

IOWA CONSERVATIONIST

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THE ABC'S OF EARLY TROUTING

RECREATION AND WILDLIFE VALUES OF WATER

By James R. Harlan

Assistant Director
State Conservation Commission

*(Excerpts from paper presented to the
Water Resources Conference, Iowa
State College, March 7)*

I believe that there is not a man within the sound of my voice who does not dream that in his twilight years he may sit in quiet meditation beside clean water. The setting of our dreams may be along the Gulf, a Minnesota lake or Colorado stream, but always beside quality waters. "He leadeth me beside the still waters. He restoreth my soul."

I wish to show that no public water use plan in Iowa can or should succeed unless the recreational aspects of water are given major consideration in such plan.

We cannot count noses of all who are interested in the recreational use of our waters. We can, however, bring out some figures that prove that vast numbers of our people are directly concerned.

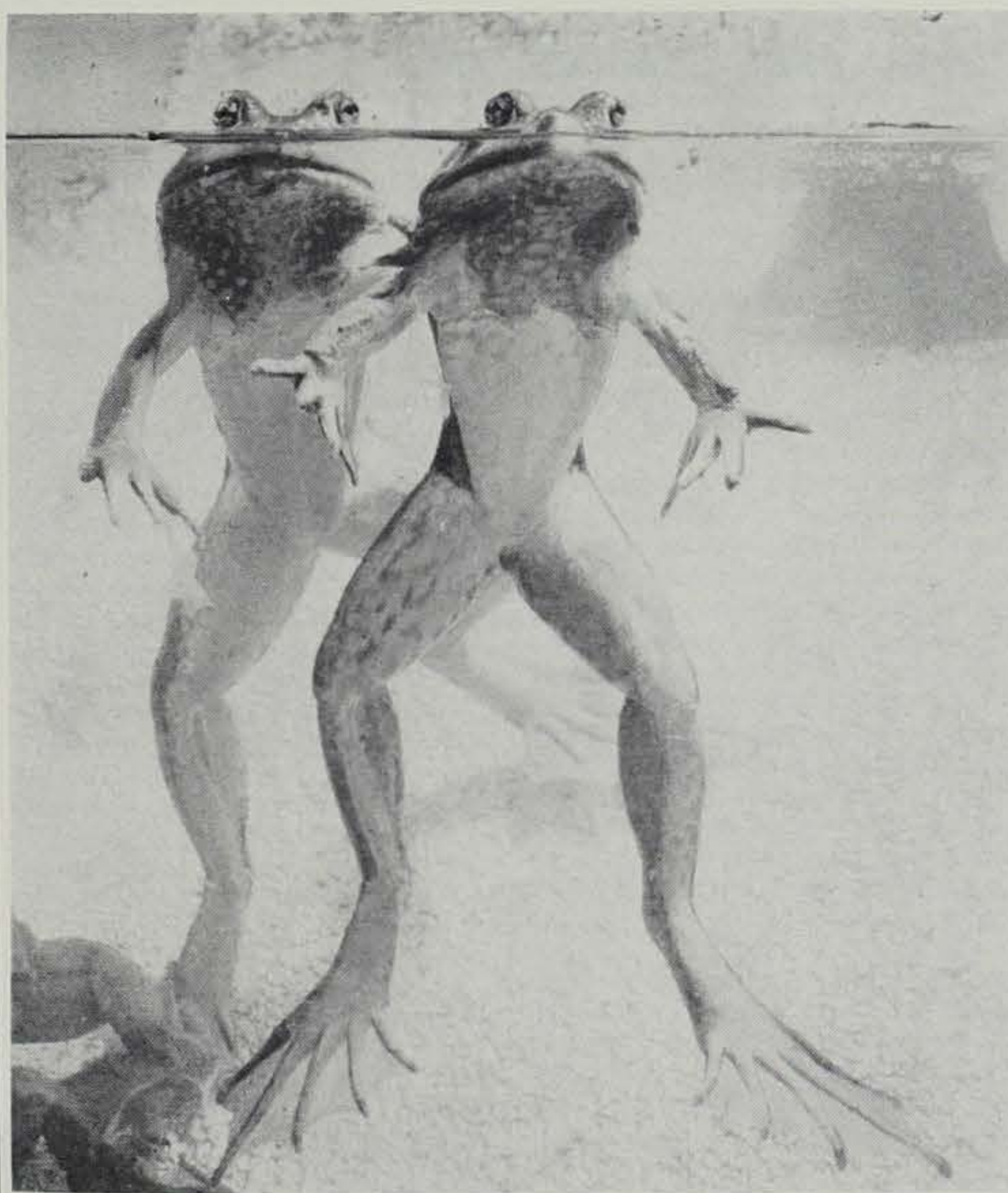
Hunters and fishermen are opinionated and outspoken. They are not organized as are labor unions or a manufacturers' group. They are disorganized in that sense for the most part—yet they are organized, for they are unanimous in that they want better hunting and fishing amid better surroundings. They are absolutely certain that the manner in which the water resources of the state are used affects their sport.

The 557,000 licensed hunters and fishermen total more than one-fifth of the entire population of the state.

It is impossible to count the number of boat operators, owners and users. However, the number of boats of one type or another in use on our public waters is conservatively estimated at 20,000.

Bathers, too, constitute a large group interested in quality, quanti-

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Bullfrogs are the largest of all North American frogs, sometimes exceeding 15 inches in length. Here a pop-eyed pair dance a ballet and stare back in mild amazement at the traveling exhibit visitors. Jim Sherman Photo.

THE BULLFROG AND HIS NEXT OF KIN

By Kenneth D. Carlander and
Robert B. Moorman
Iowa State College

Among Iowa's medium and larger sized frogs are some that are important as meat for the table and others that are widely used as bait by anglers for black bass and other fishes. Indeed, all our frogs fill definite roles in nature, since they serve as food for flesh-eating fish, birds and mammals. Even the lowly snapping turtle that ends up as delicious Saturday soup derived

some of its growth from the frogs and tadpoles it has eaten.

