IOWA CONSERVATIONIST

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War Problems of National Park Men Point Way for Us

The following paragraphs are from an article in **American Planning and Civic Annual, 1942,** on "National Parks in Wartime—A Review of the Year", by Newton B. Drury, Director, National Park Service. Director Drury's statements on national parks are equally applicable to state parks.

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War has altered the immediate work of the National Park Service. Construction programs have ended, personnel has been reduced, and the services extended to the public have been curtailed On the other hand, primary functions as trustee for many of the great things of America have not been changed. Actually, under the stress of war, the custodial responsibility of the National Park Service has been given new meaning. The primitive wilderness characteristics which give the scenic national parks their real significance are being given new appraisal and increased protection, and the historical and archaeological areas of the National Park System are receiving added study and care.

The wartime program of custodial work recognizes that these areas cannot be closed and left to themselves for the duration. Heavy investments have been made in physical developments in the National Parks and Monuments. These Federal investments will be protected; maintenance programs must continue whether or not the facilities find heavy public use. Even more important is the duty of preserving the natural and historic park values of such fundamental importance in the American scene. These values are fragile things.

Major problems in physical,

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Iowa Home of Some Mighty Odd Characters in Fish Family

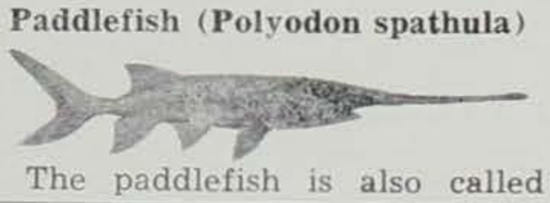
Range From Size Of Minnow To 200 Pound Weight

By E. B. SPEAKER
Superintendent of Fisheries

In previous issues of the "Iowa Conservationist" we have listed outstanding characters helpful in identifying some of our more common fishes. In this article we will describe 11 exceedingly interesting species found in our waters. The group is widely separated, ranging from the length of a king size cigarette to shark-like creatures weighing over 200 pounds. Some are primitive representatives, while others are highly - developed, m o d e r n, streamlined fishes. One diminutive little individual builds its nest from bits of wood and plants, which he carefully cements together with a secretion from his mouth, while another spends most of his life in fresh water, returning to the sea to spawn. All fishes of Iowa are interesting, but the odd ones listed here are fascinating and unique because they represent the only species of their respective families in this state.

The writer wishes to express deep gratitude to Dr. Reeve M. Bailey for the use of keys and to the Illinois Natural History Survey for permission to use the fish plates reproduced from their publication "The Fishes of Illinois".

Paddlefish (Polyodon spathula)



The paddlefish is also called

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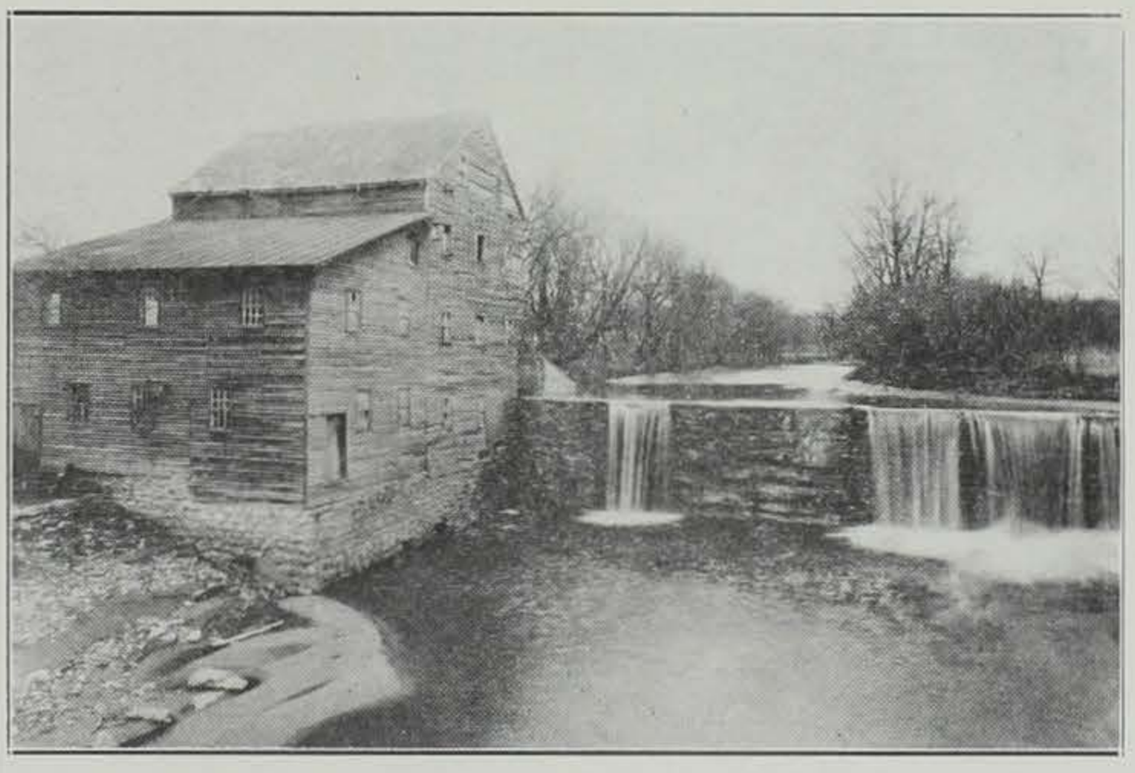

Historic mill at Wild Cat Den State Park. Maintenance programs must be carried on in Iowa's state parks to preserve the natural and historic values whether or not the facilities find heavy public use during the emergency.

Indians Had Answer For "Living Off The Land" Problem Facing Army

Willie has a wart. He's had it a long time. But lately his voice is changing, and now he's sensitive about both. He's especially so since he heard Lizzie Jones say, "Oh, that awful Willie Pepper! He has a great. big wart on his hand!"

Grandma Pepper had the solution to Willie's wart problem:

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The "Iowa Conservationist" is now available on a subscription basis at 40 cents per year. Budgetary restrictions limited the number of bulletins available in the past, and many sportsmen have been unable to secure copies. The state legislature recently passed a bill allowing the Commission to charge cost for publications. Under this law the Commission is now authorized to accept subscriptions for the "Iowa Conservationist". Subscriptions should be mailed to the State Conservation Commission, 10th & Mulberry, Des Moines, Iowa. Subscribers are requested to send 40 cents in coin, check, or money order.

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★YOUNGBLOOD, M.

Odd Fishes

(Continued from Page 33)

the spoonbill sturgeon, spoonbill cat, and boneless cat and reaches a length of nearly six feet and a weight of over 200 pounds. The body is fusiform or spindle-shaped, the skin is smooth and scaleless, and the top of the body and opercular flaps are covered with sensory or nerve pits. Paddlefish can easily be distinguished from all other Iowa fishes by the enormously elongated snout which resembles a flat paddle or spatula. The skeleton of the fish is chiefly cartilaginous. The color is pale gray or bluish-olive.

This fish belongs to a relict or vanishing race. One species lives in the Mississippi Valley and another in the larger rivers of China. In Iowa it is confined almost entirely to the Mississippi and Missouri Rivers and adjacent waters, although large specimens have been taken in former years from the Okoboji Lakes in Dickinson County. They probably reached the lakes from the Missouri River via the Little Sioux. They are presumably extinct in the lakes at this time, however, since they have not been taken for many years in the extensive commercial fishing operations.

