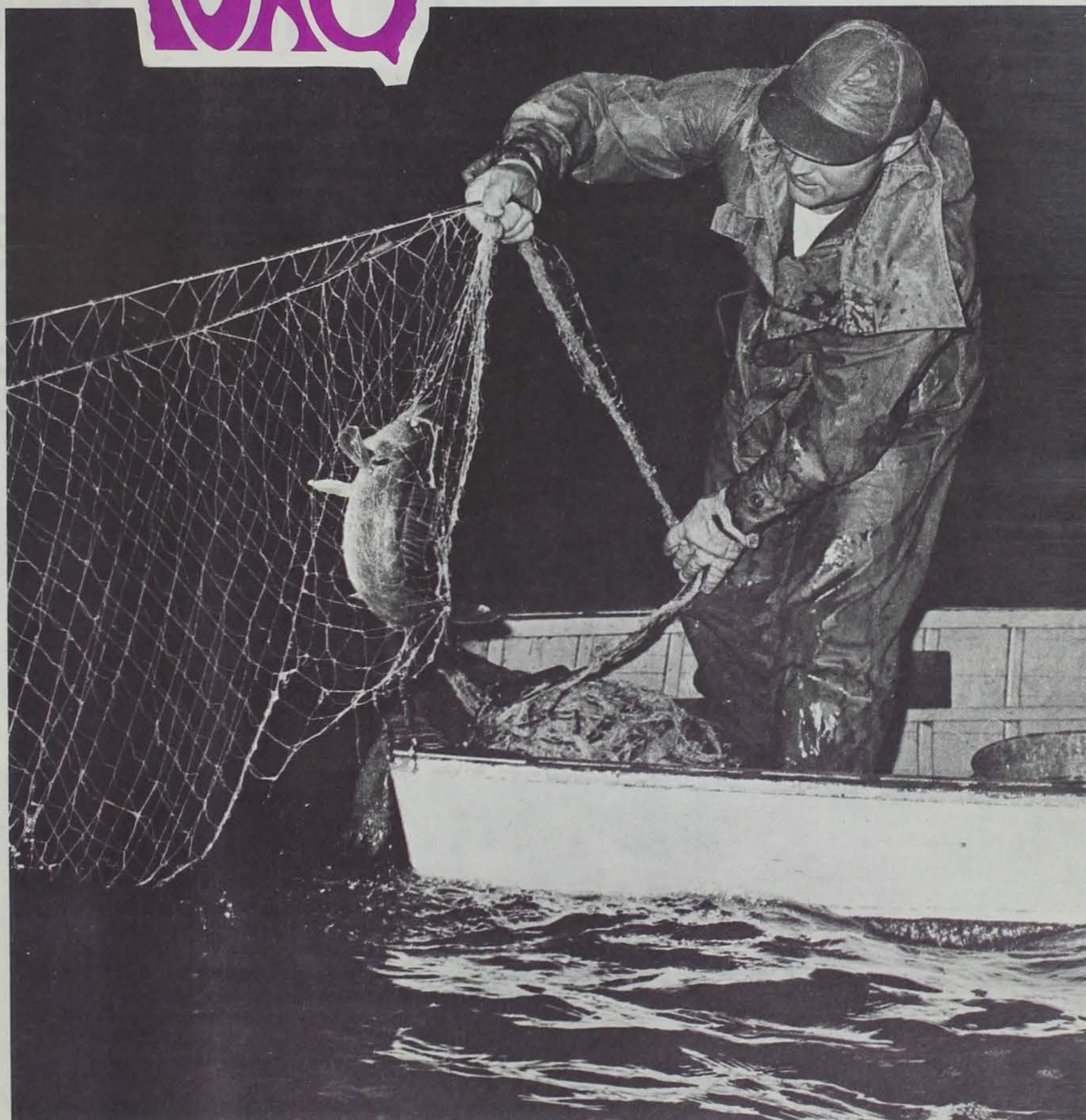




MARCH, 1974



# conservationist







MARCH, 1974



# conservationist

ROGER SPARKS, EDITOR  
WAYNE LONNING, PHOTOGRAPHER  
JERRY LEONARD, PHOTOGRAPHER

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#### Iowa Conservationist

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Cover: Hatchery personnel net brood fish walleye at Spirit Lake — Commission Photo.



Commission Photo

# spirit lake fish h

By Wallace D. Jorgensen Hatchery Manager

When an angler catches a walleye from Iowa waters, there is a good chance that its life started inside a jar.

Between 80 million and 110 million walleye eggs are hatched annually in Iowa fish hatcheries. Most of these fish are planted into Iowa waters to supplement natural reproduction and to create populations in new and renovated waters.

By far the largest walleye hatchery in Iowa is located at Spirit Lake, in Dickinson County. The hatchery complex consists of approximately 3.8 acres of ponds, a hatchery building, and three storage buildings. Spirit Lake is the source of water for the hatching operation, while the ponds are fed solely by ground water.

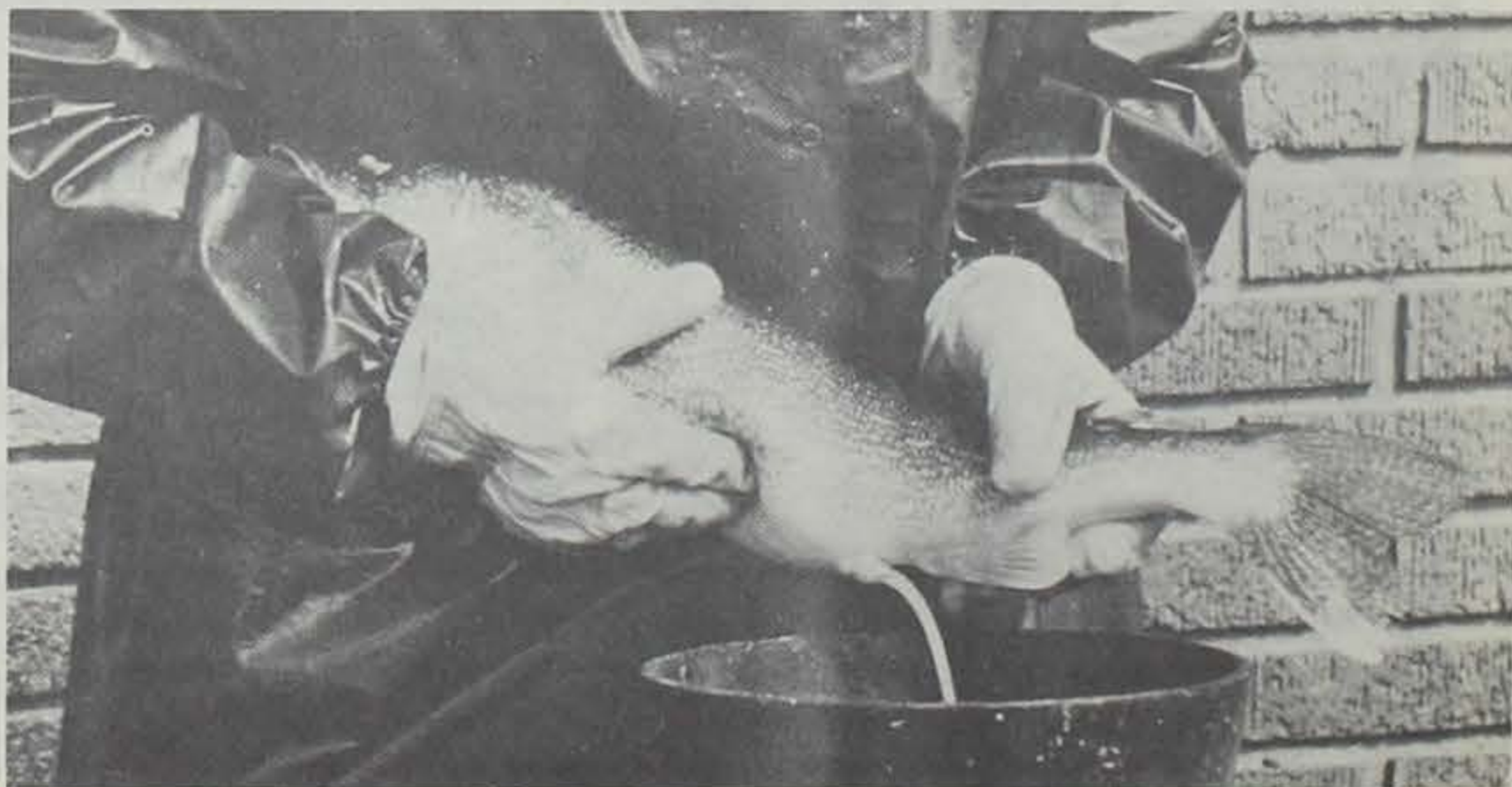
In addition to providing facilities for fish egg hatching, this building provides office space for eight fish and game personnel including the hatchery manager,

a fisheries management biologist, a fisheries research biologist, northwest Iowa district supervisors of fisheries management, game management, and law enforcement, the supervisor of fish hatcheries and a receptionist.

