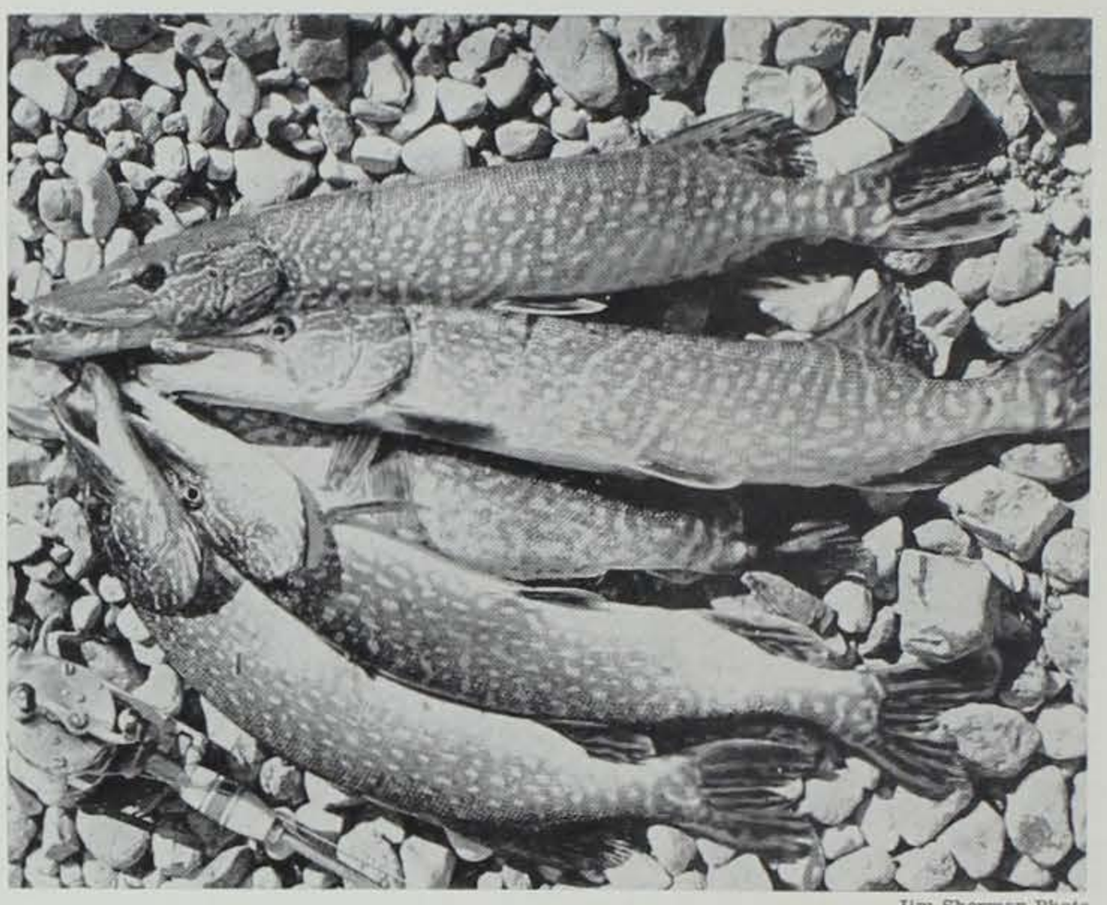
To explain further we can, in part, demonstrate what we mean by using a pie diagram to depict a typical fish population in a hypothetical lake or stream.



For our purposes, the percentage figures in our diagram refers to weights. In this instance we have a fish population where 75 percent of the total pounds of fish living in this water area is composed of forage fishes, 15 percent of the weight is pan fish, 5 percent northern pike and 5 percent walleye.

Now then, we must introduce another fundamental principle of nature, which has been stated thusly "Nature abhores a vacuum." In essence this means that all living things are striving constantly (really working at it) to maintain themselves at peak populations. If any living thing, plant, animal or fish, is destroyed it will almost immediately be replaced by its own kind or something else very similar. If in our hypothetical lake (our pie diagram) we should remove any part of the fish living there, that poundage of fish so removed would be replaced very rapidly by growth on the part of remaining population. The principle cited here is familiar to anyone who has gardened: Hoe the weeds—they make a rapid recovery, thin out the radishes, those that remain grow larger. This principle applies to fish populations as well.