Little is known of the spawning habits. From small specimens collected by Aitken and Stiles it is assumed the reproduction period is in May or early June. At birth the snout is not noticeably elongated, but apparently its growth is very rapid and it becomes at least half the length of the body within a short time.

The food consists chiefly of crustaceans, although it is known that when closely confined with other fishes (Backbone Trout Hatchery, 1939) they feed extensively on small fishes. The mouth parts and gill-structures are large and serve as a veritable plankton net, catching all manner of insects and food particles and straining out the unwanted parts through the wide gill-slits.

Bowfin (Amia calva)

The bowfin is also known as the dogfish and attains a length of about two feet. The body is covered with cycloid or rounded scales which bear no ctenii or prickles. The head is subconic, the nose bluntly rounded. There are 47 to 51 rays in the dorsal fin, and its base is twice the length of the head. The color is dark olive above with lighter sides and cream-colored belly. There is a dense black spot outlined with a yellow or orange border at the base of the upper caudal rays on the males.

Although this species is widely distributed throughout the Mississippi Valley, in Iowa it is confined principally to the Mississippi and Missouri Rivers, their overflow waters, and the lower reaches of the tributary streams. No records are available of specimens taken from the larger inland lakes.

Bowfin spawn from April to June. The spawning usually occurs at night, and when completed the male guards the nest during the eight to ten day incubation period. According to Forbes and Richardson, the young remain in the nests about nine days, attaching themselves to rootlets by an adhesive organ on the snout or lying on their sides in the bottom of the nest.

The food of the bowfin consists chiefly of fish, crayfish, and mollusks. It is a savage, voracious fish, devouring everything it is capable of swallowing. It is abundant in the boundary waters and overflow lakes and apparently prefers shallow, weedy areas and an abundant food supply.

The bowfin has some commercial value. They are usually taken for food in the late fall, winter and early spring when the flesh is firm. Smoked bowfin are very palatable when taken from cold water. They are frequently taken by fishermen on worms, minnows, and many natural and artificial baits when angling for other fishes.

Mud Minnow (Umbra limi)

The mud minnow rarely exceeds five or six inches in length in Iowa. The body is oblong and slightly compressed. It can be distinguished from other fishes it may resemble by the large scales on top of its head. The body scales are large, usually fewer than 50 in the length of the fish. The dorsal fin is located posterior to the ventral fins and the middle of the body. There are 14 or 15 rays in the dorsal fin, eight or nine in the anal fin. The caudal fin is rounded. The color of the upper parts is dull brown mottled with black, and the sides have 12 to 14 dark, narrow, transverse bars. The belly is white or cream. There is a dark bar at the base of the tail.

The mud minnows are uncommon to rare in most of the state. To date most of the specimens have been taken east of the Cedar River.

Little is known of its spawning habits in Iowa, although it is assumed it occurs in March or April as in other states.

The food consists chiefly of insects, crustaceans, small animals, etc. They are capable of living in stagnant waters containing a very small amount of oxygen, and it is said they received their name from actually burrowing in the soft mud in quest of food and for protection against other fishes.

They have no food value and no commercial value in Iowa since they are usually not abundant enough to be collected for bait minnows. In Wisconsin and some of the other states, however, they are used extensively for bait.

American Eel (Auguilla bostoniensis)

The American eel attains a weight of over six pounds in Iowa. The body is serpentine and the pelvic fins are absent. Contrary to popular belief, the body is covered with scales. These scales, however, are minute in size, oblong, and deeply imbedded. The eel can be separated from all other fishes of the state by the continuous dorsal, caudal, and anal fins. The color is greenish-brown above and pale gray below.

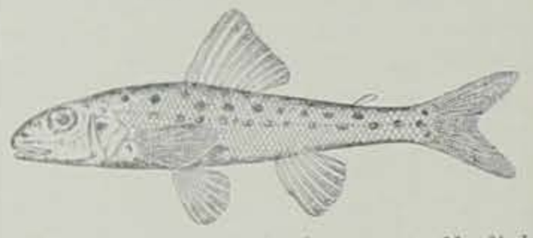
Eels prefer deep water and, although occasionally taken from lakes and small streams, are found principally in our boundary rivers and large tributaries. They are not abundant in any waters of Iowa. A small number are taken in commercial nets in boundary rivers, and on rare occasions one is taken by anglers from the inland waters.

Their spawning habits baffled scientists for centuries, and there are still wild, imaginative tales about them. During the greater part of its life, the eel is strictly a fresh water fish. When it reaches maturity, it migrates to the sea to reproduce its kind. Spawning occurs in salt water in the fall. In the second spring the young eels find their way into the mouths of inland streams and migrate far upstream, where they live until sexual maturity. After spawning both male and female die, consequently the adults never return to fresh water the second time. According to Forbes and Richardson, a 32-inch female is capable of producing 10,700,000 eggs. Obviously many small eels perish before they reach fresh water.

Eels are extremely interesting fishes. They have been known to actually come out of the water at night in marshy areas, but do not travel great distances overland. They are scavengers in their feeding habits, eating dead fish and animals as well as living fish, insects, and frogs.

They are highly valued as a food fish and are prepared in many ways. Smoked and pickled eel are especially delicious. There is little demand for them in Iowa because of their scarcity and snake-like appearance.

Eastern Troutperch (Percopsis omisco-maycus)



The troutperch is a small fish reaching a maximum length of about five or six inches in Iowa. The body is elongate and compressed. The head is slender and cone-shaped, the upper jaw protruding beyond the lower one. There is a small adipose or fleshy fin on the top near the caudal fin similar to the trout and catfish. There are two spines in the dorsal fin, followed by nine or 10 soft dorsal rays. The troutperch is translucent, the upper portion an olive or buff color fading to silver or cream below. The body scales are tipped with black, and there are from 20 to 30 dark spots on the sides.

Troutperch are scarce or absent in most waters of the state. They are, however, abundant in the Dickinson County lakes region and Little Sioux River watershed.

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WARDENS' TALES

SHOP TALK FROM THE FIELD

Sigourney, Iowa
April 1, 1943

Dear Jim,

About a year ago you asked me to write an article regarding fishing in Skunk River. Well, I was so doggoned busy that I couldn't get it finished in time for you, but here goes for this year.

Fishing is not so good here as it used to be. You know, Jim, Skunk River fishermen have the enviable reputation for being truthful about what they say regarding the fish they catch. In fact, they are more inclined to understate the size and weight of fish than to lie about it as they do in most places. Our fish are big enough we don't have to lie.

You know, South Skunk River has been straightened and practically ruined from the Mahaska and Keokuk county line on up to its headwaters and is just a ditch now, shallow, without any deep holes, and no fish of any size can go up any farther than the ditch. Just the little fish go on up, 15- to 20-pounders, but naturally the larger sized ones have to stay here in my territory where there is enough water to cover their backs.

Mud and silt from the ditch have been carried down here and filled up the deep holes, and it's hard to find any place where the water is over 15 or 20 feet deep now. As a result, we don't have the really big fish we used to have and which some of these old-timers tell about. Of course I am referring to yellow cats or flatheads as we usually call them here.