All of the larger Iowa frogs, with the exception of the bullfrog, have two conspicuous ridges or folds of skin running the length of the back. As these ridges are usually light in color, they are easily seen. The toes of the feet are webbed, but the fingers of the hands are not. Their larger size, two inches or more, serves to quickly distinguish these typical frogs from

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By Bill Tate

Dept. of Zoology and Entomology
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Another opening day is history, and the majority of the eat-and-get-caught trout have been guests of honor on tables throughout Iowa. Those trout still around to answer roll call have passed their first exams and are becoming educated. Methods that were effective on opening day may not take trout a few weeks later in the season.

This article is primarily intended for those not skilled in fishing for trout. Since almost 100 per cent of the beginners start with bait, it will be devoted largely to methods and techniques of fishing with bait. For most of us "bait" for trout means worms.

Earthworms occur naturally in the trout streams throughout the spring and early summer. They come to the surface of the soil during rains and are washed into the stream. Trout seem to associate muddy water and earthworms and will usually start feeding on worms after each rain. In streams that "clear up" very quickly trout usually start feeding actively as soon as the water becomes roily. In streams that remain muddy and that carry a tremendous silt load fishing may not be really good until the stream has just started to "clear up." Worms often are effective in clean water, too; then it's a case of "shopping around" for a trout that's hungry.

Worms that are carried along by the streams are not delivered complete with anchor, so if you want to present your bait naturally use no sinker or weight to sink the worm. If you cast your worm well up into the riffle above a pool, it will be carried along by the current to the feeding stations of the trout. Since a trout will often move only a few inches to take food, repeated drifts through a pool may be required in order to take a fish. Sometimes in fast water a small split shot may be required to keep the worm down near bottom. However, even in riffles a cast upstream from the

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COTTONTAIL RABBITS CAN TAKE IT

A sixteen-year study to determine the recuperative powers of rabbit populations under intensive hunting has been completed by Dr. Miles D. Pirnie, professor of zoology and conservation of Michigan State College.

The object of the test, conducted on a 500-acre plot of the College's Kellogg Station, was to determine the effectiveness of shooting as a method of controlling crop damage on agricultural lands. The average yield from hunts was 103 rabbits for each of the sixteen years with a high of 172 in a single year. Shooting was confined to the month of December, but 1,649 rabbits were removed during the sixteen-year period. In spite of this relatively heavy take, no reduction in rabbit numbers was evident at the end of the test period. The results show conclusively that shooting during the hunting season is a poor method of controlling rabbits, but they also show that the recuperative powers of rabbits in good habitat is great enough to offset very heavy hunting pressure. Interestingly enough, the best harvest of cottontails on the area came in the year when red foxes were most abundant.

Dr. Pirnie feels that shooting seasons in many states should be set later in the year and should be liberalized to permit greater utilization through hunting. Winter shooting was found to be of small consequence in reducing rabbit abundance.

Copies of his studies may be obtained by writing to the Department of Public Relations, Michigan State College, East Lansing, and by asking for Journal Article 31-33, "A Test of Hunting as Cottontail Control," by M. D. Pirnie. This leaflet contains much information which sportsmen and game technicians will find of interest.—Wildlife Management Institute.



Fishing prospects at Clear Lake appear to be quite good for 1950. Bluegill, carp, bullheads, and walleyes should loom large in the angler's catch. C. J. Sorlien, Mason City Globe Gazette Photo

CLEAR LAKE FISHING PROSPECTS FOR 1950

By John Parsons

Dept. of Zoology and Entomology
Iowa State College

The fishing prospects at Clear Lake appear to be quite good for 1950. Fisheries studies carried on at Clear Lake during 1949 have revealed information that should prove valuable in increasing the fish catch for the coming fishing season.

In comparing the abundance of certain species of fish taken by anglers in 1949 with those fish taken by research technicians, it appears that several common species of fish in Clear Lake are not being caught in numbers comparable to their abundance in the lake.

Such is the case with the bluegill, carp, bullhead and walleye. Bluegills are quite common near and among the rushes in Clear Lake but frequently have been ignored by most fishermen. These fish, although not large, are sporty to catch and are just right for the frying pan. Fishing for bluegills is best in quiet waters, and they may be found by observing their movements or surface feeding activities. A flyrod or light tackle will take these fish readily.

The fact that carp are abundant in Clear Lake has been well established. The Clear Lake carp are large in size and often frequent the shoreline areas where they may be easily caught. Few fishermen have attempted carp fishing in Clear Lake, but those who have have enjoyed some real sport. During the warm summer days when most fish are not biting, try catching a few of these "line-busters." Chances are you'll try it again. Dock or shore fishing is the best and it is wise to use doughballs that are not too large. It should also be remembered that carp may be good eating if properly prepared.

Prospects for bullhead fishing in Clear Lake are not too bright, although some good catches are possible this summer. It was noticed

in 1949 that bullhead fishing was best during the early hours at night in shallow water and on the windward side of a lake during a strong blow. Unfortunately the bullhead fishermen practically ignored these two periods of better bullhead fishing.

Many Clear Lake fishermen will be surprised to learn that the walleyes are quite abundant in Clear Lake and often are large in size. Spring fishing generally produces the best results, but walleyes can be caught all summer if the fisherman changes his fishing habits with the change in the habits of the walleyes. Spring fishing (May 15-June 15) is usually best in the deeper waters during the daylight hours, but during the hot summer months walleyes concentrate in shallow water at night to feed, especially just after sunset and just before dawn. Also dur-

SPECIAL CARP BAIT

We make a special dough bait for spring fishing that really catches 'em—we take about a pint of sweet milk and bring it to a boil, then add 3 heaping tablespoons of salt. This makes it foam up. Then we add corn meal and stir it up thick till it's tough enough to stay on the hook good, and the carp really like this bait.—Hopkinton Leader.

ing the summer, walleyes may frequently be found in shallow water on the windward side of a lake during a strong blow.

It all boils down to this: good walleye fishing may be had during the summer months if the fisherman is willing to tolerate rough water or sacrifice a little sleep. Other suggestions are to fish near the surface of the water at night and locate in or near the rushes in water from four to five feet in depth.