Returning again to the pie diagram let's refer to a specific part of it. The walleye will serve this purpose. According to our illustration the walleye makes up 5 percent of the total population in our hypothetical lake. What about this population? Is it a constant population? Does it change? If so, how much? The answers to these questions have some application to our discussion of minimum size limits, but the major part of those answers is material for another story. For the present, and as long as we are dealing with a hypothetical situation, let us for simplification's sake consider that the walleye population is made up of a constant poundage of walleyes. A thousand pounds of an individual size that any angler would take. Now then, let us look at a few examples of numbers and sizes of fish that could occur in our lake. With the poundage remaining constant at 1,000 pounds, we could have a situation where we have 1,000 walleyes at a pound each in our lake; 500 at 2 pounds, 2,000 at a half pound, 4,000 at a quarter pound or 250 walleyes at 4 pounds each. Again it should be mentioned that this example is greatly simplified, but it is one picture that emerges when the masks of the many, many other factors controlling fish populations are removed.



Jim Sherman Photo.

This catch represents a removal that will allow remaining populations to grow.

What we have said here is that if you are really interested in catching larger fish, one good way to achieve this wish will be by reducing the number of fish so that those that remain get larger.

The next time your dander is brought to the boiling point by the angler you see stringing a small fish, it might be a good idea for you to reconsider your feelings. Actually the removal of small fish from the environment helps Mother Nature produce big ones. Essentially this has been her way of producing bigger fish for nearly 400 million years. It's a good method, but in nature small fish are removed by disease and predators and thus serve the angler no purpose.

If on the other hand a fishermen is satisfied with a smaller fish, two things have been accomplished. We have a happy angler and have created place or void in the environment into which the remaining fish can grow larger. Big fish will forever be few in number. They become bigger and bigger at a cost of extremely heavy mortality on the part of their brothers and sisters. This is good, for a fish population composed of too many big fish is an early sign of poorer fishing days ahead.

The explanation of this concept is a subject for another article—"Too Many Big Fish?" Watch for it in an upcoming IOWA CONSERVATIONIST.

BE AN EARLY BIRD

(Continued from page 27)

are located. Of course the color or type of lure cannot be ignored, but most of the time these fish are not shy about biting if they can be located. Bait fishing with small minnows or garden worms is particularly effective this time of the year since run-off is bringing in high quantities of natural foods which in turn attracts minnow and other forms of aquatic life.

Although most fishermen do not fish for largemouth bass until late spring this does not mean they cannot be caught soon after ice cover disappears. The technique is a little different, but the effort is worthwhile. In winter most largemouth bass are located in a narrow warm stratum very near the bottom. They occupy this area until late in the spring when there is a relatively quick movement into shallow water. Early fishing should therefore be into the deeper regions with the lure almost on the bottom. Again the previous hint of using a count method is valuable. There are numerous kinds of lures available that are capable of taking big bass, the most important thing to remember is to fish deep and very slow, preferably with the bait bumping along the bottom.

LAND AND WATER CONSERVATION FUNDS

Bill Brabham, Director, Planning and Coordination

The Land and Water Conservation Fund Act, which became effective January 1, 1965, under the direction of the Secretary of Interior with the Bureau of Outdoor Recreation as the Federal Administrative Agency offers financial assistance to Iowa for recreational land acquisition and development.

To qualify for the participation in the program, it was necessary for the Iowa State Conservation Commission to prepare a comprehensive statewide outdoor recreation plan. This plan has been completed and submitted to the Bureau of Outdoor Recreation for their approval. It is anticipated that approval will be received by April 1 of this year. Following approval, the Iowa Conservation Commission will be ready to review all qualified recreational projects for land acquisition and development.