About the heaviest tackle needed here these days is half-inch manila rope and baling hooks. A suckling pig or a chicken with the feathers removed is about our largest bait.

When I get to talking to some of our old fishermen, I think I was born just about 50 years too late. Fishing really must have been good here then.

One of the common methods of fishing in those early days was to set up a stump-puller on the river bank and anchor it to a good, sound stump a couple of feet in diameter, run out 50 or 60 feet of the one-inch wire cable and attach a hook made of three-quarter inch steel rod. A two-foot section of saw log was generally used for a bobber, and bait used was a sheep, a calf, or a hundred-pound hog.

When a good-sized fish was hooked, they hitched a team of horses to the stump-puller and wound in the cable on the drum and pulled him out. It took a mighty good pulling team when a really big one was hooked. Nowadays most any team or farm tractor can hoist Skunk river cats right out on the bank.

The Keokuk dam is partly to blame for our present day lack of the big fellows. They just can't squeeze through the boat locks. One old gentleman whom I found fishing one day on South Skunk River told me of an experience he had in about the same place some 60 years before. He had just pulled in a pretty good flathead with his stump-puller and was cutting it up with a cross-cut saw so he could load it in his wagon when he noticed that the river was rising rapidly.

He saw that he would have to hurry up the job and get out of the bottom before he got cut off by the rising water. Just as he got his team hitched, a couple of farmers came up the river on horseback and told him he better hurry. He asked where all the wet was coming from because there was no sign of a storm and hadn't been for a couple of weeks.

They told him to take his team and follow the hogback to the bluff a mile or so below, and he could see what had happened for himself. At that place several hundred years before the river had cut through the bluff, leaving a canyon about 50 feet deep and 50 or 60 feet wide.

"When I got down there and walked over to the edge of the bluff, what do you think I saw? I know it doesn't sound reasonable, but there it was just the same, a granddaddy flathead wedged tight between the walls. It couldn't get up any farther, and it couldn't get back, and it was damming up the water and flooding the bottom land for several miles up the river. Well, I was flabbergasted, and I just couldn't say anything because I had never seen a flathead much over half as big as that one was."

With this my old fisherman reached in his pocket and pulled out a plug of tobacco. He shaved off a big handful with his knife, popped it in his mouth, rolled it around a while and said nothing. Finally a grasshopper lit about 10 feet away. "Phutt", and the grasshopper blinked and shuddered, thoroughly drenched. The old man rolled his cud in his toothless jaws a few more times and, with a wink and a grin, cackled, "Nope, fishing ain't what she used to be in Skunk River no more."

Very truly yours,
Tom Johnston,
Conservation Officer.

Just A Minnow From Skunk River

Big catfish in the Skunk River in early days were landed with the aid of a stump-puller and team. Nowadays without aid most any team can hoist out the Skunk River cats.

Transplanting Wild Flowers Serious Problem For The Horticulturist

By ARTHUR E. RAPP

One of the most difficult problems in establishing a garden of wild flowers is to obtain plants that are desired in the condition and at the time in which they are needed. Wild flowers are more difficult to grow and they grow slower than do cultivated flowers, and they do not respond satisfactorily to the methods used in the storage and distribution of cultivated nursery stock.

The presence of considerable areas upon which wild flowers grow naturally, and from which they can be collected at very low cost, complicates a situation which is already quite difficult. Nursery men specializing in wild flowers have spent a great deal of time, effort, and money in attempting to solve some of the problems of supplying wild flowers, and wild flower enthusiasts have transplanted a great many plants from the wild to their gardens, and neither have been entirely satisfied with results.

Because such a large percentage of the trade in wild flowers is of collected material, it may be well to give a brief review of the processes by which the business is carried on. Nearly always the collector is a person interested in wild flowers, who knows where they grow, and who has successfully collected from the wild for his own usage. After it becomes evident that native plant material is salable, the collector soon decides that if he had a wider range of material or an adequate supply of stock to fill orders as he receives them, his business might be more profitable.

Prairie plants are more difficult to transplant than those of the woodland generally speaking, because of the long taproots of the former.

* *

To meet these needs he must go greater distances to supplies that are available or else depend upon other collectors. Both involve a reduced control over the time and manner in which the stock is collected and also increase the necessity of storage or of growing the material on until it is needed. It has proven to be very difficult to store or to grow on native plant material without very heavy losses or considerable expense. As a result there is a constant tendency to supply collected plant material that can be obtained very closely, with the hope that the purchasers will accept it and succeed in growing it.

As a rule the efficiency of a collecting service declines as it increases in extent, but when it is possible to provide a direct arrangement between the collector and the purchaser by which plant material carefully handled at the proper time can be provided, very satisfactory results can be obtained.

Because of the slower growth processes of much of our native plant material, it is relatively easy to collect or transplant if it is done at the proper time. With many varieties this is easier to do than with some of our cultivated material. If collecting is done during the blooming or growing period when most of our wild flowers are most conspicuous, care should be taken to avoid injuring, breaking, or bruising the stems and leaves of the plants.

Apparently plants of wild flowers can stand considerable injury to the root system, but if the stems and leaves are injured, the growth cycle for the year is not completed, and while the plant does not immediately die, it fails to appear in the following year. Collecting can also be done during the dormant period, but if it is done at this time, it should be

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Wild Flowers

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done before the new root growth starts. If these new roots are injured, they are not always replaced.

When collecting is done for personal use, it should only be carried on with a good understanding of how and when it should be done and with the preparation of a proper place and the proper conditions for the plant collected. This may involve a knowledge of the growth processes of the variety and its preferences, as well as a knowledge of where it can be found.

In collecting plants, it is advisable to learn how to dig, wrap, and set plants with the least possible injury to the root system and the tops of the plants. Plants should be dug with a strong sharp trowel or with a narrow and sharp tiling spade at a time when the soil is damp enough to hold to a ball without shattering from the roots of the plants. Have prepared sheets of newspaper slightly dampened and folded as to size and the number of thicknesses. Mold the ball into a compact shape with the hands, place in the center of the left hand side of the sheets of paper, and roll tightly, crimping the paper on the bottom as the roll is completed. The paper should extend past the crown of the plant so as to protect the stems and leaves. Tie firmly with twine or use strong rubber bands. Plants so prepared can be set up in paper cartons and carried for a week in the trunk of a car without injury if occasionally sprinkled. In parking a car containing plants, care should be taken not to expose the car to intense sunshine and to provide ample ventilation.

With especially difficult material or where collecting from sandy or dry soil, a metal sleeve of a suitable size to enclose the main root system can be used. Any tin can with both ends removed will make a good sleeve. The sleeve should be pressed into the ground with the plant in the center. The sleeve enclosing the plant can then be dug and slipped into a strong manila paper bag of suitable size. The sleeve can be easily removed and the bag tied loosely to protect the top of the plant.

With plants having intergrown root systems, such as some of the anemones have, entire sods can be dug up with a sharp spade, lifted and placed into paper cartons. Prairie plants are usually more difficult to collect than those of the woodlands, especially those having long taproots or those that extend themselves by the development of long underground stems. Most of these kinds can only be satisfactorily handled during the period of dormancy, which means late fall or early spring.