#### Hatchery Activities

Walleye: When the ice cover leaves the Iowa Great Lakes, normally early April, the water temperature is nearing the mark that triggers the annual walleye spawning "run." It also marks the beginning of the busiest time of the year for personnel working at the Spirit Lake Fish Hatchery. It is from these spawning "runs" that Conservation Commission personnel capture the brood fish that provide the eggs and subsequently the fish that are stocked into Iowa waters.

Collection of broodfish is accomplished with the aid of gill-nets set perpendicular to the shoreline each night during the



—Commission Photo

Milking eggs from walleye.

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Jerry Leonard photo

# hatchery

spawning "run" at specified locations on Spirit Lake, East Okoboji and West Okoboji.

Walleye captured at the netting sites are transported to the hatchery by live-truck. There, the fish are sorted by sex and by gonadal development and held in hatchery tanks until their eggs and sperm can easily be taken. After the walleye have fulfilled their role in the hatchery operation, they are returned unharmed to the lake from which they were captured.

Eggs collected from female walleye undergo a series of delicate manipulations before they're placed in jars, where they remain until hatching. Hatching will occur at 14 days to 21 days of age depending on water temperature.

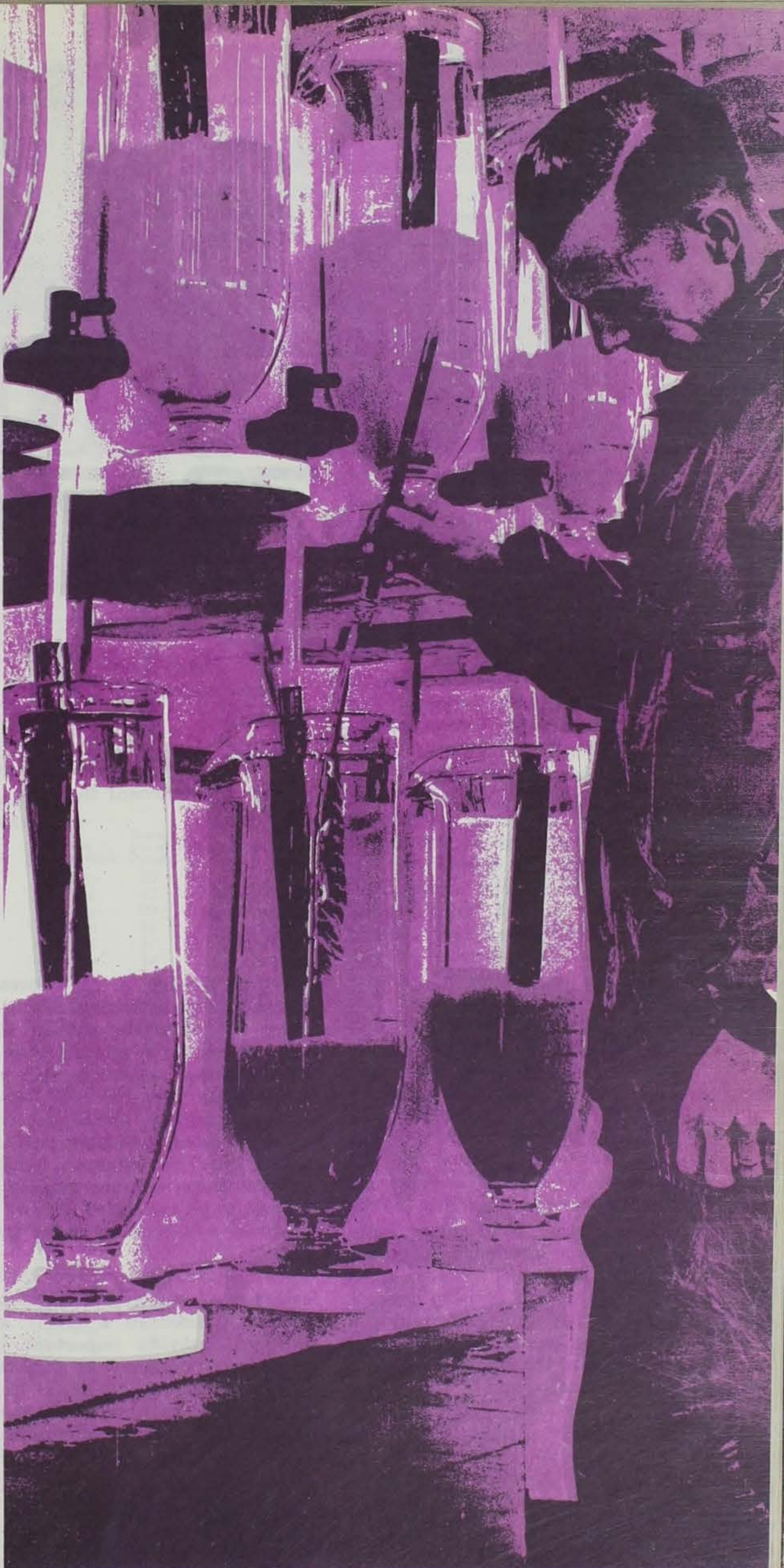
Within a short period of time after hatching, fry leave the jars and collect in holding tanks. The fish are then removed from the

(Continued on Page 9)



—Commission Photo

Some of 80 million Walleye Fry to be stocked in Iowa waters.







# TROUT 73&74

With winter's demise in sight many a trout fisherman's blood starts to stir with memories of last year's fishing adventures — appropriately enlarged, of course, by the passage of time! How successful was the average trout angler last year in Northeast Iowa's trout streams? What awaits in 1974? Let's explore in some detail these questions of last year's trout fishing and propose a forecast for the coming season.

"Put and Take" trout fishing can be enjoyed in any one of 45 cold water streams in Iowa's nine northeastern counties. Fishing in these streams is maintained by stocking "catchable" sized trout reared in one of Iowa's three trout hatcheries and stocked April through November of each year. For the more adventure-some at heart, carry over fish from previous years plantings and fingerling plants provide variety and "bragging" size fish. This type of quality fishing exists generally above and below the regularly stocked portions of the aforementioned streams and in some 50-70 smaller streams receiving periodic fingerling plants.

The average trout angler, however, is more interested in the put and take portion of the Iowa trout program as this activity greatly enhances his chance of "taking a limit." The success of stockings is measured in the management biologist's mind — and by the fishermen — by the percentage of stocked fish caught. Of major concern to both interests is the optimum number of fish that

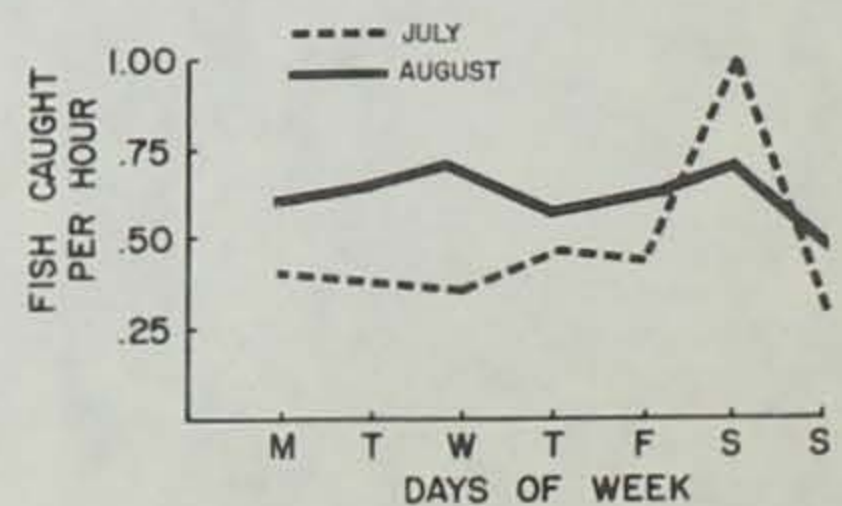
must be stocked in each stream to produce good fishing. Stocking more fish than the stream will support results in a low return of trout fishing, i.e., many fish are wasted. Too few fish will result in poor fishing — the angler will have too much difficulty catching trout; thus, the stream's habitat and the fishermen are two major factors to be evaluated if Iowa is to have a successful trout program.

Fishermen interviews, often called creel surveys because fish caught (placed in a creel) are checked, provide important information necessary to evaluate the trout fishing success in each stream. Data collected from these interviews enables comparison between different streams, reflects fishermen's use, and pro-

vides some insight into the trout's actions after being released into the stream.

To answer that question of last year's success, let's look at a creel survey conducted during 1973 on Trout Run, one of the heavier fished streams of Winneshiek County. The stocking level was high in Trout Run, over 16,000 trout in 1973. Fishermen historically have flocked to this scenic stream originating from the spring feeding the Commission's Decorah Trout Hatchery. To monitor trout movement, a fish weir (trap) was placed in the lower end of the stream to account for any instream movement by the stocked trout. All fish captured on the weir were counted and released up or downstream corresponding to their original destination to prevent bias or restriction of natural movement.