Yellow bass fishing should continue to be good, and as in past years the yellow bass should substantially contribute to the fishermen's catch. The silver or white bass should appear frequently in fishermen's catches this summer, although the fish will be rather small in size. The reproductive success of the white bass last summer indicates that they may re-establish themselves in Clear Lake.

Remember that Clear Lake has an abundance of several species of fish and fishing for all these species will result in better year around fishing, a more variable sport, and better utilization of this lake's resources.



Yellow bass fishing should continue good in Clear Lake this year. This scrappy little fighter has contributed substantially to the fisherman's string for the past several years. C. J. Sorlien, Mason City Globe Gazette Photo.

CRAYFISHES, CRAWFISHES OR CRAWDADS

By A. E. Ortman

This common little animal of the "crustacea" classification is well known, but not many people know too much about his habits and his value to the streams. Probably every fisherman knows of the "craw's" value as a fishing bait. The "soft craw" is a tempting dish to dangle before a bass, a catfish and many other species. And the white meat obtained by peeling the tail of the "craw" is a delicacy to the bluegill especially and other type fish.

As a fish food in the streams and ponds, the craw is invaluable. Take him from our waters and many fish would go hungry, and clear the streams of him and much of the decaying matter of both plants and animals would remain to more or less pollute that body of water.

The craw is omnivorous, that is, he feeds on both plant and animal matter, both living and dead, but probably decaying matter is preferred by most of them. In this manner they clear from the streams and ponds much matter which would otherwise be left to cause deterioration of the water.

The white meat that the bluegill so eagerly devours is also a delicacy when rolled in meal, fried in a deep fat and served on our tables. Much of this food value of the craw is overlooked because of the patience one must have to obtain a "mess" and due to the squeamishness of the women to whose lot preparation of the dish falls. However, those who have tasted this crawdad delicacy will testify to its epicurean supremacy.

As everyone knows, the crawfish's body is enclosed in a hard shell, and he has ample protection through his two giant pinchers pro-

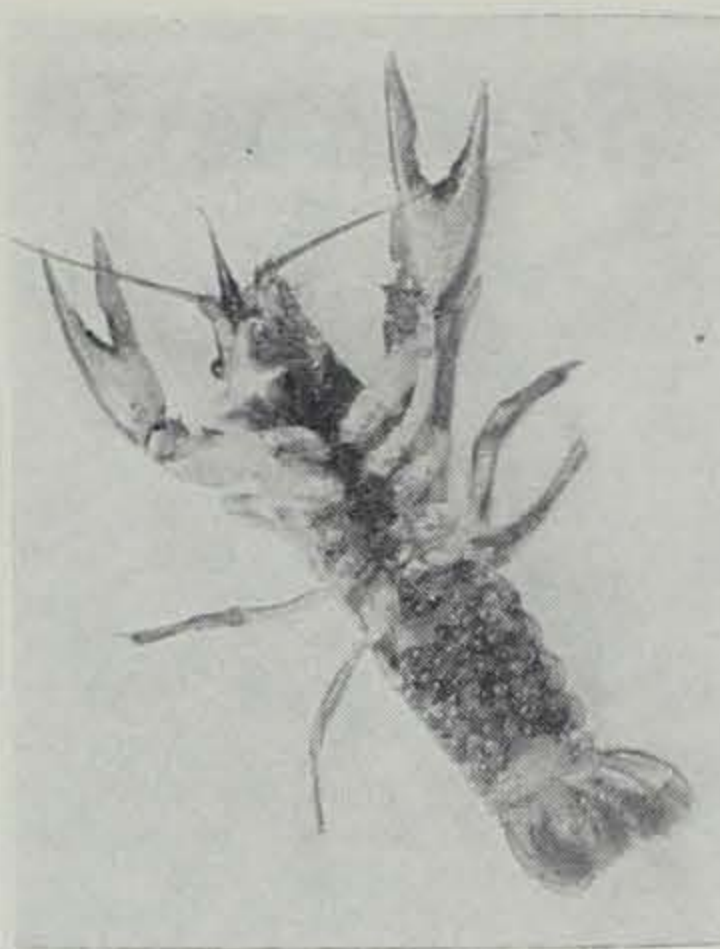
truding from a segment just back of his head. The hardshell craw may also become the "soft craw" or the "paper shell craw," as he goes through his various stages of growth. He alternately may become one or the other of the three stages as he moults or sheds his old shell.

The life of a crawfish may be five years, or even a few more. The young start their life under the tail section of their mother and are hatched from eggs held firmly by the mother with the tiny pinchers or claws.

The breeding period for the craws is in the fall and extends into the winter months. The male craw attaches himself to the female and ejects a sperm which is held in a sac under the tail by the female. This sperm remains in the sac until the spring, or a warmer period, when it is fertilized by the female and eggs are ejected from the body, to be held under the tail until they hatch. From three to four weeks are required for hatching, and then the young remain in the custody of their mother for another week. At the end of that period they must fend for themselves and are highly capable of taking care of themselves since they grow rapidly the first summer.

The male craw may undergo alternating conditions. In the fall and winter months he is sexually potent, but with the beginning of spring he loses this potency. From year to year he undergoes this change. The alternating conditions may occur at different periods in other sections of the country.

During the first summer the baby craws grow rapidly. This growth is produced only when the old shell is expelled during the



Young crayfish lead a sheltered life. Both the eggs and newborn young are carried under the female's tail, held firmly in place by tiny pinchers. Note the egg masses fastened on the underside of this craw. Jim Sherman Photo.

moulting period and a new shell is formed. Immediately after the old shell is discarded, the growth is very rapid until the new or soft shell becomes rigid. Then growth is stopped until another moulting period. The young craws moult six or even eight times during the first summer, but after that moulting occurs only in the spring and fall. However, under certain conditions three moults in one year by adult craws have been recorded.

The body of the crawfish is made up of a number of segments. To each segment is attached an appendage to which is attached a claw. On the front two appendages are giant claws. Each segment is covered by a shell-like substance and all these segments are cast off in the same change during the moulting period.