In setting taprooted and runner plants, a greater degree of success was attained by boring holes in compact soil by the use of an auger an inch in diameter and from 15 to 18 inches long. The root is then slipped into the hole made and the soil rammed in with a wooden ramrod. Plants having these kinds of roots which often lack feeding rootlets seemed to prefer the close contact with firm soil more than the contact provided by the looser soil in good tilth. Extra holes made from three to four inches away can be used for watering purposes. This method was especially successful on steep or dry banks.

In planting balled plant material, the paper wrapping was dampened and very carefully removed without breaking the ball. In planting, a hole considerably larger than the ball was made, and this was only partly filled with soil. Such watering as may be necessary should be done around but not in the ball, and the following day the soil should be made very firm and compact. Seed stalks or unusually tall spikes should be removed.

National Parks

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geological, biological and historical sciences are encountered and solved in the process of preserving them. The knowledge and experience of administrators, technicians and specialists are correlated and brought to bear upon the varied questions that must be answered. Many of these problems press themselves upon the administrator whether or not visitors are in the National Parks and Monuments. They are with us in war as in peace.

We face the necessity of protecting the natural and historical values of the National Parks and Monuments from impairment that may be brought about by enthusiastic promoters of wartime use of the areas and their resources. Timber, minerals, forage and water may be demanded as contributions to the nation's production program. Most of the demands come from well-meaning citizens; others may be the culmination of planned raids. All must be studied and appraised.

Requests for use of park and monument areas for military camps, maneuver grounds, bombing ranges, training areas or defense installations have been weighed in the light of national need. When it has been demonstrated that contributions in certain park areas should be made to the victory program, it continues to be necessary to give technical supervision or administrative direction to the emergency activities.

A preliminary fresh water mussel survey is being conducted on several major Iowa streams.

Trigger & Reel

By RIES TUTTLE

This department, "Conservation Columnists", is to give each month a little sketch of one of the columnists who write outdoor columns regularly for newspapers. These writers are widely known for what they write, and we know that you will enjoy these briefs of what and who they are.

Jim Harlan asked me to write my "autobiography," and for one who is accustomed to writing about others it's a rather tough assignment. Anyway, I've cleaned up the letter "I" on my typewriter and here goes:

I was born 36 years ago at Milton, Iowa, under the Zodiacal sign of Pisces (fish). But more important than this astrologic phenomena, I was fortunate in having a Dad who stayed young by hunting and fishing.

By the time I was knee-high to our old setter, Sport, I was traipsing all over Van Buren county with Dad. Maybe we were catching catfish on Big Fox creek, Chequest creek or the Des Moines River; perhaps we were shooting squirrels in Hargroves' timber or rabbits on South Prairie. He still is my favorite hunting partner.

I managed to trap my share of skunks, muskrats, 'coons and 'possums during World War I when pelts were bringing good prices. In this manner several of us kids earned enough money for shows, candy and ammunition. It also lent a distinct air to us in the school room just after skinning out a skunk.

So the twig was definitely bent at an early age.

Ten years ago I began writing TRIGGER AND REEL for The Des Moines Sunday Register. Since then I have added to my memories many outstanding experiences in the great out-of-doors. I have seen Iowa's dwindling fish and game resources climb to new heights under the wise administration of the State Conservation Commission with the added impetus of the Iowa Twenty-Five Year Conservation Plan.

It has been an era of conservation consciousness. It is my sincere hope that this great war will not give over to greed and waste of our national resources. It is an endowed America that our men are fighting for, and when they return they are entitled to find and enjoy the same sports afield that they left.

Conservation has been defined as the wise planning and use of our natural resources. I try to slant every one of my columns along conservation lines. Over the year I try to divide my space equally between hunting and fishing. Often I am accused by fishermen of devoting too much space to hunting, and hunters likewise say I devote too much time to the fishermen. By their very accusations I feel I am being fair to all elements.

Actually, my favorite sport is hunting—although I will miss a night's sleep and three meals to get in some good fishing. And I would rather shoot quail over a good bird dog than any other type of hunting. Duck hunting is next on my list, followed by pheasant and other upland bird shooting. Squirrel hunting with a good rifle runs neck and neck with the latter.

I'm just an average shot and am not immune to "buck fever". I discovered that in killing my first deer in Canada. Still-hunting, I came upon a young buck in the bush. He was standing broadside at about 50 yards and hadn't discovered me.

Kneeling, and with heart

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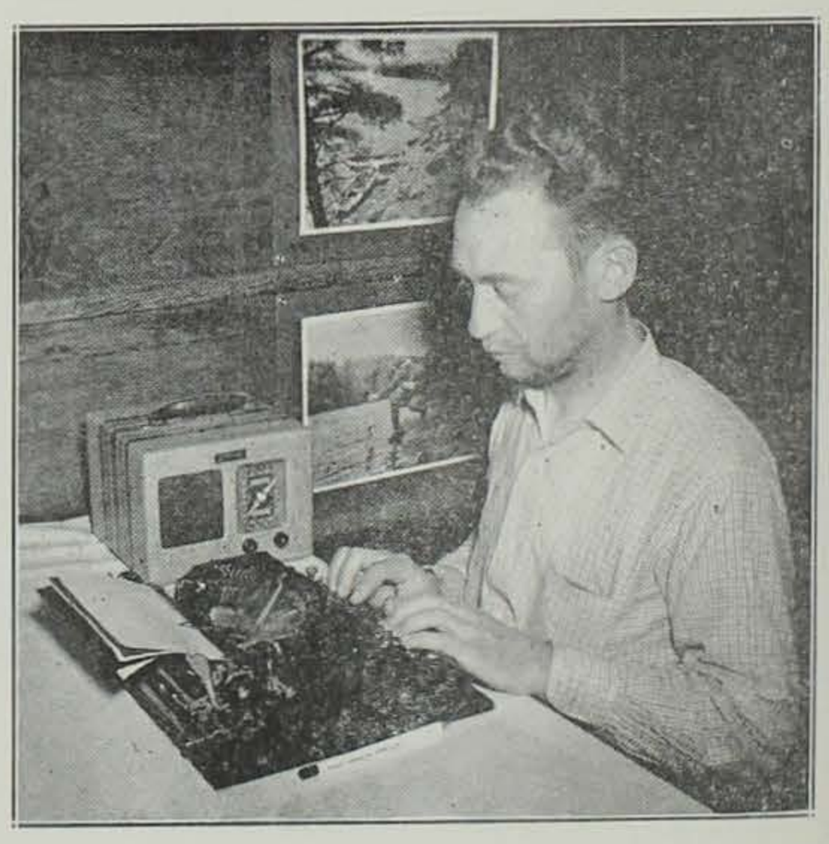

Ries Tuttle, veteran outdoor writer for the Des Moines Register and Tribune, with a luxurious beard growth, one of the prerequisites for wildlife columning when on vacation.

Trigger and Reel

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pounding, I took careful aim, squeezed the trigger and—that's right, I missed! But the crack of the rifle that sent that deer bounding also relaxed my nerves. I rose to my feet, took a quick squint down the gun barrel and sent a bullet through the fleeing buck's liver that brought him down dead.

When it comes to angling pleasure I'll take trout on a flyrod. Although I handle a fly more or less awkwardly, I am amply rewarded when a rainbow starts his fireworks on the business end of the line.