Here are some of the facts of the survey. Instream movement of the stocked trout was minimal. Only six trout were captured during the period the weir was manned. This is not to say trout will not distribute themselves over the stream given sufficient time, but the fishermen was there to intercept any movement they



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may have contemplated! Of the 16,000 trout released, expansion of creel results indicated over 90% or 14,400 were taken during the period covered by the creel. As shown on the accompanying chart of fishing success by months, fish were taken at the overall rate of one-half fish per hour. To put this figure in perspective, a catch rate of one fish per hour is usually accepted as

excellent fishing. Using this criteria, Trout Run produced fair to very good fishing. With some 75 anglers per day fishing this stream, it was impressive that such a high catch success was maintained over a year's time period!

Angler success was better during August, but a check of stocking records accounts for this higher success. More rainbow

trout were released in this period than brown trout. As most trout anglers know, rainbows are generally easier to catch than brown.

Success similar to that experienced on Trout Run, was noted on other Iowa trout streams in 1973. Although water fluctuations in volume and temperature may have decreased or improved the success you experienced in your favorite stream.

Enough of the past—what are the prospects like for 1974 on your favorite stream? Generally speaking, from a water standpoint prospects are excellent as the above normal rainfall of the past year has fully charged the many springs flowing into Iowa's trout streams. This means cooler water for a longer period, allowing prolonged stocking of smaller lots each week. The result is more chance for the angler to find fish on each visit to his favorite stream.

The other one-half of the trout story — hatchery production — also looks good. Recent construction at Big Springs now allows for a dependable supply of fish yearly in the numbers required for each stream. The accompanying stocking schedule should provide the trout angler with some insight on the number of fish, species, and frequency of plants in his or her favorite stream in 1974. Of course, inclement weather and muddy roads could alter the proposed stocking, so it's always best to stop at one of the trout hatcheries for up-to-date information.

The 1974 trout program also represents increased Conservation Commission concern for providing "quality" as well as quantity. For example, an "artificial only" area is being set aside for the first time on the Maquoketa River in Backbone State Park. Fingerling brown trout plants are also being greatly expanded in smaller streams throughout Northeast Iowa.

The recent trend in loss of private stream areas for stocking due to landowner closures will also be reversed in 1974. Four ad-

(Continued on Page 15)

#### 1974 TROUT STOCKING GUIDE BACKBONE TROUT HATCHERY

CREEK	COUNTY	1974 QUOTA	80% RBO	20% BRN	Maximum Stocking Rate	Number of Plants	Stocking Frequency Spring	Stocking Frequency Fall
Bankston	31	5000	4000	1000	250-trip	20	12	8
Bear	33	5000	4000	1000	250-trip	20	12	8
Big Mill	49	12000	9600	2400	400-trip	30	once/week	
Brush	33	3000	2400	600	150-trip	20	12	8
Brush	49	8000	6400	1600	400-trip	20	12	8
Dalton L.	49	7000	5600	1400	350-trip	20	12	8
Elk	28	5000	4000	1000	125-trip	40	plus/week	
Ensign	22	3000	2400	600	150-trip	20	once/week	
Grannis	33	6000	4800	1200	200-trip	30	once/week	
Kleinlein	22	6000	4800	1200	150-trip	40	plus/week	
Little Mill	49	7000	5600	1400	350-trip	20	once/week	
Maquoketa R.	28	7500	6000	1500	350-trip	20	12	8
Mink	22	3000	2400	600	150-trip	20	12	8
Pine	22	1000	800	200	100-trip	10	as required	
Richmond	28	12500	10000	2000	175-trip	70	twice/week	
Spring Branch	28	6000	4800	1200	150-trip	40	plus/week	
Swiss Valley	31	6000	5400	1600	300-trip	20	12	8
Turkey Creek	22	3000	2400	600	150-trip	20	once/week	
TOTALS		100000	80000	20000	208-trip	480		

#### 1974 TROUT STOCKING GUIDE BIG SPRING TROUT HATCHERY

CREEK	COUNTY	1974 QUOTA	80% RBO	20% BRN	Maximum Stocking Rate	Number of Plants	Stocking Frequency Spring	Stocking Frequency Fall
Buck Creek	22	6000	4800	1200	300-trip	20	12	8
Bloody Run	22	10000	8000	2000	250-trip	40	plus/week	
Clear	3	2000	1600	400	100-trip	20	once/week	
French	3	7500	6000	1500	250-trip	30	once/week	
Glovers	33	5000	4000	1000	175-trip	30	once/week	
Hickory	3	7500	6000	1500	250-trip	30	once/week	
Little Point	3	10000	8000	2000	200-trip	50	twice/week	
Livingood	3	3000	2400	600	100-trip	30	once/week	
North Cedar	22	3000	2400	600	100-trip	30	once/week	
Otter	33	500	4000	1000	250-trip	20	12	8
Paint	3	5000	4000	1000	250-trip	20	12	8
Sny Magil	22	9000	7200	1800	300-trip	30	once/week	
South Cedar	22	3000	2400	600	150-trip	20	12	8
Turkey R.	22	11000	8800	2200	150-trip	75	twice/week	
Village	3	7500	6000	1500	250-trip	30	once/week	
Wexford	3	4000	3200	800	125-trip	30	once/week	
TOTALS		98500	78800	19700	205-trip	485		

#### 1974 TROUT STOCKING GUIDE DECORAH TROUT HATCHERY

CREEK	COUNTY	1974 QUOTA	80% RBO	20% BRN	Maximum Stocking Rate	Number of Plants	Stocking Frequency Spring	Stocking Frequency Fall
Bohemian	96	2000	1600	400	100-trip	20	12	8
Coldwater	96	7500	6000	1500	250-trip	30	once/week	
Coon	96	2000	1600	400	100-trip	20	12	8
North Bear	96	9000	7200	1800	225-trip	40	plus/week	
Patterson	3	3000	2400	600	150-trip	20	12	8
Silver	3	3000	2400	600	150-trip	20	12	8
Spring	66	4000	3200	800	200-trip	30	12	8
South Bear	96	7500	6000	1500	250-trip	30	once/week	
Trout River	96	7500	6000	1500	250-trip	30	once/week	
Trout Run	96	10000	8000	2000	125-trip	80	twice/week	
Twin	96	8000	6400	1600	100-trip	80	twice/week	
Turtle	66	4000	3200	800	200-trip	20	12	8
Wapsi River	66	4000	3200	800	200-trip	20	12	8
Waterloo	3	9000	7200	1800	300-trip	30	once/week	
West Canoe	96	5000	4000	1000	250-trip	20	12	8
TOTALS		84500	67600	16900	250-trip	480		





# SPRING CRAPPIES

Soon after the ice vanishes, crappies begin gathering around rocky shorelines and submerged brush piles. For anxious anglers, the long wait is over. Bait preference varies among fishermen, but try the baits and lures shown below during these generalized periods of spring:

## Early Spring (March - Mid April)

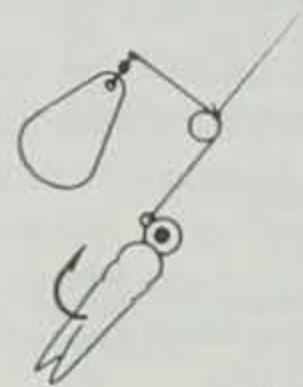
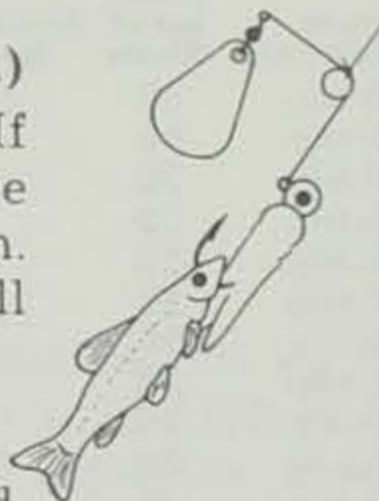
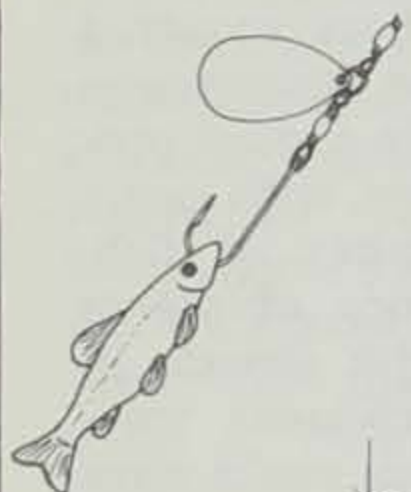
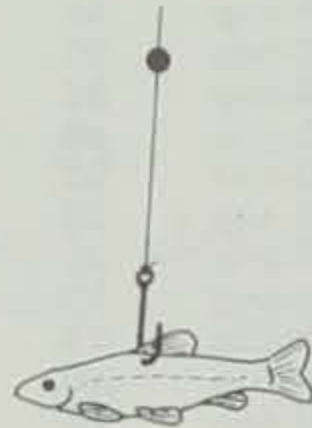
Bait fishing pays off early. If using a bobber, set it so that the bait gets down near the bottom. Very early, nightcrawlers will sometimes out fish minnows.