The craw's means of locomotion may be either by crawling or swimming. It may move about on the bottom of stream or lake by crawling, using its appendages as legs. Unless excited or scared, this is the common form of locomotion. When excited or scared, it can swim rapidly backward. This movement is accomplished by flipping the tail sharply underneath the body and for a short distance it may move about rapidly.

Mostly the craws hide under rocks, logs or stay in holes which they dig in the bottom or along the sides of the body of water. They are mostly nocturnal by habit, which accounts for the supposed smaller population. Actually they run a close second to fish as to density in streams and ponds.

The burrowing type crawfish may frequent the water very little. It breathes, as do the stream types, by gills, and must of necessity wet these gills periodically. The burrowing type may inhabit the lowlands and marshes where there is actually no water visible. They dig their holes from one to six feet deep, until they reach water, and pile the mud

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FUR CATCH IN THE U. S.

Fur takes are decreasing while the populations of wild fur animals are increasing, according to Frank G. Ashbrook of the U. S. Fish and Wildlife Service in his annual report on the fur catch in the United States and Alaska. The report, issued as Wildlife Leaflet 315, is a free publication of the Fish and Wildlife Service.

"Warehouses are bulging with raccoon, opossum, skunk, fox and coyote furs," Ashbrook says in his introduction. "These are the 'unwanted furs'—according to the trade designation. A considerable number of raw furs are only worth 25 cents or less per pelt on the market, and in some states local raw fur receiving houses are not buying certain species of long-haired furs.

"Some ideas advanced to build up the market for these long-haired furs include shearing, clipping and dyeing to make a 'new and exotic' product. Already stylists have shown crimson and green fur coats. Experiments in the production of fancy leathers from unwanted skins also continue apace. Suede shoes, gloves, 'chamois', billfolds and unique bookbindings are only a few of the products manufacturers hope to make out of such skins as raccoon, opossum and coyote."

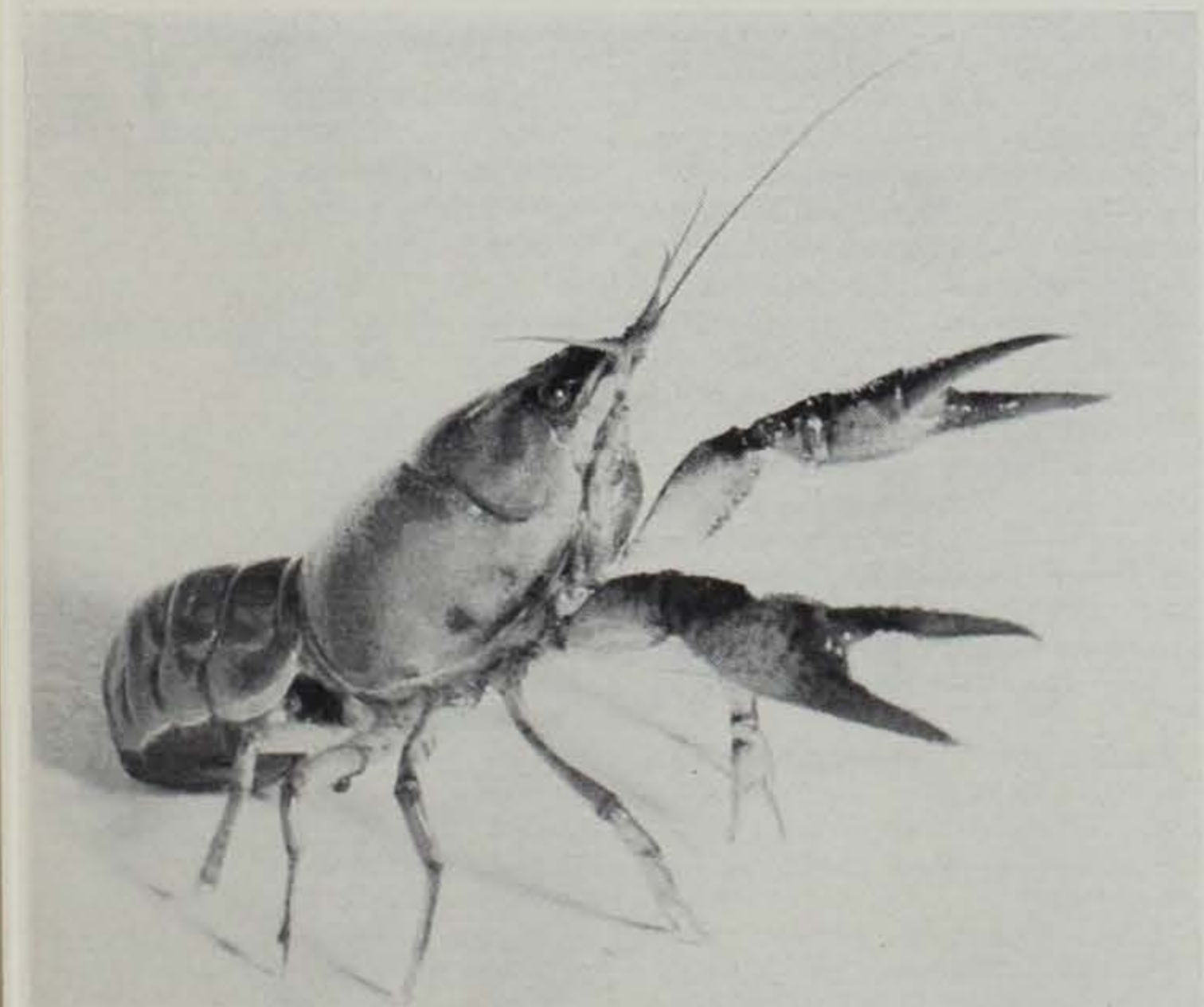
Some operators of warehouses that are full of cheap raccoon skins have recently expressed the hope that "Dan'l Boone" caps of raccoon fur—with tails flying out behind—would become a style hit again with teenagers, skiers and others, says Ashbrook. A revival of the old "Joe College" raccoon skin coats, though, is not looked for. The labor involved in making up a coat runs into too much expense. But the Daniel Boone cap, say the fur operators, would make a wonderful small home industry for many towns.