But the bullhead and channel cat have their fine points. They're fine eating, and catfish sometimes can be just as wary and pugnacious as the next fish that swims downstream. I always enjoy bass—for their fighting qualities—and I'm a staunch defender of the northern pike, vilified by many as being a "snake". Old Esox is always ready for a scrap and not very particular what he tackles. His fighting tactics are unpredictable, and when caught in cold water the fine, white meat is just as delicious as the walleye.

Every fall my faith in Iowa sportsmen is renewed in the way they respond to my "Pheasants for Veterans" campaign. Last hunting season, with travel handicapped and ammunition scarce, they came through in a grand manner. Not only did every one of the disabled veterans at the Des Moines hospital enjoy a big plate of pheasant, but there were enough left over to supply the Des Moines Children's Home, Arlington Hall for Boys, and the Junior League Convalescent Home for Crippled Children.

I was glad to have an active part recently in sponsoring and seeing its enactment into law, S. F. 212, which provides for the use of commercially reared game birds in conducting licensed field trials and retrieving dog trials. It is my sincere belief that it will encourage the use of more hunting dogs in the field and result in better bred and better trained dogs. Such use of dogs in the field, particularly retrievers, would reduce greatly the estimated 60 percent loss of crippled and dead game birds now suffered when a dog is not used.

Recently elected a national director of the Izaak Walton League of America and now serving as state vice-president of the league, I have through my column and through personal action supported sound conservation legislation both in the state legislature and in Congress. I have become convinced that the league is the sole organization of sufficient scope to fight for the sportsmen's ideals on the national and local fronts. In unity there is strength.

Besides photography, hunting and fishing, my hobbies include my two sons. Don, 11, is taking to the sports like a duck to water. He's won three bars on his N. R. A. sharpshooter medal with the .22-caliber rifle and is a tireless hunter. Jimmy, just one month old, has not yet developed any definite outdoor instincts outside of having a lusty appetite.

I hope they can enjoy an unspoiled America.

Tasty Morel One of "Foolproof Four"

The most popular Iowa mushroom is the morel or sponge mushroom. It is one of the four species included in the "foolproof four" in the new book "Common Edible Mushrooms", by Christensen.

New Book On Edible Mushrooms Just Released

Did you know that a giant puffball four feet across and five feet high has been found and that it was large enough to have supplied 500 people with delicious mushroom steaks 8x4x1 inches? That in European countries it was necessary to pass laws to prevent burning of valuable timber by mushroom fans to encourage growth of edible fungi?

These facts and many more are told in an entertaining and informative new book, "Common Edible Mushrooms", by Clyde M. Christensen, Copyright 1943, University of Minnesota Press, $2.50. This 125-page book, profusely illustrated with drawings, photographs, and color plates, points out that "the choicest kinds (mushrooms) cannot be cultivated and can seldom be had for money, but are available to everyone for the mere pleasure of picking them".

In the section of the book called "The Foolproof Four", the most delicious, most commonly found and most easily recognized of the edible varieties are discussed and described. Each of these four species has such a characteristic appearance that once they have been seen and identified they will not be confused with any other edible kind or any poisonous variety.

All amateur mushroom hunters should have a good mushroom book for reference before sampling new species. Iowa's mushrooms include several deadly poisonous species, some of the **Amanitas** containing one of the most deadly vegetable poisons known.

By E. R. BALLARD
Custodian, Echo Valley State Park

A few years ago when Echo Valley State Park was still an infant, and after the CCC work in the park was discontinued, we conceived the idea of a conservation cooperation project with the public school. The high school at West Union is just two miles from Echo Valley, and the agriculture teacher and the superintendent of the school were contacted and a plan was worked out.

The Future Farmers' class took the park's name, calling themselves "Echo Valley Future Farmers of America".

On Arbor Day about 30 boys each brought to school five small trees or shrubs, all native of Iowa and from their own farm fence rows. These were planted in the park by the boys under the supervision of their teacher, the county agent, and the park custodian. The results were so satisfactory to the state plantsman that the next year trees were furnished from the state nursery.

The county engineer's office cooperated, loaning shovels for the work. The shovels were checked in and out of the school each day for three days, the time taken for the work, then returned to the county.

This project has been repeated yearly for a number of years. Hundreds of trees have been planted on the hills and in the valleys, in rocky, clay, and black soil.

The seasons following the plantings have been both good and bad, but a surprisingly large number of the trees have lived and have helped to reforest those parts of the park land that were stripped of their fine native growth sometime before it became state property.

Outside of the value of the timber to future park visitors, wildlife and other conservation, it has worked as an experimental plot for the classes where they may watch results of their work. They feel they have performed a good turn for the state, taking a little more personal interest in the park, and no doubt in other state property. Don't let one of them catch you with a knife getting a wiener stick from one of **their trees** or from others in the park, for they are interested part-owners, working for protection of public property.

A train, with a heavy pull up the grade in the park, belched hot cinders that started a grass fire. The alarm was relayed to the Echo Valley Future Farmers at the high school. They were excused from class, and with their instructor they went to the park with gunny sacks they purchased from a grocery store. With these sacks wet in the stream, they beat out a fire that was about out of control, saving the cedar-covered bluffs and many of the young plantings. They have replanted where the fire did its damage.

I believe this is an outstanding example of the good that can be accomplished by a sound plan of conservation with the students now in our schools, who will in such a short time be entrusted with the affairs of townsnip, town, county, state, and the nation.

Watch for trout with only one pelvic fin when fishing Trout Run near Decorah in Winneshiek County. The department is carrying on experiments in this stream, and your co-operation will be greatly appreciated.

A Summary of 37 Hook and Line Fishing Collections From Spirit Lake
By WILLIAM F. SIGLER

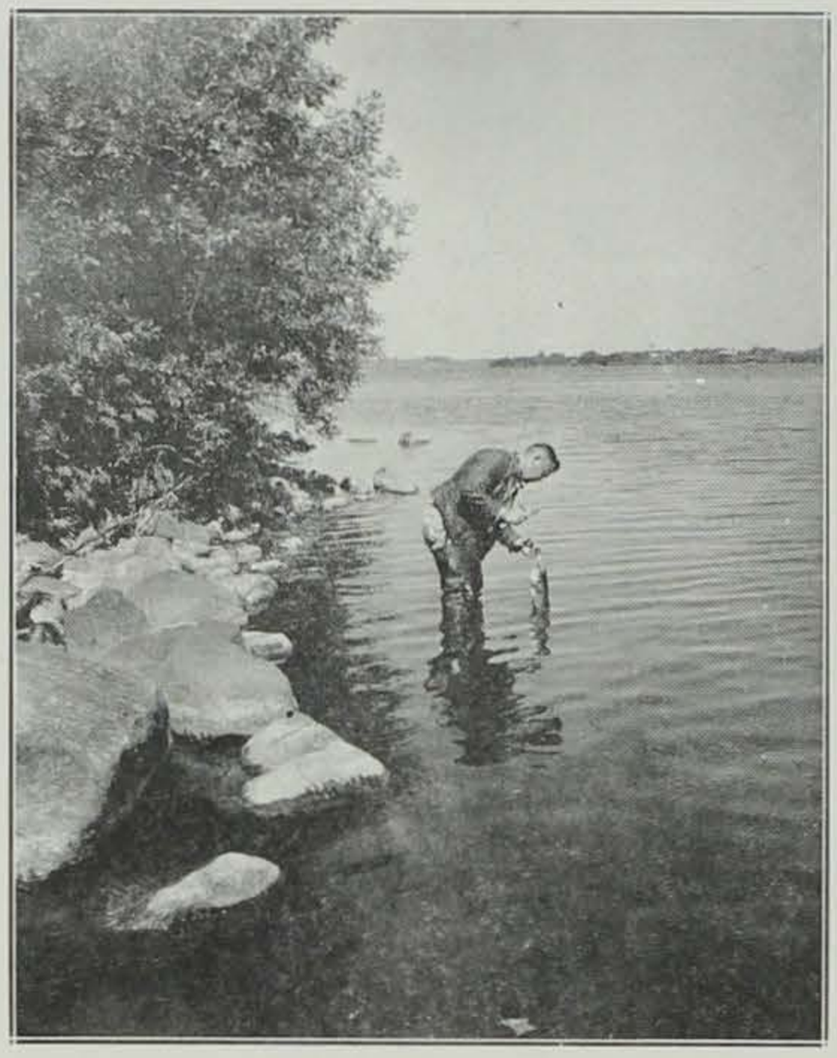
The data on 37 hook and line fishing collections taken from July 21 to November 12, 1942, in Spirit Lake, Iowa, were used to study feeding activities, to determine the more effective baits, and to find the most productive time and place to fish for white, or silver, bass (**Lepibema chrysops.**) Seventeen attempts to take fish failed, but the balance produced 213 white bass and 49 other fish, making a total of 262 fish taken. This means an average of 1.35 white bass per hour or 1.66 of all fish per hour for the 158 hours fished.