## Mid-Spring (April - May)

When crappies are schooled, leadheads and spinner baits of 1/16 ounce to 1/32 ounce will catch them fast, without rebaiting slowdowns. If the action is slow, try adding a live minnow (hooked through the lips) to the lure.

## Late Spring (After May)

Use leadheads or live minnows during the day. Watch for crappies rising to the surface in mornings and evenings and try fly fishing with sizes 8 to 12 flies, wet or dry. ☆



The following explains why the organization I represent is in favor of a park user fee in Iowa's many beautiful parks, parks which up to now have been financed exclusively through taxation or the special fees which have been charged for the use of camping facilities, boat docking, concession and beach receipts.

For the past four years, my wife, Kay, and I have represented the National Campers and Hikers

## IOWA CAMPER

I won't attempt to convince you that all our members want a park users fee in any form. No organization has 100% agreement on such a major issue. However, a survey of our membership some two or three years ago — the results of this survey were included in the May, 1973 issue of this publication — indicated that a majority of our members favored such a fee. Nationally, the margin was about 58% for, compared to 42% against or uncommitted. In Iowa, the vote was two to one in favor. Nearly all of our state officers and committee members favor this proposal. Our State Director, Bill Boust of Audubon, and our State Association President, Earl Whitney of Waterloo, have solidly endorsed the legislative proposals which have appeared up to the time I write this. Why? How can these people honestly say they want to pay more to use the same park facilities next year? I don't think anyone willingly wants to pay more but we do have our reasons for feeling that doing so is advisable.

I believe that our members generally recognize the fact that our park system must have more income from some source. We cannot continue to operate our parks even on the same level as in the past on the same revenues. Our economic structure in this country will not allow this. The cost of living continues to rise.



Association (Iowa Chapter) as Legislation Chairmen, responsible for investigating and reporting on any items of legislation or rules which seem to be of importance to our association. Nationwide, our membership is composed of some 70,000 families. Iowa membership in the national group presently stands at approximately 1,400 and our State Association includes more than fifty camping clubs. Our membership roster in-

clude professional people and blue collar workers, truck drivers and ministers. My own club includes a self-employed businessman, a factory man, a salesman, a medical technician, plus several other skilled or semiprofessional people. Nationally, our group includes people who don't camp and people who do, people who backpack and people who live in Airstream trailers. Our motto, which I sincerely believe, is "The

Friendliest People in the World." The main common denominator of our group seems to be simply that we all enjoy the outdoors, spend as much time as we can in it, and hope to preserve and perhaps even improve it a little for the next generation.

Happy camping! Kay and I hope to see all of you in some one of our state parks this season. The coffee pot is always on someplace around our campsite.

## CAMPERS VIEW THE PARK USER FEE

By Dale Noel, Legislative Chairman, Iowa Chapter, National Campers & Hikers Association

Wages and product prices seem to go up without end. It simply costs more to operate our parks today than it did yesterday. In addition, more demands are being placed on our recreational systems by more people with more free time, increasing operating costs for our parks by requiring more facilities and more staff. It appears to me that our major reason for backing a users fee is simply based on economics.

Our park system needs more funds than we believe the legislature can or will provide. Besides, an increase in appropriations could only be paid through tax funds under the present system and I don't think most of us really want to throw a bigger load on the taxpayer who probably never gets any use from our parks at the present time. The park user fee, if the legislature will allow it as additional revenue over and above appropriations from taxes, appears to us to be a feasible plan to provide the needed income.

What about new facilities? With increased use by increasing number of people, where will he put them all in the next few years? Land acquisition is becoming very expensive. Land prices have risen probably more rapidly than any other product I can think of and there seems to be no end in sight. The Conservation Commission has some appropriated tax funds available to spend

for this purpose but is the budget adequate? Some states are already designating that income from a users fee will be used for land purchases — or for the cost of capital improvements after the purchase. If the legislature does not feel that a users fee should be used to pay regular administrative costs of our parks, why not use the revenue for this purpose?

Another factor which has influenced our position a great deal is that a users fee, while adding to our own immediate costs for enjoying our parks, would also place some financial responsibility on those many other people using our parks. Because they can enter and leave almost without control, and since there is a definite deterioration on the part of many of these people in the matter of respect for property, whether it be publicly owned or private, some do feel it their prerogative to litter, damage, or destroy. Vandalism is rampant and rowdyism occurs even in the best-run parks in our state. Restricting access to these parks to only those persons willing to pay an admission fee would reduce these problems. Our park officers would be able to better control and police the areas under their jurisdiction. The persons creating the problems would be helping to pay the cost. Those of our members who do camp — and in Iowa this means essentially all our

members — have been paying an additional fee for many years. Our rigs, whether they are tents, tent trailers, or the most deluxe travel trailer or motor home, do require some special facilities and we have been willing to pay for these facilities. However, we do not like to see these fees being used to maintain other areas of the park which may have been thoughtlessly or maliciously damaged or destroyed by other users. In our association functions, at least, we take pride in leaving an area cleaner than we found it.

To sum up, we don't want to pay more for the same facilities or services but we are willing to pay more to help improve these facilities, provided that all benefited persons are asked to pay a share. We don't profess to have all the answers. We are simply interested, concerned people who want to preserve and use our natural resources to the fullest. If there is an alternative to the users fee other than increased taxes, we are willing to listen and will certainly support any plan we believe is feasible. To quote our State Director in a presentation to a 1973 joint meeting of the House and Senate committees responsible for this type of legislation, "The members of the National Campers and Hikers Association stand behind any comprehensive plan to maintain, improve and acquire needed outdoor recreational facilities . . ." ☆



By Jon Gibson  
Information Specialist

The old bur oak and shagbark hickory trees on the hillside stood naked and grey under what seemed like an even greyer early March sky. Their branches were still cold and damp from the first good rain of the year which had occurred earlier that morning. Even though the decaying leaves on the woodland floor were just as cold and just as damp, a rustling could be heard among them. The shiny black body sprinkled with bright yellow spots made the eight-year old male tiger salamander stand out among the rotting brown leaves. He was moving slower than in past springs for he was as old as most tiger salamanders go. If fortunate, he might survive two or three more years. Things looked the same to him this time around as last — the familiar moss-draped tree trunks and lichen-covered rock ledges. He couldn't see them until he was a few feet away, however. Members of his species were equipped with small, feeble eyes, which made them near-sighted from birth to death.

It was only this morning that a number of things began to happen to him to make him wake-up so suddenly. Little did he know that all during his winter hibernation under the protective woodland soil, that an internal alarm clock had just been waiting to go off. As always it seemed, the clock had begun to ring just as the soil had started to warm up and the days get longer.

Only a few minutes were needed for him to re-orient himself to his surroundings. The well known scents he had been following since his first such post-hibernation trip were again leading him to his destination. Within



# MARCH TIG

the past few years, however, he had learned the territory so well that he could find his way by just using a familiar polished granite boulder or dead elm trunk as a guide.

When he was about ten feet from the water's edge, he began to make out the outline of the pond. His pace began to quicken in expectation of being in the water once again. Although he was trying to hurry, his movements were awkward. His short arms and legs stuck straight out from the side of his body, not underneath it so they could support his weight. In fact, his belly dragged the ground. Such physical handicaps to terrestrial movement were testimony to his ancient

evolutionary heritage that now made him more at home in the water than on land.

As he finally slipped into the frigid water, his breathing stopped. The lungs he had used on land were useless to him underwater. He was not likely to suffocate from a lack of oxygen, however. His ever-moist and paper-thin skin was underlaid by a vast network of blood vessels which easily absorbed oxygen from the surrounding water.

With his primitive brain, the tiger salamander had no way of "knowing" why he had awoken on this particular day and was taking this special journey. The longer days, the warmer temperatures, and that biological time-

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choice but to endure the winter while in the pond.

Females were not to be seen by the adult male. They would be entering the water very soon, however. When that happened, an innate urge would force him to seek out a female and begin jousting with her in prelude to a later mating. He would nudge her with his head again and again. Finally, the female would become aroused by his actions and return the nudges. All this courtship display had been engaged in many times in the past by the adult male. In this excited state the mating would take place. Later the female would lay about 20 clusters of 50 eggs each onto the submerged stems of aquatic vegetation about a foot below the surface. The small eggs, brown on one half, white on the other, would swell to three or four times their original size before they would hatch about a month later. And so, the cycle of life would go on.

The adult male was not going to be involved in his sixth spawning season, however. While searching for insect nymphs and other food items along the bottom, he ran headlong into a seine. His poorly developed internal ears didn't let him hear the shouts of the young college students who had just pulled him from the water. He had no idea of what was going to happen to him next as the two biology majors commented on his huge size. His ten inch length was as large as any of his species ever attained.