Mr. Ashbrook's leaflet, "Annual Fur Catch of the United States," lists the reported take of wild fur animals in the various states and

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Fur takes are decreasing while the populations of wild fur animals are increasing throughout the United States. Jim Sherman Photo.



The body of the crayfish is enclosed in a hard shell, and he has ample protection provided by two giant pinchers. He is important in our waters as a scavenger and as food for all aquatic birds, mammals and fish. Jim Sherman Photo.

Echoes From The Past

(Editor's Note: This is the fourth of a series relative to wildlife in early Iowa. Additional excerpts from pioneer books, newspapers and diaries will be printed in future issues.)

"The Express Agent in this city informs us, that on Tuesday he sent away fourteen ton of wild fowl, most of which were prairie chickens. On the preceding day he sent away five ton of the same kind of game.—We are informed that some men in this vicinity have made as high as \$20 a day trapping prairie chickens."—*Cedar Valley Times*, quoted in the *Union Barrier*, Bellevue, Jackson County, Iowa, Tuesday, January 19, 1864.

"Of course we all went to shooting snipe and woodcock, and we did excellent execution. We, that is us the Editor, shot 17 times and brought down a bird every time—but they invariably went so far before they came down that we didn't trouble ourselves about finding them. . . . We have no data from which to tell the number of ducks we killed. But it was fun. To see them keel over when we fired, and soar away so beautifully to find a soft spot to fall in. But we didn't go after them. Our pleasure was gratified with the sport of shooting them. We could have filled the boat had we cared about securing all the ducks we fired at."—*Iowa Age*, Clinton, November 5, 1869.

"Our friends in Pocahontas County have recently enjoyed the rare

pleasure of a buffalo hunt. Some two weeks since, a large buffalo of the "male persuasion" was discovered on the prairie some mile or more from the courthouse, and a party consisting of Messrs. Hait, Struthers, Metcalf, and Stickney immediately started on horseback in pursuit. After a hot chase of several miles, his bovine majesty was finally overtaken and compelled to give up the ghost by the reception of some balls fired from revolvers, pistols, and shotguns. He proved to be one of the largest of his species, and the weight of the carcass was estimated at over 1,500 pounds."—*Fort Dodge Republican*, September 23, 1863.



One of the last recorded buffalo hunts in Iowa took place in Pocahontas County in September, 1863. The old bull killed at this time weighed an estimated 1500 pounds.



Each year more and more women are included in the totals of hunting and fishing license buyers and, according to conservation officers, catch more than their share of fish. Jim Sherman Photo.

CARP CHUNKS FOR CATFISH BAIT

A channel catfish bait that is becoming increasingly popular throughout the state is the so-called cut or chunk bait. It is made by filleting carp, cutting the fillets into strips two to three inches long and about an inch wide.

The carp strips are put into a glass jar and let stand two or three days in cool weather or a few hours in hot weather.

Channel catfish find this bait irresistible in any point of decomposition, from slightly "sour" to just short of dead ripe.

ANNOUNCE EXAMINATION FOR STATE CONSERVATION OFFICER APPOINTMENTS

Preliminary examinations for state conservation officers will be held June 19 at 9:00 a.m. in the House of Representatives chamber at Des Moines. Deadline for receipt of applications is 2:00 p.m., June 6.

Under provisions of the statutes, the Conservation Commission is required to hold competitive examinations prior to appointment to any law enforcement officer positions with the Commission. Minimum age for applicants is 25 years, maximum age 38, minimum height 5 feet, 9 inches, minimum weight 140.

Examination application blanks may be secured by writing to the State Conservation Commission, 914 Grand Avenue, Des Moines 8, Iowa.

The silver northern, a mutation from the northern pike, is commonly caught by anglers in the Okoboji and Spirit Lakes. He looks just like the northern, but lacks the white spots on the sides.

Outdoor Enthusiasts

We haven't seen the figures for other states, but we doubt that any state in the union matches Iowa for enthusiasm about hunting and fishing. Last year the State Conservation Commission issued:

211,000 resident fishing licenses
190,000 resident hunting licenses
156,000 resident combination licenses

557,000 Total

That's more than one license for every five people, babies and all, in the whole state!

And don't forget that children up to 16 (who do a lot of hunting and fishing) don't need fishing licenses; women don't need a license to fish in waters other than state-owned lakes; and farm families may hunt and fish on their own land without licenses.

Figure all that in, and it seems practically EVERYBODY in the Hawkeye state must do some hunting or fishing or both. . . .—*Des Moines Tribune*.

3,000 NEW SUBSCRIBERS IN APRIL

We welcome 3,000 new subscribers to the CONSERVATIONIST during April, the largest circulation increase in a single month in the eight-year life of the publication. We are well on our way to the goal of 100,000 circulation. You can help us reach this goal. If you are not a subscriber, subscribe. The cost is low, three years for \$1.00, the value great. If you are a subscriber, call the "IOWA CONSERVATIONIST" to the attention of a friend whom you think would enjoy reading it—or better yet, send in a subscription for him.

Welcome, new readers. We are sure you will enjoy each of the 36 issues you receive during the next three years.

WATCH FOR CATFISH TAGS

Several thousand channel catfish in the Des Moines, Raccoon and Boone rivers carry tiny numbered metal tags in their intestinal cavities. The tags were placed there by Harry Harrison, fisheries biologist for the Conservation Commission. We would like to have these tags returned as the fish are caught to aid in detailed studies being made of the private life of channel cat.

Tags have been inserted through the abdominal wall and will be found somewhere within the intestinal cavity, not inside the intestines nor the stomach, but drifting around inside the body. The tags are small and sometimes difficult to find, but any fish caught with the small adipose fin (the fatty fin on the back near the tail) missing carries one of these "license plates."

Please return the tag together with information relative to the length, weight, date and place of capture to the State Conservation Commission office, 914 Grand, Des Moines.

CARE OF NIGHTCRAWLERS

Nightcrawlers or "dew worms," the granddaddy of all our angleworms, are easy to catch but hard for some fishermen to keep for long periods. With a little care nightcrawlers, so easy to catch in the wet spring months, may be held over in perfect condition for late summer fishing.