White bass from these collections in Spirit Lake fed on small fish, insects, and crustaceans. The four species of fish that were fed on most frequently were perch (**Perca flavescens**), fathead minnows (**Pimephales p. promelas**), bluegills (**Lepomis m. macrochirus**), and sheepshead (**Aplodinotus grunniens**). Only seven game fish, six yellow pike-perch (**Stizostedion v. vitreum**) and one white bass were identified from the stomachs. The four species of crustaceans found most frequently were two water fleas **Daphia** sp., **Leptodora kindti,** and **Gammarus** sp. The insects eaten were waterboatman (**Corixidae**), mayflies (**Ephemerida**), and midges (**Chironomus** sp.). Approximately 30 percent of the stomachs analyzed had no food in them.

The white bass were taken by fly fishing with a small white bucktail, with a casting rod outfit using various baits, and by still fishing with a live minnow. By far the best of the 15 baits used was the casting rod white bucktail and spinner. White bass were, for the entire period, taken at the rate of 3.1 per hour with this bait. This was largely due to the fact that the lake had a large population of yearling (spawned in 1941) white bass that showed a marked preference for this particular bait. Several of the other casting rod plugs were also quite effective, particularly for the larger fish. Only one white bass was taken for every 11 hours of still fishing with a live minnow.

Fishing in the vicinity of the shore was more productive than fishing from a boat in the deeper portions of the lake. However, the larger fish were likely to be in the deep water during the daylight hours on quiet days. Sand beaches and rock trees were the best types of shore to fish. The best time to catch the adults (those larger than 11 inches at that time) was the period just preceding dark. According to the data, however, the time to catch the greatest number of fish was between 11 a .m. and 2 p. m. This was because on several occasions yearling white bass moved into shore in such large schools that it was not difficult to catch from 15 to 20 per hour. On windy days these fish were consistently on the leeward side of the lake.

Fish The Shoreline for Best Results



In a summary of hook and line fishing in Spirit Lake, fishing in the vicinity of the shore was more productive than fishing in the deeper portions of the lake.

Extinction of Buffalo Proves Conservation Theory

Waiving all arguments as to whether or not the buffalo had outlived its time and had to be destroyed in order to make way for white men's civilization (i.e., to starve the wild Indians into submission and to provide pastureland for domestic stock), the story of the wanton destruction of the once innumerable American bison in a few decades of the last century becomes more amazing and—to the conservationist, at least—more tragic as the years go on.

Of several factors operative in the sudden, almost incredible disappearance of this mighty animal early in the 1870's, one which may have been important is usually overlooked by historians who have given the matter their attention. But that some conservationists of the time were aware of this particular causitive agent is indicated by a report of Dr. Ferdinand V. Hayden of Yellowstone Park fame, who visited the Upper Mississippi country several times between the years 1850 and 1870 in the service of the U. S. Department of the Interior.

"As near as I could ascertain," Dr. Hayden reported of the buffalo (Trans. Am. Phil. Soc., Vol. XII, New Series, P. 151), "about 250,000 individuals are destroyed every year, about 200,000 being killed for robes. At the present time, the number of males to the females seems to be in the ratio of ten to one (ten males to one female), and the fact is readily accounted for from the fact that the males are seldom killed when the cows can be obtained.

"Skins of females only are used for robes, and (cows) are preferred for food. Besides the robes which are traded to whites by the Indians, each man, woman, and child requires from one to three robes a year for clothing. A large quantity are employed in the manufacture of lodges, and an immense number of animals, which it would be difficult to estimate, are annually destroyed by wolves and by accidents."

Thus a factor important in modern game management was recognized 80 years ago, by one conservationist at least: Reduce the females of any species, and you reduce the entire population. Complete destruction of the buffalo resulted in great part from uncontrolled reduction of females. But CONTROLLED reduction of females is a potent and vital means of keeping game animal populations in check today, now that many species have been restored to the carrying limits of their range.—Wyoming Wild Life.

Need Shells To Control Game Crop

"A wise cattle rancher will not attempt to raise more calves than his range will feed. On the other hand, he will not butcher his breeding stock and thus destroy the source of his supply. He will endeavor to maintain his herd at a level which will produce a calf crop in proportion to the amount of available grass."

The same methods of control apply to fish and game, and particularly to upland birds and waterfowl, which next fall will hit a new high level in the United States and Canada and thus give sportsmen the best hunting they have enjoyed in years—IF they are able to get ammunition with which to harvest the crop.

And, according to the April issue of **Field and Stream,** unless the surplus of this bumper crop is harvested properly, if government agencies do not permit the release of sufficient shotgun shells for this purpose, there is going to be a return of the "market hunter" and the poacning game hog.

In this article, "What About Shells?" the sportsmen's magazine points out that years of hard work and millions of dollars spent for restoration of wildlife will be wasted unless the real sportsmen, instead of the game hog and the market hunter, is allowed to thin out the surplus game crop.

The shell problem is of such importance that the North American Wildlife Conference at its recent Denver meeting took cognizance of the situation and asked the War Production Board to give it consideration.

"Fishing is another relaxation that I believe is the best sport of all. If you want to work hard at it, you can, or you can be the laziest person in the world and still have some luck. One of these days just walk down by some stream and watch the various fishermen go about their business. Some work as hard at it as they know how, tramping up and down the stream, trying all sorts of baits. Along every stream will be at least one fellow that picks out a nice shady spot and parks his body down on the ground. If the fish bite for him, all right, and if they don't, well that's okay with him, too."—Hopkinton Leader.