His fate was a new home in an aquarium where he would be the subject of scientific study. The pond was without him now, but his disappearance had little effect. Those weird looking larvae, of which the captured adult was once himself a member, would soon begin absorbing their external gills and body fins. They would develop functional lungs and take on the coloration of the adults. A new year class of "tigers" were getting ready to populate the pond and later in the surrounding land. ☆



# TIGER

piece inside of him were changing his body chemistry — there was nothing he could do to deny these impulses.

As he swam above the bottom mud and alongside the cattail roots, he began passing other males just like himself, although they were all younger than he was. There were also a few weird looking salamanders with fuzzy external gills, large transparent fins on their backs and tails, and wearing a drab green color speckled with small buff and black dots. These unusual creatures were tiger salamander larvae that had spent the winter in the pond. Since the larvae had gills, but had not yet developed functional lungs, they had no

## Spirit Lake Fish Hatchery . . . (Continued from Page 3)

tanks and prepared for the trip to the stocking site. Normally all of the walleye fry have been planted before May 15.

The Spirit Lake Hatchery has a maximum capacity of 280 jars. When all of the jars contain the optimum number of eggs, the hatchery holds about 107 million eggs and normally about 75 to 85 million eggs will hatch.

The hatchery crew is also responsible for producing 4-inch to 6-inch walleye fingerling for fall distribution. Production of these fish is accomplished in small natural lakes near the hatchery.

Muskellunge: Although the number one priority at Spirit Lake is to produce walleye, the station also hatches and rears muskellunge. Muskie stocking in Iowa began in 1960, but it was not until 1973 that sufficient quantities of eggs were collected from our brood fish to make this program self sustaining.

The number of muskie produced was small (about 132,000) when compared with walleye production. Because there is a limited number of mature adults available in the Iowa Great Lakes, the number of muskie produced will never be large.

Because of the small number of fry produced, most of the muskie fry are stocked into rearing ponds where they attain a size of seven inches to 10 inches before being planted into Iowa waters. Experience has shown that the return of fingerling fish from rearing ponds is unpredictable. Therefore personnel at Spirit Lake have been experimentally rearing them in hatchery holding tanks. This program seems to be working well and will be continued during 1974.

### Visitors Welcome

To many people the most interesting time to visit this hatchery is April and early May. During this time the walleye hatching operation is in full swing and the holding tanks contain large

(Continued on Page 16)

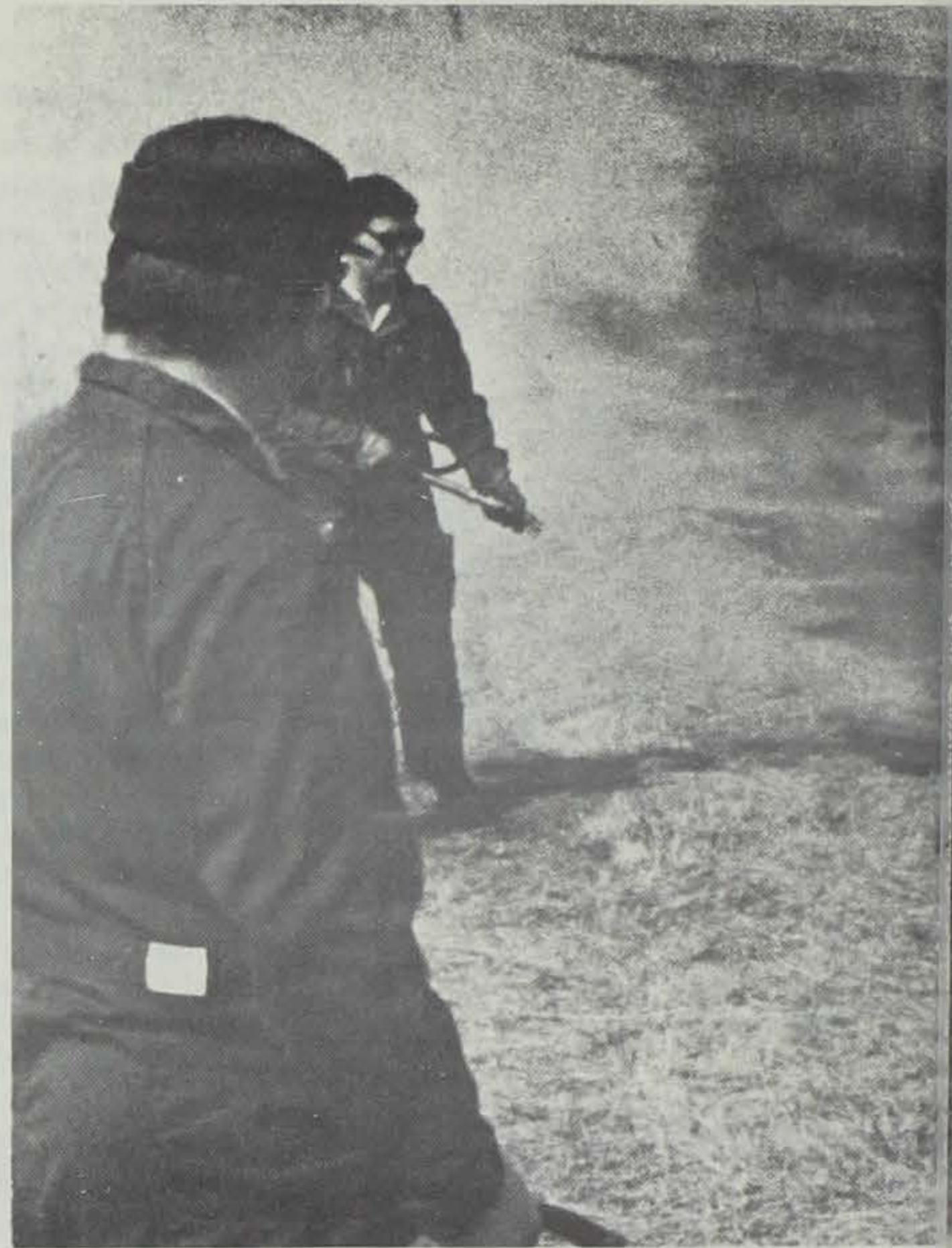


# prairie

# FIRE!

By Douglas Harr

Wildlife Management Biologist



—photos by author

Such words conjure up images of stampeding buffalo herds and pioneers racing their wagons to escape the rushing flames and pillars of smoke. Yes, the prairie fire could be a terrifying phenomenon to man and beast alike, and Hollywood movies have certainly done their best to perpetuate that idea.

Although the prairie fire could be dangerous it was also one of the oldest and best grassland management methods. For centuries plains Indians set fires early in the spring to encourage quick greening of the grasses in desired areas. Grazing buffalo would concentrate in these areas and the Indians would have a plentiful meat supply for the tribe. We will examine the use of controlled burning in modern grassland management, but let's first look at more of the fire's historical significance.

Fire has always been part of the natural perpetuation of native

grasslands. Periodic droughts often resulted in fires sweeping large areas every few years. Both drought and fire prevented moisture-loving trees and brush from spreading out of the river bottoms and onto the grassy plains. If not for this, Iowa's prairies might have been crowded out of existence before man ever set foot in the midwest.

Fires were additionally useful in burning away accumulations of dead, matted vegetation, or duff, from the ground. If duff was built up for several years, the above-ground growing points of the native grasses would be covered, possibly resulting in decreased growth rates and hardiness of the plants. Burning not only eliminated this hinderance but also released mineral-rich ash into the soil, supplying elements necessary for growing plants.

Today, our remnant tracts of native prairie are burned for even more reasons. When settlers

first came to the prairie they brought with them several "foreign" plants, such as Kentucky bluegrass, actually a European, and brome grass. These are commonly called "cool season" grasses because they begin growing early in the cool part of the spring.

Native grasses, such as big bluestem, switchgrass and indian grass, are known as "warm season" grasses. They don't begin their greening until long into the spring. This trait allows the cool season plants to tie up nutrients and water before the warm season species can make use of them. If this is allowed to continue for a number of years the Kentucky bluegrass and other introduced varieties will spread until they have effectively choked out the natives. It is here that burning can be useful.

Iowa has only four large tracts of undisturbed prairie remaining. These are Cayler Prairie, in Dickenson County, Hayden Prairie, in

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Howard County, Kalsow Prairie, in Calhoun County, and Sheeder Prairie, in Guthrie County. There are smaller prairie areas along railroad rights-of-way, by roadsides and in small rural cemeteries, but almost all other prairie succumbed to the plow or to heavy grazing decades ago.

Because the historical significance and uniqueness of the plant life is so great, it has become the task of the Iowa Conservation Commission to maintain these

large virgin prairies in their most natural conditions, thus preserving them for future generations to explore and enjoy. Wildlife management biologists, working closely with the State Preserves Board and faculty and students of the state's universities, are attempting to carry out this job of utilizing controlled burning techniques, while simultaneously providing good nesting cover for gamebirds and other wildlife.

Using fire crews and large volumes of water, these grassland management specialists carefully control the fires, burning only the portions of the prairie needing rejuvenation or removal of undesirable species. Most areas are not burned yearly but rather at intervals of several years, thus approximating the historical patterns of natural fires. However, certain small portions may be burned annually so that they may be scientifically studied and compared to unburned sections.