It is important to note that the Land and Water Conservation Act is founded on the principle that adequate outdoor recreational facilities can be provided only if all levels of government cooperate and share the task of developing recreational facilities. Governor Hughes has designated the Iowa State Conservation Commission as the official state agency to administer the program and has further designated Mr. E. B. Speaker, Director, as liaison officer between the Commission and the Bureau. This program was not intended to replace existing programs but rather to supplement them in the efforts of providing needed outdoor recreational facilities in our state.

To date Iowa has received two grant-in-aid apportionments under the Land and Water Conservation Fund Act. These funds are available for the fiscal year and remain available to the state on a dollar for dollar matching basis for two additional fiscal years if they are not spent immediately. The first grants-in-aid apportionment, $157,868, covers the period of January 1 to June 30, 1965. This allocation will be available to Iowa for qualified projects through June 30, 1967. The allocation for the present fiscal year totals $1,283,864 and will be available to Iowa for qualified projects through June 30 of 1968.

Federal funds under this program will not be adequate to meet all needs, nor will they be sufficient to match all state and local funds which may be available for land acquisition and development of recreational facilities. Therefore, it is extremely important that the various units of Iowa government become aware of other grants-in-aid programs which can help them reach their recreational goals. As an example, the DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT offers grants-in-aid opportunities for the urban areas of Iowa. In addition, loans can be secured from some Federal agencies by private enterprise to invest in recreational lands and developments. At the present time, however, the Land and Water grants-in-aid funds are the only source available to the county conservation boards of Iowa.

Just as planning is required at the Federal and State levels, it is also a basic concept of the Land and Water Conservation Fund Act that comprehensive planning for outdoor recreation at the local level shall guide the expenditures of matching funds for outdoor recreation. So, local comprehensive plans will guide the way to future, sound outdoor recreational programs.

The requirements for local participation in the Land and Water Conservation Fund Program are:

1. **The proposed project must be in accord with the approved statewide comprehensive outdoor recreation plan.**
2. **The local agency must certify to its ability to provide its share of project costs.**
3. **The proposed project must be part of a comprehensive recreation plan which has been prepared by the local agency submitting the project, or evidence must be submitted that such a plan is being prepared.**

For the purpose of supporting project applications, the local comprehensive outdoor recreation plan or recreation element of a comprehensive community plan should contain the following information:

a. A detailed inventory of present public outdoor recreation areas and facilities administered by the local government. Areas should be listed by name; type, such as park, playground, golf course, etc.; and give total acreage of each area. Principal facilities for each area should be detailed showing amounts and/or capacities wherever possible. A ranking of the principal activities and use pressure would be useful.

b. A general inventory of neighboring public outdoor recreation areas. List the local state and municipal areas and also all state and county areas in adjacent counties in the case of a county or regional plan. List all state and county areas within at least a 25-mile radius in the case of a municipal plan. Give name, type of area and size. Principal facilities and activities should be listed for each area.

c. A general inventory of the local and neighboring private outdoor recreation areas and facilities open to the public. List by type giving acreages and capacities where possible.

Jim Sherman Photo.

Every conceivable recreation area must be studied and developed according to sound, sensible guide lines that consider land, people and cost.

d. Objectives and policies for outdoor recreation programs including standards of development. Summarize wishes and desires regarding the provision of outdoor recreation and detail the type and extent of facilities which it is desired to provide.

e. An analysis of present recreation needs, opportunities and trends in local and surrounding areas and identification of deficiencies. Take into consideration present populations and state of economy in the community. List known deficiencies based on accepted standards by types and, wherever possible, by amounts or capacities such as camping or picnicking sites, boat ramps, etc.

f. A projection of future recreation needs. Base projected needs on population projections, outlook for economic growth, etc. List needs based on accepted standards by types, and whenever possible, broken down further into amounts or capacities by facility.

g. The recommended local program for meeting these needs. List potential acquisitions and types of development to meet needs including a timetable. Give estimated costs wherever possible.

h. Local government structure in relation to recreation. Name the board, commission, etc., who is responsible for carrying out the recreation program.

i. Evidence of coordination of programs and plans with other local governmental units. Describe how the recreation programs and facilities of other agencies will be considered in recreation planning and future programs.