Place a tight wooden box or tub in a cool place, preferably a basement. Fill the tub with dry florist's moss (inexpensive and obtainable at most greenhouses), throw in a handful of dry cornmeal or oatmeal, dump in a gallon or two of nightcrawlers, and your worm problems are solved for the summer.



Nightcrawlers sometimes a foot or more in length are the favorite bait of many anglers.



Flies should be fished upstream in fast water for best results. Keep the slack out of the line and strike at any flash of color moving for the fly. Jim Sherman Photo.

The ABC's . . .

(Continued from page 33)

spot you want to fish will usually allow the bait to sink to the bottom by the time it reaches the "pay off" spot.

Hook in the Water

It should be obvious that your line must be in the water to catch fish, but many fishermen spend over half of their time hurrying from one pool to another. The trout streams in Iowa are well stocked, and only exercise is to be gained by chasing up and down a stream. This doesn't mean, however, that one should sit in the same spot and drown worms for hours on end. When fishing for trout that you can see, remember that they also can see you. Place your bait where one or more of the fish can see it. Then leave it long enough for the fish to make up his mind whether or not he's hungry. Don't go any closer than necessary to present your bait; stay out of their vision as much as possible and remain motionless. Such tactics often enable one person to catch fish in a pool where other fishermen are not doing so well.

Both "barnyard" worms and "nightcrawlers" will take trout;



For most of us bait for trout means worms. Earthworms occur naturally in the trout streams throughout the spring and early summer. Jim Sherman Photo.

most fishermen swear by one or the other. In our experience trout seem to prefer one over the other at times and it's a good idea to have both along, just in case. In order to catch large smart trout the worm or worms must be lively, particularly in quiet water. When fishing with "crawlers" a larger hook should be used than when fishing with smaller earthworms. The large worms are easily flipped off in casting or are readily snatched from a small hook by the fish. Size 8 or even size 6 hooks should be used with "crawlers." Size 10 or size 12 hooks should be used with the smaller earthworms.

Hooking the Worm

There are several effective methods for hooking earthworms to entice trout, and it's a matter of individual preference by the fisherman which he uses. All methods that take trout leave most of the worm free of the hook so that the bait has plenty of wriggle. One of the most effective methods is to hook the worm by passing the point and barb just beneath the skin of the unsegmented band (clitellum), which is located about a third of the length of the worm from the head end. This band is somewhat greater in diameter than the remainder of the worm, which makes hooking in this manner quite easy and the worm remains lively longer than when hooked deeply.

When a fisherman has small worms and the trout seem to prefer a banquet, two worms can be hooked in the above manner, one from the head end and one from the tail end of the clitellum. Short shank hooks with a round or "model perfect" bend with straight point have been proven better than the rolled-in point style hooks so popular with bait fishermen. It is necessary to use a rolled-in point hook at least one size larger than a straight point hook to obtain the same gap or "bite" for hooking a fish.

It is true that any rod and line

combination can be used to catch trout, but the enjoyment of fishing can be increased by the use of light tackle. The leader should be smaller than the average trout fisherman uses. A four-pound test leader is certainly strong enough for any type of trout fishing with a flyrod. Lighter leaders should be used when the water is clear. Smart trout will often reject a bait when heavy leaders are used.

Setting the Hook

One of the major reasons why many of us fail to catch trout is that we don't know when to "set" the hook after a trout has taken the bait. When the striking trout is visible, wait until the entire worm is inside its mouth, then take up the slack line and raise the rod tip to set the hook. Trout have soft jaws and a gentle sweep upward for a few inches is all that is required. In fast water if the bait stops suddenly with a jerk, remove slack and strike the fish immediately. (In fast water a fish must take the bait quickly or lose it.) When fishing in pools where the trout are not visible, watch the line where it enters the water. A strike is usually indicated by a few jerks of the line; then quite often the fish will start to move. Let the fish run for about ten feet before raising the rod to set the hook. If the strike is sudden and hard and the fish moves away quickly, merely raise the rod tip and the fish will hook itself. If the fish remains motionless, as they often do, cautiously tighten the line until you can feel the fish lightly, wait until there is a steady pull against the line, then raise the rod tip. No one gets them all, so expect to miss some strikes.

We have heard many bait fishermen say that you can't take trout in our streams on flies until mid-summer. While it is true that the dry flies and wet flies in the sizes commonly sold in most stores do not consistently take trout, small

wet flies and particularly nymphs in sizes 12 and 14 are very effective.

Since most of the nymphs in the streams are brown to black in color, brown and black are consistently the best producers. If you don't tie your own flies and black nymphs are not available, buy size 12 or 14 black gnat wet flies, clip the wings to about one-sixteenth to one-eighth inches in length and cut off all the hackle except a small patch on the bottom of the fly. This is a very effective lure for most of the Iowa streams.

Fly Fish Upstream

Flies should be fished upstream in fast water for best results. After the cast pull the line through the guides with the left hand to keep slack out of the line and watch the line or end loop where the leader is tied, and strike to set the hook if there is any slow-down or sidewise movement of the leader. Also strike at any flash of color or other sign of trout moving for the fly. Almost all of the strikes will be missed if you wait until you feel the fish. Many strikes are missed by experienced anglers, but even a beginner will hook enough fish to make things interesting.

For the early season dry fly fisherman, we recommend he carry some nymphs and a can of worms if he wants to catch fish! Most of the natural insects hatching early in the season are very small and are hard to imitate with artificials. Occasionally a good catch can be made on black or brown bivisibles in sizes 14 to 18. Many fish are lost when using these small flies unless an angler has more skill than most of us.

Most of the Iowa fly fishermen are over-armed for trout. In our experience we've never seen a pool on an Iowa trout stream that is too large to be fished with a six-foot flyrod. For the fellow who can afford a rod to be used only for

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Many trout fishermen spend too much time hurrying from one pool to another. Only exercise is to be gained by chasing up and down the streamside. Jim Sherman Photo.



The open season on frogs is from May 12 to November 30, with a daily catch limit of one dozen.

The Bullfrog . . .

(Continued from page 33)

the tree frogs. Apart from their size they can be separated by the absence of disks at the finger tips and by the presence of very noticeable ears that show as round smooth surfaces just behind and below the eyes.