Burning usually takes place in late March or early April, as weather conditions dictate. By burning this early, the warm season grasses are quickly invigorated, and the cool season invaders are set back for several weeks. By mid-June the natives are lush enough to out-compete the cool season grasses, while providing relatively good late nesting cover for pheasants. Fall burning, although a common natural occurrence before settlement of the prairie, is not practiced at the present time. In this way the tall native grasses, often reaching heights of five to seven feet, offer fairly good winter cover for wildlife seeking shelter from the winds and snow.

In the spring of 1972, one-half of Cayler Prairie, near Spirit Lake, was burned off, leaving the other half for comparison by biology students and researchers.

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Indians burned prairies in spring to encourage quick greening, which attracted buffalo.





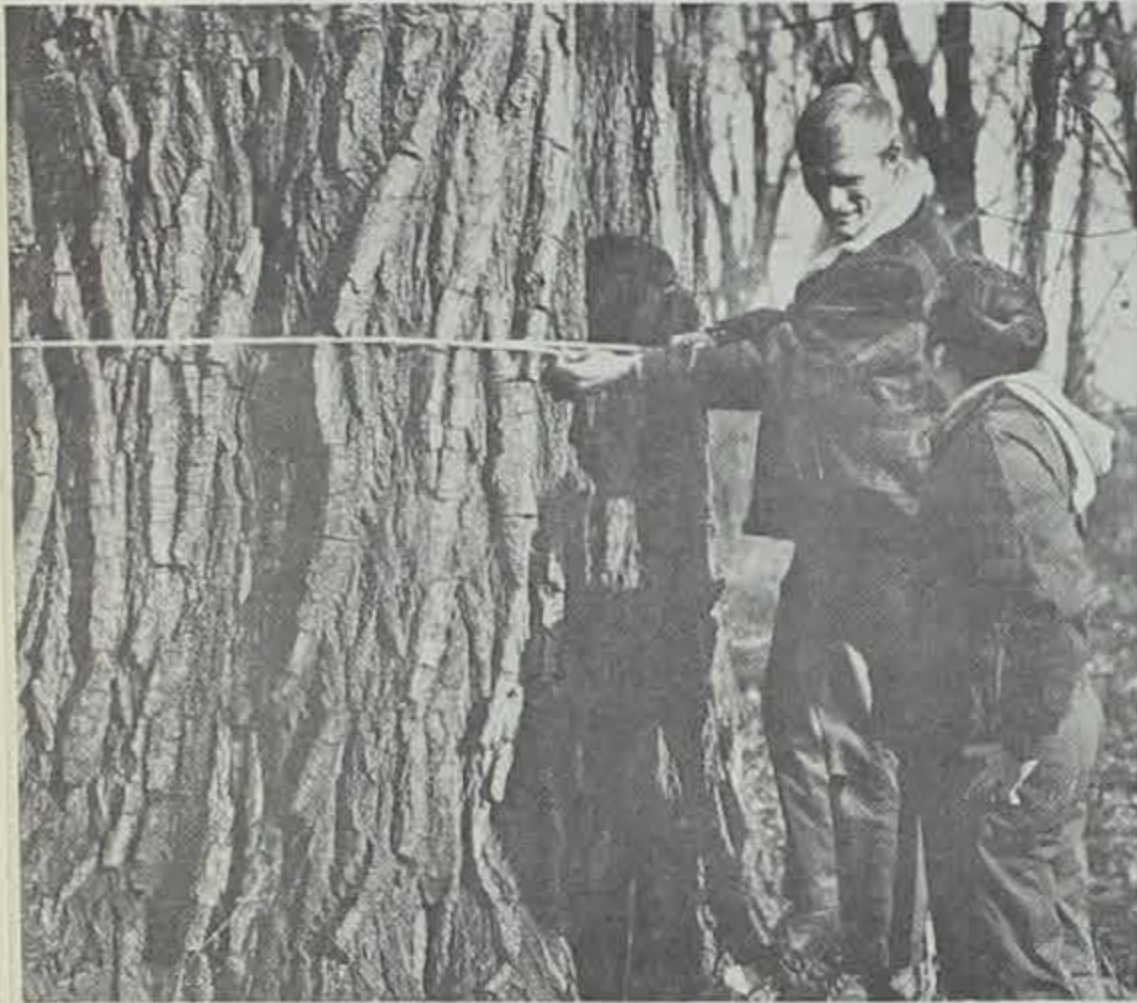
# FOREST SURVEY



keeping tabs on one solution to the energy crisis

Photos by Jerry Leonard

By Dan Seekins Field Supervisor  
Forest Survey North-Central U.S. Forest Service



Resource analysts now tell us that the energy crisis is "here to stay" and that our lifestyles may change profoundly as a result. The future of Arab oil supplies is uncertain at best, and our own oil reserves have been depleted badly by America's affluent and energy-intensive postwar lifestyle.

So how does the energy crisis relate to Iowa's forests? Simply stated, as our oil reserves and non-renewable resource supplies dwindle, the importance of our renewable forest resources will be correspondingly greater. Forest products represent a partial solution to the energy crisis. For example, wood requires only one-third the energy to be processed into construction materials as does steel and only one-eighth the energy of aluminum and concrete. Also, our forests can be renewed indefinitely with wise management in contrast to steel, aluminum, and other construction alternatives to wood. Of course, the energy crisis would be eased if non-renewable resources such as aluminum would be recycled, but so far there have only been token efforts in that direction. Forest products, and particularly wood pulp for paper, are very adaptable to recycling.

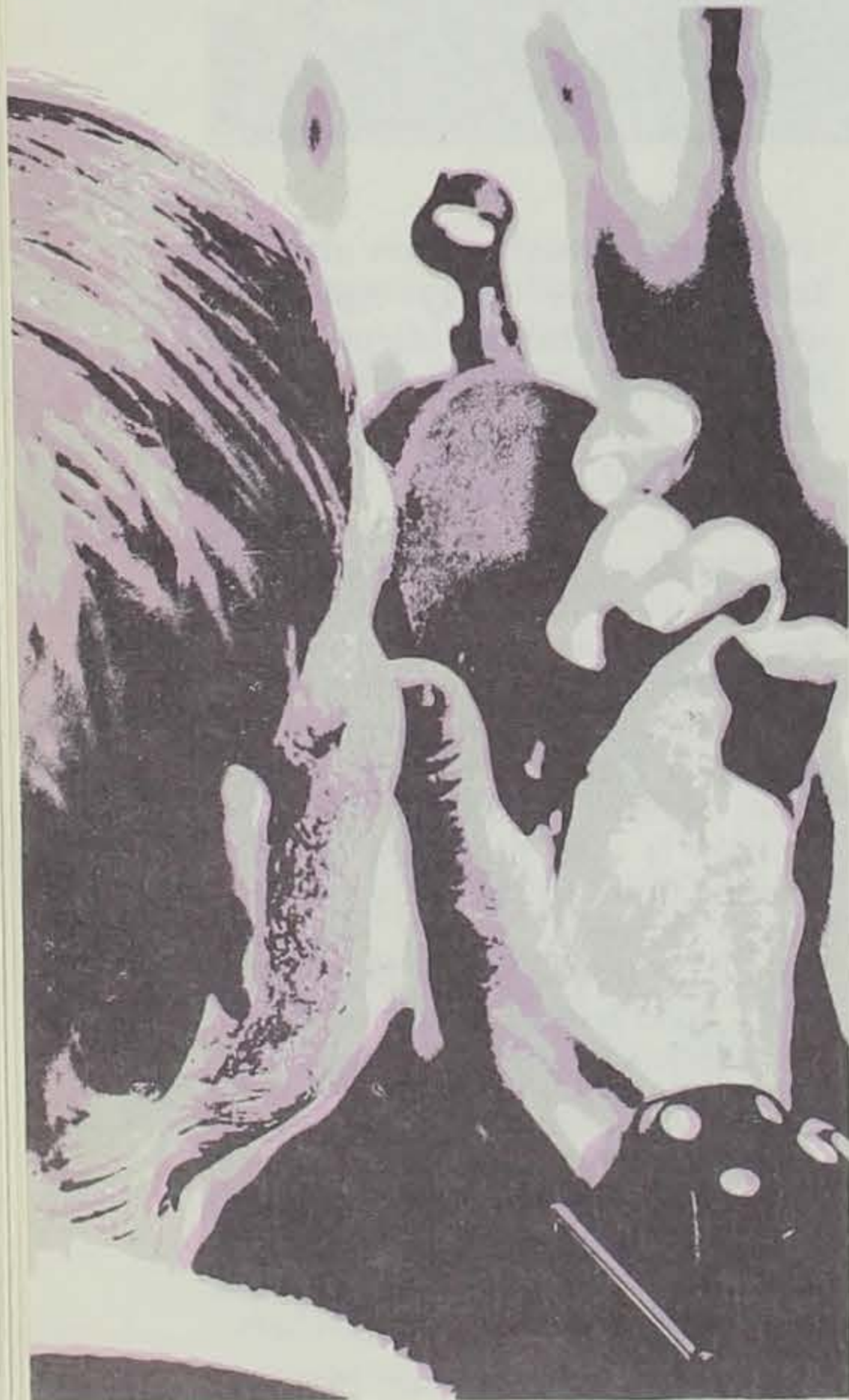
The energy crisis has also brought the haunting specter of cold homes due to shortages of heating oil, and many rural Iowans are beginning to think of their woodlots as a "hedge" against such shortages. Farmers are now likely to reconsider plans that they might have had to bulldoze their woodlots for pasture. It's estimated that nine acres of forest land will provide enough firewood on a sustained yield basis to heat an average home annually.