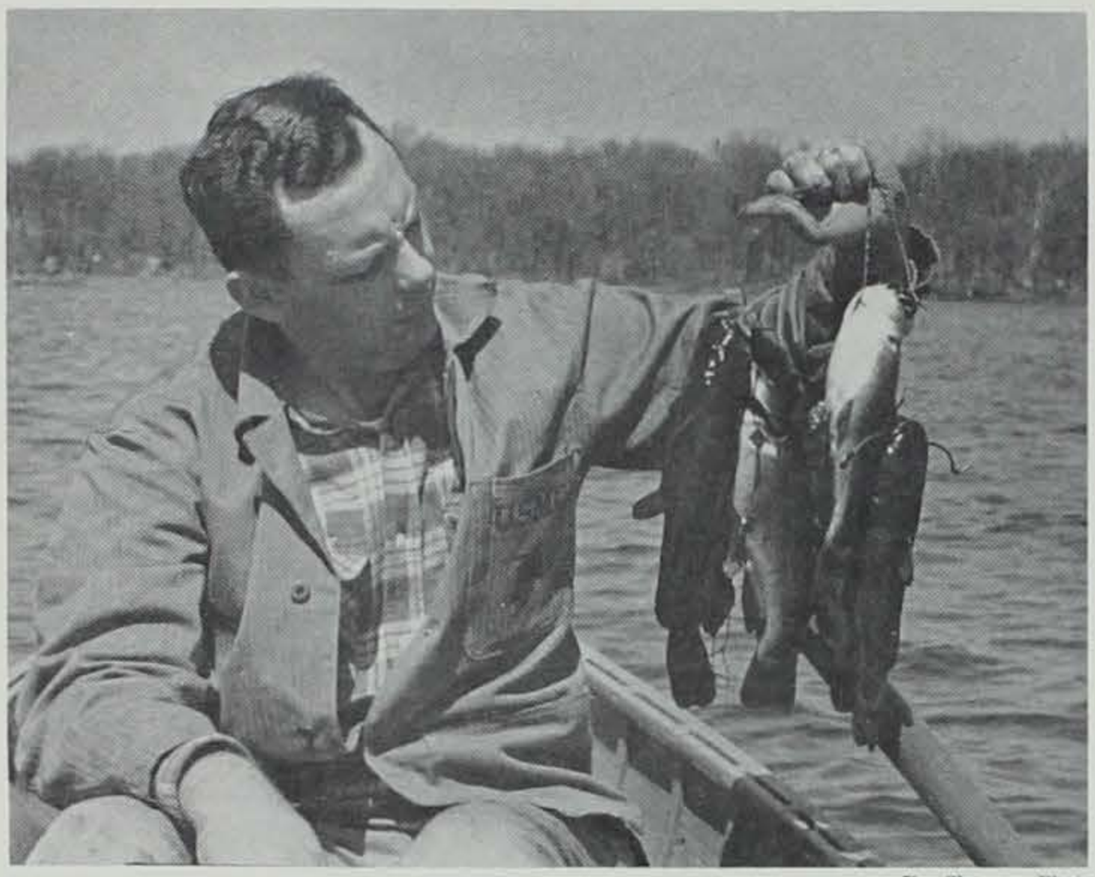
j. Financing capabilities, plans and methods for land acquisition, capital improvements and operations. Include present source of financing and recommended supplementary sources if needed. Give recommended methods of land acquisition such as fee title, easements, leases, etc., with amounts. Detail how improvements and operations will be carried out and by whom.

There are three Federal sources of funds for the Land and Water Grant-in-Aid Program.