These frogs are largely creatures of the daylight hours, although much calling may be done at night during the breeding season. They lay their eggs in large jellylike masses, usually attached to sticks or vegetation growing in the shallow water. Growth and development of the tadpole into the adult form normally occurs the first summer, although the tadpoles of the green frog and the bullfrog do not change until the second or third summer.

The bullfrog, *Rana catesbiana*, awakens from winter hibernation last of all the frogs. His booming but musical "Jug o' rum" is not heard until late April, and it is not until then you first see the large green head and intent eyes peering above the water surface. For all his tremendous size the bullfrog is one of the shyest of our frogs. He is loath to come out on land and, if surprised near the shore, goes skipping off across the water in great alarm.

The bullfrog is best identified by the absence of the lateral ridges and the presence of large ears that are as large or larger than the eyes. He is the largest of all American frogs, and Iowa specimens may measure seven inches in length, with stretched-out legs adding another seven inches. Such giants are very rare, however, as most individuals never reach a body length of more than 5½ or 6 inches.

Bullfrogs do not call in chorus as do many of our frogs. Instead this master of the deep bass voice usually sings solo. Unlike most other frogs, the female bullfrog is able to

croak much like her mate, although her call lacks some of his force and volume.

Exact colors are relatively unimportant in describing frogs. Colors vary greatly between the males and females and among individuals of the same sex. Although bullfrogs generally are a dull olive-green in color, individuals from open sunlit ponds may be a light yellowish green and those from a dark shaded pool almost a solid black. The males have a yellow throat, while the females have dusky white ones.

Bullfrogs ordinarily breed among the vegetation or collected rubbish in shallow water. The cluster or mass of eggs is attached to several plant stems and may cover an area of two to five square feet and contain 10,000 or more eggs. Eggs are not produced until water temperatures reach approximately 70 degrees F., which means the latter part of June or the first part of July. Under average conditions the eggs hatch in about six days. Tadpoles four to six inches long from head to tip of the tail are in their second or third year. They are then ready to grow legs and transform to the adult frog form. This transformation results in a frog 1¾ to 2¾ inches long, the length of the legs not being considered. In another two years the bullfrog reaches sexual maturity and may reproduce its kind.

Bullfrogs were apparently native only to the southern and southeastern Iowa counties and to counties along the Mississippi River, but they have been introduced in many places further north. Most of these introductions have been occasioned by the thrill at the booming love call or by dreams of heaping platters piled with delicious frog legs.

Iowa law limits the taking of frogs for food, bait, or other purposes to the season from May 12 to November 30. During such time they may be taken by anyone holding a fishing license or hunting on his own premises. There is a daily catch limit of one dozen frogs.

The green frog, *Rana clamitans*, is the bullfrog's nearest competitor for size among our common frogs. Exceptionally large females may have a body length of four inches; males are smaller. They may be readily distinguished from smallish bullfrogs by the ridges or folds that extend from the eye two-thirds of the way back on the body. Typically the coloring is a brilliant metallic green on the head and shoulders that quickly shades to a dusky olive or brown rearward. There may be indistinct dark spots on the back. The males also have a bright yellow throat. The skin is quite rough when compared with that of other frogs.

Although they come out of hibernation several weeks earlier, green frogs do not lay eggs until the last of May and later. The song of the green frog consists of three to six deep notes, each sounding like the plucking of strings on



The spectacular crayfish frog, found in southeastern Iowa, is little known because of its habit of hiding during daylight hours in crayfish burrows. Iowa State College Photo.

a bass viol. If surprised at the water's edge, the green frog utters a short, high-pitched scream as it leaps for safety. It is this call that gives it the local name "screaming frog."

Like the bullfrog it prefers permanent bodies of water for a home. The green frog, however, is not as shy and retiring as its big cousin but likes to climb out of the water on anything available. He is curious, alert, and always in evidence where he occurs. He is most common in the northeastern and east central counties of the state.

The leopard frog, *Rana pipiens*, is the most common of Iowa's typical frogs. After the spring breeding season these frogs tend to leave the water and scatter over damp meadows and low grassy areas. The leopard frog is best identified by the round or oblong dark-colored spots on the back. Bordering the two or three loose rows of spots are light-colored ridges that run from the eye back to the groin region.

The male leopard frog has vocal pouches located on each side just ahead of the arms. As the frog croaks the pouches alternately inflate with air and then collapse. They serve to amplify the sound.

There are several songs or calls. The normal call is a sort of guttural laughter consisting of a long growling note followed by a series of short chuckles. This call is given with the mouth fully closed and may be given under water. If seized by an enemy, the frog will open its mouth wide and give a cry of pain reminding of the protest of a young chicken. If held quietly in the hand and touched on the sides or back, it may give low purring sounds as though it were perfectly contented.

Since the leopard frog spends most of its time on land, very little of its food comes from the water. Its principal foods are insects and spiders that it catches among the vegetation. Its value to agriculture is indicated by the grasshoppers, potato bugs, and other harmful insects included in that diet.

The pickerel frog, *Rana palustris*, is often confused with the leopard frog in the eastern section of Iowa. On close observation the pickerel frog is seen to have squarish or angular spots on the back in place of the rounded or oblong spots in the leopard frog. There are but two rows of such spots. Further, the

inner side of the thighs and nearby portions of the belly are bright yellow in this species. The call of the pickerel frog is low in pitch and low in volume. It has been described as a "gentle, musical snore."

The pickerel frog seems to have one distinction among Iowa frogs. It alone seems to secrete, in the skin, a substance that is distasteful to many of its enemies. To what extent snakes, skunks and other animals respect the pickerel frog for this reason is unknown.

The crayfish frog, *Rana areolata cirulosa*, has a particular liking for old crayfish burrows. During the summer many individuals never get far from such a retreat. When alarmed they immediately drop out of sight into the gaping hole. For this reason this frog is little known.

The crayfish frog may reach a length of four inches. The body is quite heavy set, and the skin of the sides and back is coarse and rough. The upper parts are covered with more or less circular dark spots, each spot bordered with lighter color. The spaces between the spots usually have a fine network of black lines. Lateral ridges extend to the groin.