Notwithstanding the energy

crisis, Iowa's forest acres are becoming more precious due to the multitude of values that they provide. Not only does Iowa's forestland and forest products industry provide employment for some 9,000 people, but the forest gives us many other intangible values such as premium watershed cover, wildlife habitat, and recreational opportunities. Since only 7% of Iowa's landscape is in forest cover, these woodland acres provide a pleasant type of diversity when contrasted to Iowa's expansive agricultural lands. All these values, plus the increased importance of forest due to the energy crisis, have made it very important for our natural resource agencies to be aware of the current condition of Iowa's forests. Many questions need to be answered:

- What is the present acreage, timber volumes, and species composition of Iowa's forests?
- Has there been an increase or a decrease in forest resources since the last forest survey in 1954?
- What has been the impact of forest tree diseases, excessive forestland grazing, land-use changes, and other factors potentially destructive to forest resources?
- How much tree growth occurs annually on Iowa's forest acres, and much timber can be cut and yet leave enough for demand in future years?
- Will future timber supplies meet the demand for them?

The above questions and many others will be answered when the U. S. Forest Service survey team, based at Lake Macbride State Park, completes its comprehensive inventory of Iowa's forest resources. The results will be printed in a future issue of the CONSERVATIONIST. ☆





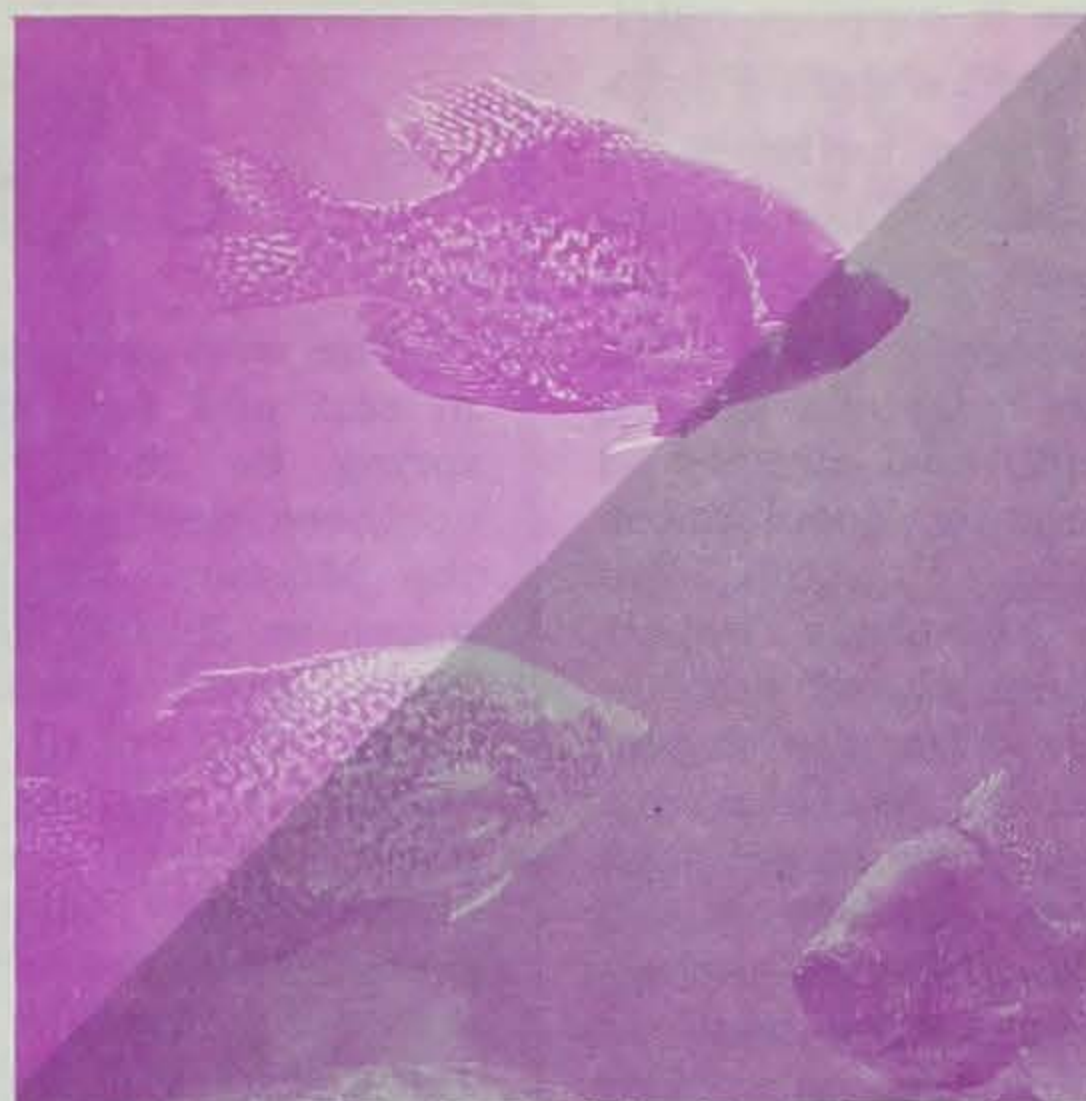
Have you ever wondered why lake water looks relatively clear at one time and at other times is quite murky?

This cloudiness in the water is called turbidity. Turbidity is caused by solid particles which are suspended in the water. Let us look at the types of particles which cause the water to be turbid and how they affect fish populations and you, the angler.

You have noticed that after a heavy rainfall the lake, especially near the stream that feeds the lake, takes on a brownish, dirty color. This is caused by silt and clay particles picked up from the land in the lake's watershed and carried by runoff water into the lake. The amount of silt and clay carried into the lake depends on the size of the watershed, the severity of the rainfall and the land-use practices of the watershed. The amount of silt carried into the lake will be much greater if the watershed has a high percentage of rowcrops than if it is primarily forest, pasture and hay. However, strip-farming, good crop rotation and farming-on-the-contour greatly lessen the amount of silt carried from the land.

What happens to these particles? Nearly all settle out on the lake bottom. The larger ones settle out first, while very small clay particles may take several weeks to settle out. Even after the silt and clay have settled out they can still add to the turbidity. High winds over a shallow lake can stir the water so much that it will pick up silt off the bottom and hold them in suspension. Also, certain fish, particularly carp, root along the bottom while feeding. Large numbers of carp will increase turbidity by rolling the water and stirring up the bottom mud.

Another factor that causes lake water to be turbid is the presence of plankton — microscopic plants and animals. The term "plankton" includes a wide variety of single and multi-celled plants and animals, most of which cannot be seen without a microscope. The plants are called phytoplankton



Commission Photo

## TURBIDITY

### Good or Bad?

By Dave Moeller

Fisheries Management Biologist

and consist mainly of algae. Algae contain chlorophyll and use nutrients in the water and sunlight to grow and reproduce.

There are over 100,000 species of algae and their colors range from green to yellow and brown. Populations of algae vary greatly, even from day to day. When water and nutrient conditions are right they grow and reproduce rapidly. The life span of these individual plants is actually very short. The size of the population may increase extremely fast, hit a peak, and then decline in just a few days. You have probably heard the phrase "a bloom on the lake." This simply refers to the coloration in the water that is caused by a tremendous population of one or more of these species. It is a combination of these algae populations that cause the water to appear green or even brown, depending on which species are the most heavily populated at the time. As phytoplankton grow they give off oxygen that is dissolved in the water. This is an important supply of oxygen, especially during the winter months when the ice cover prevents the exchange of oxygen from the air to the water.

Zooplankton are microscopic animals and have little power of movement. They feed on phytoplankton and organic matter and their populations also vary greatly. Under the right conditions they grow and reproduce rapidly, adding to the turbidity.

Even though plankton populations fluctuate greatly they do exhibit definite trends. Plankton populations reach their highest levels during the summer and fall months when water temperatures are highest. Cold water slows the growth of plankton and this causes the water to be clearer during the winter and early spring.

Just how does all of this affect fish populations and their catchability?

As silt and clay settle out, water depths lessen. If the rate of silt deposition is very high, the life of the lake for supporting fish populations is shortened. Iowa's watersheds contain a high percentage of farm land. Good farm practices such as farming-on-the-contour, strip-farming and crop rotation not only keep Iowa's fertile top soil on the land but also lengthen the life of our lakes.