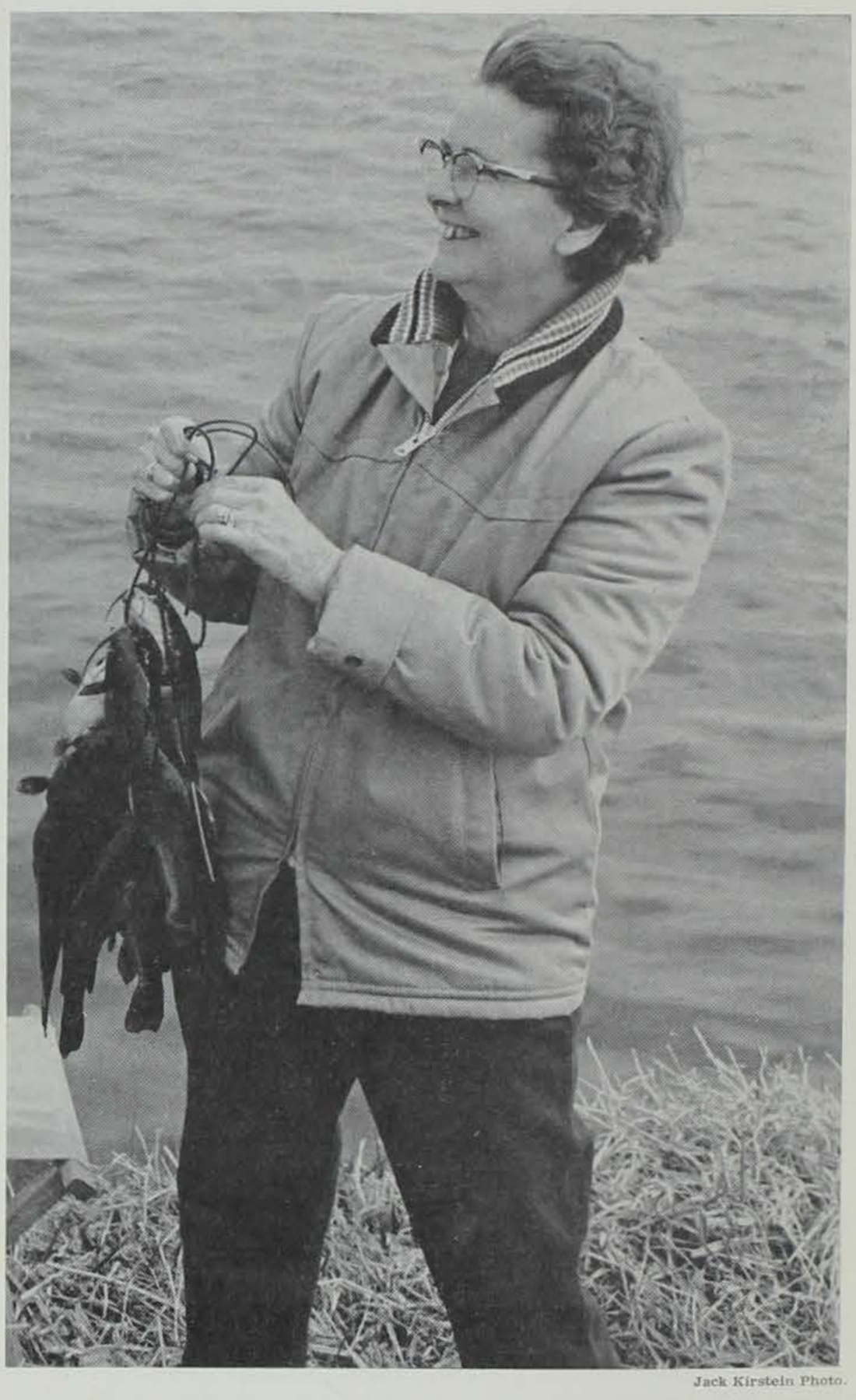
1. Admission fees on Federal recreation areas.

   This year the "Golden Passport," officially called the Federal Recreation Area Entrance Permit, is a wallet sized card and is the successor to the recreation conservation sticker introduced in 1965. The annual $7.00 "Golden Passport" Area Entrance Permit is valid on a nationwide basis and will permit its purchaser and all who accompany him in a private automobile to more than 7,000 Federal recreation areas.

2. Proceeds from the sale of surplus Federal real property.
3. Federal tax on motorboat fuel.



Jim Sherman Photo.



Jack Kirstein Photo.