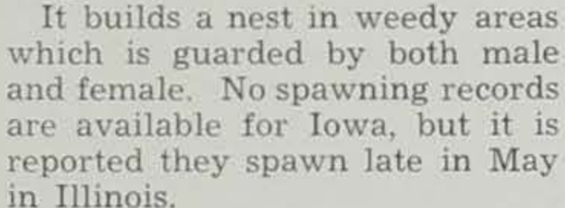
If you catch a tagged or marked fish, report the tag number or marking to the State Conservation Commission, Des Moines, or to the local conservation officer or fisheries supervisor. It is not necessary to send in the tag—just the number. Your cooperation will assist the department in furnishing better fishing for you.

Odd Fish

(Continued from Page 34)

Little is known of its local spawning habits, although ripe females have been observed from the Little Sioux River in late April and early May. In former years when the species was very abundant in Spirit Lake, large schools appeared in the shallow waters in early spring. During the remainder of the summer they were less common and apparently preferred a greater depth of water.

Western Pirateperch
(Aphredoderus sayanus gibbosus)



The pirateperch is a small fish rarely exceeding four inches in length. The adults can be distinguished from all other species by the position of the vent. When young the position of the vent is normal, just anterior to the anal fin. In adults the vent moves gradually forward and is established in the throat region. There are three, rarely four, dorsal spines followed by 10 or 11 soft dorsal rays. The outer edge of the preopercle is rough and saw-like. The color is olive-buff above and lighter below with dark markings on the opercle and at the base of the caudal fin.

This is one of the rarest fish in Iowa to our knowledge and has been found only along the Mississippi River in our collections. Further investigations may increase our knowledge of its range.

It builds a nest in weedy areas which is guarded by both male and female. No spawning records are available for Iowa, but it is reported they spawn late in May in Illinois.

The food consists mainly of insects, insect larvae, and small crustaceans. Because of its diminutive size it has no food value, and it is too rare in the state to be of any importance in other ways.

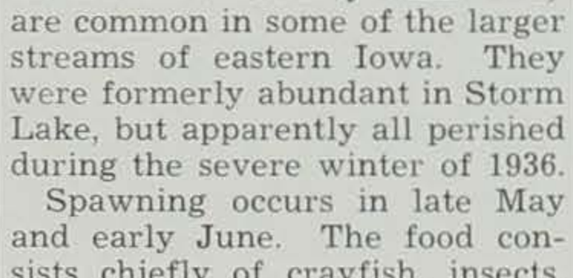
Northern Brook Silversides
(Labidesthes sicculus sicculus)

The brook silversides are small, slender fishes reaching a maximum length of three or three and a half inches. The snout is long and slender, and the jaws, which are of equal length, are prolonged into a short beak. The eyes and mouth are large. There are two dorsal fins, the anterior very small with four weak spines, and the posterior dorsal with nine to 10 rays. The color is translucent, silvery, or light olive green with a pronounced bright silvery stripe along the sides. The fish is nearly transparent and is often called the transparent or ghost minnow.

This little fish is one of the most exquisite and graceful of all our native species. It is commonly distributed throughout the state, but is usually found in relatively small numbers except in Clear Lake, in Cerro Gordo County, and some of the city reservoirs in southern Iowa.

Its food is comprised almost wholly of animal plankton, insects, and insect larvae.

Sheepshead
(Aplodinotus grunniens)



Sheepshead have attained a weight of over 30 pounds in Iowa. The body is robust, but considerably compressed. The head is subconic, and the lower jaw is shorter than the upper one. The spinous dorsal fin is continuous with the soft portion, and the notch is gradual and deep. There are about 30 soft dorsal rays. The color is silvery-gray on the back and sides and white beneath. The upper part of the body and head is flecked with dark greenish-black dots, and the fish appears to have an iridescent or pearl color. Except for the color, it closely resembles the red snapper found in the coastal waters.

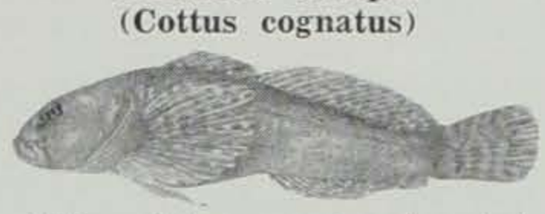
Sheepshead are abundant in the Mississippi River, Missouri River, their oxbow lakes and the Dickinson County lakes. They are common in some of the larger streams of eastern Iowa. They were formerly abundant in Storm Lake, but apparently all perished during the severe winter of 1936.

Spawning occurs in late May and early June. The food consists chiefly of crayfish, insects, fish and mollusks. Many observers believe the sheepshead is responsible for the disappearance of the clams in Spirit Lake and the Okobojis.

They are easily taken by anglers, and the favorite baits are crayfish, nightcrawlers, and artificial lures. They are abundant in many areas and interfere with pike fishing, since they take a spinner fly and spinner minnow bait.

Sheepshead make a loud grunting sound by the contraction of special muscles of the air-bladder. This is plainly audible when the fish are feeding close to the surface of the water and is especially noticeable when taken from the water by anglers. This peculiar noise has given rise to such common names as freshwater drum, croaker, and grunter. On the boundary streams it is usually referred to as white perch, and often served as such in restaurants.

Northern Sculpin
(Cottus cognatus)



Although two species of sculpin or Miller's thumb have been reported from Iowa, our recent collections have failed to find but one. The sculpins are small fishes, usually not exceeding four or four and a half inches in length. The body is robust and subcylindrical. The skin is scaleless and slimy, hence it is sometimes called the slimy muddler. They are easily distinguished from other Iowa fishes by the broad, expansive pectoral fins and large, flattened head. The mouth is wide and the lips are thick. The eyes are large and set close together. There is a deep notch between the first and second dorsal fin and about eight or nine rays in the first and 15 or 16 in the second.

The palatine teeth, located on the roof of the mouth, are usually not developed in this species. This character distinguishes it from **C. bairdii bairdii,** which is the other species reported from Iowa. The sculpins are olive or olive brown above and white below. The sides are barred with dark markings. The broad fins are mottled with greenish-brown spots or bars.

In Iowa the sculpins are confined largely to the trout and cold water streams of the northeast and eastern part of the state. They inhabit rock areas and watercress beds. Their food in these streams consists of scuds, insects, and small fish.

They are frequently taken by trout fishermen on worms, salmon eggs and flies, but are too small for food.

In some areas it is said they eat the eggs and fry of trout. The life history and food habits have not been carefully worked out for the species in Iowa, but they will be studied more thoroughly this summer.

Eastern Burbot
(Lota lota maculosa)

The burbot is also called the lawyer, ling and eelpout. It reaches a length of two feet, but it usually does not exceed 14 to 18 inches. Its body is very much elongated, nearly serpentine. The head is broad and considerably compressed. Like the true eel, the scales are small and deeply imbedded, giving the impression at first glance that the fish is scaleless. The distinguishing feature which separates the burbot from all other Iowa fishes is the single median barble on the chin. Both dorsal fins are without spines. There are usually 12 rays in the anterior dorsal and 70 to 75 rays in the posterior dorsal. The color is dark olive or olive-brown, thickly mottled with darker areas on top and dull gray beneath.

It is the only member of the codfish family in the state. Burbots are not common in any Iowa water and are principally confined to the Mississippi River. Only a few are taken in the commercial fishermen's nets each year, and they are rarely taken by anglers.

The species is very common north of Iowa and often becomes a pest in many areas. They are fierce feeders, eating everything available, including fish, frogs, crayfish, and even their own young.