Although he is physically shy, the crayfish frog possesses a deep resounding voice that is audible for over half a mile. The song can best be written as "w-a-a-ah."

Crayfish frogs are known to occur in but five of the southeastern counties. Careful search might show them to be in a few additional places.

The ABC's . . .

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fishing the Iowa trout streams a rod 6 to 7½ feet long is about ideal. Such a rod will not tire the caster and can be used in tight quarters for making short accurate casts that often "pay off."

For the one-rod man at least two large manufacturers are making a combination rod. Various combinations of the four rod sections form a casting rod, a short flyrod or a long flyrod. The owners we have contacted are enthusiastic about their rods, and the price is reasonable enough that a mortgage on the homestead is not prerequisite to owning one. This combination job answers a great need, for there never was nor will there ever be a single general purpose rod entirely satisfactory for all types of fishing.

Fur Catch . . .

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Alaska for the five seasons from 1944-45 to 1948-49. The reported catch for each state is broken down among the various animals trapped in that state. The report may be obtained free by requesting "Wildlife Leaflet 315" from the Division of Information, U. S. Fish and Wildlife Service, Washington 25, D. C.

Recreation . . .

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ty and location of public water. I believe no one can give an estimate of the number of bathing enthusiasts. We do know that during the past year 3,700,000 citizens attended the state parks. A large majority attended parks with beaches, and the peak load in these parks was reached in the hot months when swimming was popular.

The manufacturers of firearms and ammunitions, fishing tackle, boats and motors, gasoline and automobiles are interested in water from a recreation use standpoint, as are operators of hotels, restaurants, and filling stations.

It is hard to believe that there is a single Iowa citizen who does not have an interest in clean recreation water abundantly available. This fact is reflected in recent appropriations of millions of dollars by the state legislature for the specific purpose of creating recreation waters where they have been destroyed or never existed.

What are our recreation waters in the order of their importance? We have 15,000 miles of streams, 45,000 acres of natural lakes, 3,000 acres of state-owned artificial lakes, thousands of additional acres of privately and publicly owned marsh and slough, unknown numbers of gravel pits and reservoirs, and an ever-increasing number of farm ponds. Every mile and every acre of this water is of potential worth for wildlife and recreation.

What is the recreation value of Iowa waters? Many attempts have been made to put a dollar value on these resources. In my opinion they have been guesses, with tangibles and intangibles thrown into the same hopper and magically coming out translated into coin of the realm.

I think that attempts to give dollar evaluation to water for recreational use show careless thinking. What is the value of this great college? What is the value of our

churches? What is the value of our inheritance of freedom? What is the value of your dream of peace beside clean water?

We must leave evaluations by the dollar sign to those who sell vegetables, automobiles and baseball players, and judge clean water in the light of Moffitt's translation of the 23rd Psalm, "He leads me to refreshing streams. He revives life in me."

In what condition is our recreational water, and what of its future?

For most classifications the outlook is at least fair.

The primary use for our natural lakes is firmly established in the public mind. Recreation has the green light over every other. As a result pollution is being controlled, siltation retarded, dredging continued, public access acquired, and fishing improved. For natural lakes the future looks rosy.

The pattern for artificial lakes is also definite. The plan of a body of recreation water within 25 miles of every Iowa citizen is undeniably



For recreation and wildlife we ask only the use of clean water. We give it back undiminished in quantity and unspoiled in quality. Do we not have the right to demand care in the use of water from others? Jim Sherman Photo.

taking that form. Better artificial lakes, both in quality and size, are blueprinted for the future. Five new lakes are now in various stages of construction.



Everyone needs and enjoys the rest and relaxation that comes with loafing beside clean, quiet waters. Jim Sherman Photo.

Industrial pits and municipal reservoirs for obvious reasons are increasing in numbers. With their recreational values more widely

Our streams give us most concern. These are our priceless 15,000 miles of recreational arteries, and their use for this purpose is much greater than generally recognized.

For recreation and wildlife we ask only the use of clean water. We give it back undiminished in quantity and unspoiled in quality. Do we not have the right to demand care from others in the use of water which is theirs on public loan? Can ignorant or selfish use that destroys public values be condoned or tolerated?

May I ask, has stream straightening, marsh draining, destruction of soil humus, and downhill plowing despoiled our streams and increased the tragic peaks and valleys of stream flow? Have these engineering and agricultural activities destroyed the innumerable stream bank springs? Have they choked our rivers with undigested sand and destroyed fish environment?

Has unnecessary municipal and industrial pollution driven the smallmouth, walleye and northern pike into the clean headwaters of our rivers? Must the wastes of industry drive pleasure boats and bankside slick butts of small boys from our streams forever? Does civilization require the destruction of the esthetic value of our rivers?

Who has these answers?

Great is the need of an understanding of Iowa's hydrologic cycle. Great and diverse are the claims of our water-users, but greater than ever before is the human spiritual need expressed in David's song, "He leads me to refreshing streams. He revives life in me."

Crayfishes . . .

(Continued from page 35)

from their projects alongside the hole. In this manner, a crawfish field may be detected by the "chimneys" which are erected around the holes.—Kentucky Happy Hunting Ground.

understood and accepted, they will provide more recreation in the future.

Farm ponds in astronomical numbers are appearing on the horizon; each one to a greater or lesser degree has both wildlife and recreational possibilities.

The marsh picture has both a bright and a dark side, and these are very important from a recreation and wildlife standpoint.

It is probable that no more large marshes will be drained—certainly not today or tomorrow for the production of potatoes. The Conservation Commission is acquiring the large recreation marshes at an ever-increasing tempo, building control structures and otherwise managing them with the primary objective of increasing their wildlife and recreation values.

It is in the case of the small marsh, the pothole and slough that recreation is losing to the tiling spade. We are losing dozens each year. These numberless small water areas have incalculable value as fur and game producing areas. We cannot afford to lose a single one, for this, if for no other reason.



Hunters and fishermen are opinionated and outspoken. They are certain that the manner in which our waters are used affects their sport. They number more than half a million in Iowa. Ottumwa Courier Photo.