From Boat or Shore . . .

SPRING IS BULLHEAD FISHIN'

K. M. Madden, Supt. of Fisheries

Spring is—green grass, willows' swelling buds, wood violets, pasque flowers on the prairie, ducks on the pond, wild geese going north, farmers in the field, and bullheads near shore.

A "Megalopolis" night visitor to Iowa's bullhead waters might wonder. Could this be some special tropism not found in neon lighted concrete canyons of cities? Cars parked bumper to bumper; lantern and flashlight grotesquely casting shadows of warmly clothed figures of night bullhead fishermen; driftwood stoked fires flickering on the far lake shoreline like those of a resting army: they await a call to action —the gentle tug of a hungry bullhead on the line. This is the army of Iowa bullhead fishermen driven by an irresistible force—Spring. From the time the ice goes out in spring and 'till freeze over in the fall, bullheads are sought by all classes of people—men and women, young and old, rich and poor, purist and "one-gallused" anglers. No fish caught on a hook and line enjoys a more widespread popularity. Bullhead fishing is to be had throughout Iowa, often in places where there is no other fishing.

The bullhead is a rugged fish and its ability to live under all conditions is almost legendary. It will grow in shallow lakes and backwaters where no other game fish can survive.

People often say, "There is no place we'd rather be than right here catching bullheads." The lake you know is the best bullhead lake! Although several species of fish may be available, including the popular walleye, yellow perch, largemouth bass, northern pike and crappie, the bullhead has dominated the Iowa catch for many years. This is apparent from creel census data collected by the Conservation Commission during the past years.

Most fishermen and biologists know that fish are more active at certain seasons and times of the day or night. And so, fish can be divided into three general groups on the basis of their activity patterns: (1) those that are more active at night than during the day; (2) those that are more active during the daylight hours; and (3) those species that move from one habitat to another at different periods of the day.

Black bullheads, Ameiurus melas (Rafinesque) apparently **come into the shallow water more at night than they do in the daytime.** So the bullhead has a special place in the hearts of working Iowans.

From experiments carried on at Iowa State University it is apparent that the bullheads have a keen sense of smell and are attracted to food by its odor. Further experiments indicated that bullheads find food more readily when it is lying on the bottom than when suspended in the water.

Crustaceans, plant materials, chironomids and small fish were noted in a high percent of the bullhead stomachs, respectively. **Chironomids** (blood worms) were the most important **immature insect among black** bullhead food items found during both studies. In general, crustaceans and chironomids were eaten more frequently at shallow water locations.

An important factor in favor of bullhead fishing is their readiness to take your bait, regardless of the time of day or night. They are far less temperamental in their feeding habits than most other species of fish. Bullheads are apt to eat whatever is available, including insect larvae, worms, snails, aquatic vegetation, and occasionally small fish and eggs of fish.

A big gob of worms lying on the bottom is a sure killer for the bullhead. Some "bullheaders" believe that garden worms are better than night crawlers. Others think that night crawlers, when broken into sections an inch and one-half long and piled on the hook, improve their fish catching qualities. The hook may be as large as "size one" and a large sinker is permissible. This type of rig is best suited to a casting rod. Spin casters use the same technique but reduce the hook size and sinker weight. The cane pole is very popular with bullhead boat fishing regulars. Special skill and special tackle is not necessary. Anyone equipped with a rod, a line, a hook, and a can of worms is ready to go bullhead fishing.

The food qualities of the bullhead, like many other fish, vary with the season. The flesh is firm and well flavored in the spring. The size you catch are the "best eating size," so keep the small bullheads. This will help relieve, in a small way, the congestion of bullheads in most lakes and streams. The sooner they are thinned down the sooner you will be catching bigger fish. It is an accepted principle in fishery biology that the greatest production of fish can be secured when fish are removed from the lake as rapidly as possible.

Fish dressing skill improves with practice and the time required will be reduced to the point where you feel "at home" with a sharp knife, a pair of pliers, and the "know how" of bullhead preparation for the frying pan.

Spring and Iowa bullhead fishing are eternal!