The flesh is considered inferior to most other species, although it is eaten in some areas.

Brook Stickleback
(Eucalia inconstans)

The stickleback is a small fish not exceeding three inches in length. The body is fusiform or spindle-shaped, the mouth small and oblique, and the body smooth and scaleless. It can be immediately distinguished from all Iowa fishes by the five widely-separated spines on its back preceding the soft dorsal fin. The base of the tail is very slender. The color is olive-green, mottled with dark blotches, and the sides are barred with a number of dark bands. The belly is light olive, often flecked with minute dark spots.

Sticklebacks are widely distributed throughout the state. They usually prefer cool, clear waters, but have been taken from nearly every conceivable place.

The spawning habits of the stickleback are unique. Small, barrel-shaped nests are made of vegetation and bits of wood and debris, which are cemented together with a secretion from the mouth. The male only is equipped with the gland providing this secretion. According to Dr. Forbes, the substance is secreted from the kidney. When the nest is completed, the male escorts his mate to the "barrel-house" bungalow. When spawning is completed, the female is excused, and the male savagely guards it until the young hatch.

Sticklebacks are among the most interesting small fishes known in Iowa. They are hardy, fierce, little warriors holding their ground with larger fishes in all communities. They destroy small fish and are extremely unwelcome in the hatcheries by our fish culturists. Their food consists essentially of insects, crustaceans, and small fish.

A preliminary stream survey has been made of all the principal trout streams of Iowa.

Living Off Land

(Continued from Page 33)

"Go down to the garden and break off a milkweed stalk and rub the white milk on your wart. It will go away. When I was a girl we used to say 'Hocus pocus Johnny docus', as we rubbed the milk in, but I don't think that it is necessary to say that. And, Willie, don't get any of the milkweek in your mouth. It's poison as sin."

Willie's counterpart, an Indian boy at Tama, knew about milkweed, too. He didn't know the milk would cure warts, and it won't. He didn't know the common milkweed was poisonous, and it isn't. He did know, however, that the tender leaves of milkweed are delicious to eat and that except for wild onions it is the Indian's first important spring food plant.

How fortunate that the Indian boy learned facts of field and stream, and how unfortunate our own sons too often learn foolish fables.

"To live off the land in foreign climes" is a course in army-navy training, just in case. Without apology here are a few Indian items "off the land" in Iowa.

The common milkweed of cornfield and garden (**Asclepias syriaca**) has for centuries been one of the food staples of the Indians of Iowa. This common plant—weed if you prefer—was a necessity to the aborigines and in more recent years was gathered in Iowa by the Mesquakies and sold as a luxury food at fancy prices to the oil-rich Oklahoma Indians. Milkweed is still an important food at Tama and used not as "greens", but as a food much like potatoes, beans, and cabbage.

From its first appearance in the latter part of April until blossoms appear in July, milkweed is gathered and used fresh or dried and stored for fall and winter use in loosely filled bags or baskets.

Only the top part of the plant is harvested, that is, from the top down the stem some eight inches to where the leaves and stem begin to be tough and fibrous. After picking, the plant tops are prepared by gathering in clusters and cut crosswise, the leaves then appearing as ribbons about a half-inch wide and the tender stalks like half-inch sections of asparagus. They are then thoroughly washed.

The fresh plants are most often boiled with meat, the meat being partially cooked before the milkweed is added. Before cooking is complete, thickening similar to the thickening used for creamed vegetables is added. Creamed milkweed without meat tastes surprisingly like creamed asparagus.

In trying this Indian food remember that the common milkweed is a fleshy, broad-leaved plant. Do not confuse it with the narrow-leaved whorled milkweed (**Asclepias verticillata**), a single leaf of which will give an exceedingly bitter taste to the whole dish and make it unpalatable.

Sugar ration stamps don't bother the Mesquakies. Not that our Indians are unpatriotic (they have a military service list of 32 from a population of 475), but they make sugar right at home just as they did in prehistoric times.

Before white men came, family groups left the winter camps in February and set up temporary quarters in hard maple groves, often many miles from their permanent camps. When the maple sap began to "run", the entire family made sugar, tapping the trees and boiling down the sap.

One of the most important articles the Indian traders brought to exchange for furs were the big brass and copper kettles used for boiling maple syrup. After the sap thickened, the hot syrup was poured into large clam shells and when cool formed maple sugar blocks. With spring, the sugar makers returned to the permanent camp with the year's supply of sweets.

This spring while we worried about sugar rationing, Iowa Indians boiled down the sap from hard and soft maple and box-elder trees and now have a supply of delicious, native maple sugar. Sugar shortage? There were millions of sugar-producing trees untapped in Iowa this year.

What is the Fourth of July without lemonade? The Indians will have it, shortage of lemons or no, for about Independence Day the seeds of the smooth sumac (**Rhus glabra**), Iowa's most common species, make delicious lemonade. The Indians prepare it by putting two large sumac seed clusters in a gallon of water. It is then stirred briskly for a few seconds, the seeds taken out, sugar added, and there it is.

Sumac lemonade is much more tasty than the carnival variety, and when the seeds are prime, the resulting drink cannot be distinguished by taste from true lemonade. Try the "blindfold test" and see for yourself, but be sure you have the right sumac, for some kinds are poisonous.

Perhaps you prefer tea. Mesquakie tea is made from the second year shoots of wild blackberry and raspberry vines, the strength of the brew depending on the amount of tea shoots and the length of time the vines are boiled.

Irish potatoes were unknown to the Indians before modern times, but several substitutes for them grow wild in this state. The most commonly known of these ersatz potatoes is the tuber of the arrowhead or wapato, the scientific name of which is **Sagittaria latifolia.** This fresh water plant is found in abundance in marshes and in shallow water along the margins of lakes and streams. The Mesquakie name for arrowhead is wapsipinicon and is the origin of the name of the Wapsipinicon River, which, prior to the introduction of carp, was fringed with the arrow-shaped leaves of this plant.

The "potatoes" of the arrowhead are bulbs or tubers from which the plant grows. They are larger than tulip bulbs and are found buried in the mud at the base of the plant. In September the Indians dig wapatoes from the mud for immediate or future use. The tubers, if dried, are soaked overnight before using and then boiled with meat. Wapatoes taste quite a bit like sweet potatoes, and they are very nutritious and have a "staying" quality as well.

Muskrats often store the tubers in their dome-like houses, and in times of emergency the Indians raided the muskrats' larder, always leaving a generous portion of the store so that the original owner would have food for the winter.

The beautiful American lotus bulbs provide another potato substitute for the Mesquakies. Like the bulbs of the arrowhead, these tubers are dug out of the mud and used fresh or dried for winter. The tuber is the general shape of a banana and sometimes as large as a man's arm. This tuber is generally sliced in one-fourth inch slices and cooked with meat. Like the wapato, lotus bulbs taste similar to sweet potatoes and are nutritious and filling.

Pretty? And You Can Eat 'Em, Too

The bulbs of the American lotus are the general shape of a banana, sometimes as large as a man's arm. These tubers provide a very palatable potato substitute for Iowa's Indians.

The trout fishing season opened May 1, and all the streams were stocked with legal size fish prior to that time.

Indians Knew Secret of the Wild

It is not advocated that Iowans in 1943 return to the primitive living of the Indians; however, much uncultivated native food could be utilized if it were necessary.