Runoff water is extremely im-

(Continued on Page 14)



portant because it supplies nutrients to the lake water. Phytoplankton use these nutrients to grow and reproduce. They are the basic producers of food in the water environment. Some fish species such as minnows, gizzard shad and bluegill feed directly on these small plants. Zooplankton also feed on phytoplankton. Zooplankton are extremely important to fish populations because they serve as food for all fish just after they hatch. As these fry grow they switch to larger food items such as aquatic insects and later the predator species including bass, channel catfish, walleye and northern pike feed on smaller fish.

It is easy to see that without nutrients, phytoplankton and zooplankton there would be no fish present in our lakes.

Plankton population levels occasionally become extremely high causing the water to be very turbid. Fish that feed primarily by sight such as walleye, bass and northern pike then have difficulty locating prey fish to feed on. These game fish also have difficulty seeing your bait or lure and fishing success drops drastically. At the other extreme when plankton populations are so low that the water is very clear, the growth of fry and small fingerling fish is inhibited because there is little plankton available for food. Most anglers also know that when the water is very clear they have a tougher time catching fish. It is necessary for good angling and good growth of young and adult fish that moderate population levels of plankton exist. Extreme high and low turbidity are detrimental to both you and the fish populations.

Turbidity also controls to a large extent, the amount and location of rooted aquatic plants such as pondweed, lily pads and rushes. These higher aquatic plants need sunlight to grow. Turbidity lessens the penetration of sunlight in the water. When the turbidity is very low, sunlight may penetrate to the entire bottom of the lake. This can allow

## Warden's diary

The wild geese and ducks stop to rest and feed in Iowa every spring on their way to their northern nesting grounds. Along the Missouri River bottoms, as many as 300,000 snow and blue geese, plus several thousand ducks stay until the weather opens up further north. Iowa game wardens across the state observe them, then turn the responsibility over to the Minnesota and South Dakota wardens. We enjoy watching the spring migration, but after babysitting with a goose for three weeks we're glad to see them move out of the state.

When the main migration gets into Fremont County we don't have too much trouble with poachers, at least during nice days. When the weather is lousy we have to really keep our eyes and ears open. As the geese move northward from Fremont County they spread out and are not quite as concentrated, making it a little harder to watch over them.

I enjoyed this day. There were a lot of sight-seers interested in knowing where they could see another field full of geese, where the geese had been, and where they were going. Lots of nice people to talk to.

About three o'clock this afternoon I was watching through binoculars a car traveling slowly along a dike. The car stopped and a man got out with what looked like a shotgun. He walked up almost to the top of the dike and

these plants to grow excessively making it difficult for the angler to fish without hanging up on "weeds" on every cast. At the other extreme when turbidity is so high that the sunlight can penetrate the water only a few inches then these rooted plants cannot grow except right near the shore. The presence of some rooted plants is beneficial because it provides excellent fish habitat. Again, moderate levels of turbid-

By Rex Emerson  
Law Enforcement Supervisor

then started crawling through the heavy vegetation. I knew that about fifty yards ahead of him was an open water area, and several hundred ducks were sitting on it. I eased my car up fairly close to his and stepped out being careful not to slam the door or make any other noise. The best way to find him would be to follow his trail — a man sliding on his stomach through the grass and weeds leaves a good trail. I crawled very quietly until I was close enough to see the butt of the gun beside him. Just then a flock of pintail came in. When they were about twenty feet above the water my would-be violator raised to his knees, brought the gun stock to his shoulder, and ... "Click."

Being behind him it was difficult to see at first that he had a camera with a lense about two feet long mounted on a gun stock. He wanted to get a picture of pintail coming in with their wings cupped.

"Their wings do cup," he said, "but when you examine the wing it looks impossible." He explained that he was an artist and wanted to paint a realistic picture of pintail ducks. He was surprised to learn that I was behind him. Had he been a poacher he probably would have been watching over his shoulder.

One thing about picture taking, the season never closes and I guess you could say the sky is the limit. ☆

ity are beneficial to both fish populations and you.

Is turbidity good or bad? Moderation is the key word. Occasional periods of moderate turbidity due to silt is not harmful but excessive siltation will shorten the life of the lake considerably. Moderate turbidity that is caused by plankton populations is beneficial to the growth and balance of fish populations and aids you in filling your stringer. ☆

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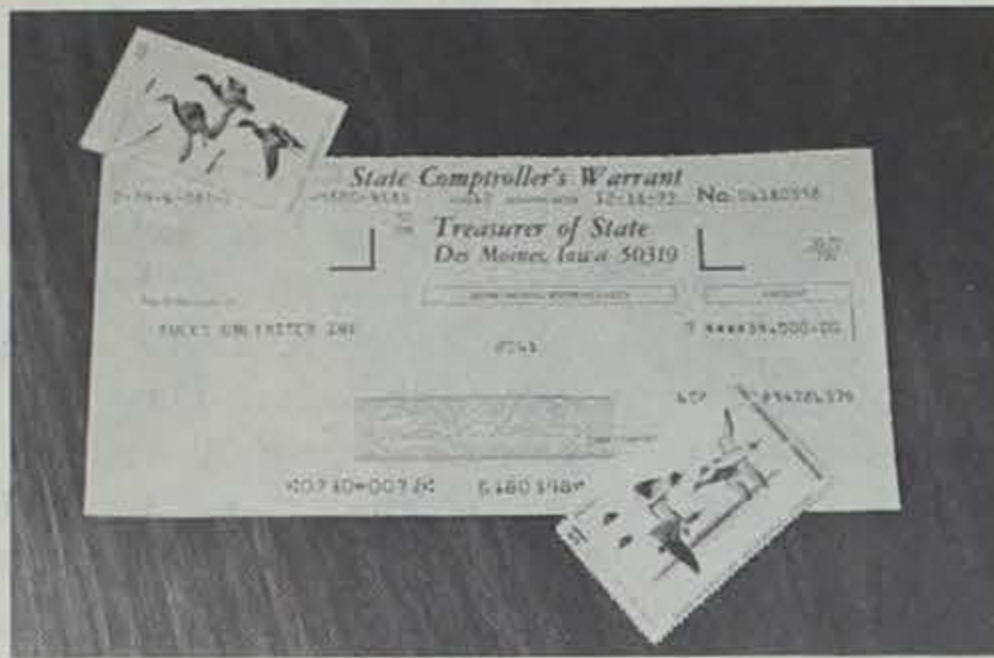


photo by Ken Formanek

## IOWA SPORTSMEN INVEST IN CANADA WETLANDS

Fred A. Prievert, Director of the Iowa Conservation Commission recently presented John Spence, Iowa Chairman of Ducks Unlimited, a check for \$34,000 which will benefit waterfowl and many non-game species. The funds will be used for the development and restoration of marsh lands in Canada.

The funds are the result of revenues collected from the sales of the state's \$1.00 Migratory Waterfowl Stamps. Approximately 70,000 stamps are sold annually.

Fifty percent or more of the revenue collected from the sale of state duck stamps is used directly in Iowa to benefit various waterfowl programs. None of the money is used for administrative purposes — all of it is used for acquisition and restoration of waterfowl wetlands.

Because the remaining major waterfowl production areas are in Canada, the state legislature in 1972 saw fit to allow one-half of the funds collected annually to be spent outside the United States.

The legislators also approved for the ICC to enter into contracts with nonprofit organizations such as Ducks Unlimited, which incidentally was one of the sportsmen groups who recognized the need for this type of legislation.

Prievert said the funds will be used to develop the One Man Unit of the Mawdesley Wildlife Management Area, a 14,000 acre tract east of The Pas, Manitoba. "This area produces good numbers of various species of ducks when water conditions are satisfactory. Frequently, however, extreme water level fluctuations occur in this area which adversely affect waterfowl reproduction," Prievert explained. "Our contract with the DU for the use of these funds calls for building water control structures and ditchings to regulate water fluctuations and the end result will be a much more desirable marsh which will benefit all wildlife species, both game and non-game." Iowa's contribution is part of an overall project in this region. ☆

## TROUT . . .

(Continued from Page 5)

ditional streams have been opened for stocking. New state areas containing trout water were also purchased in 1973 under funding provided by the Governor's Open Space Program. These areas will be opened for fishing in 1974. Some possibility even exists for the reintroduction of brook trout experimentally on one of these areas. Additionally, the experimental stocking on portions of the Upper Iowa River has

proven successful and is being implemented on a yearly basis. Details on all of these new and old programs are always available by stopping by or writing the NE District Office at Backbone State Park, or any of Iowa's trout hatcheries.

In the era of the great energy crisis, there certainly was no crisis for trout fishermen in 1973 or ahead in 1974. If trout fishing is your sport, sharpen up those hooks and get ready for a "fishful" year. ☆

# Classroom Corner

By Curt Powell

Administrator

Conservation Education Center

The Conservation Education Center will have the following courses taught by Drake University. These are residency programs, offer three semester hours credit each, and may be used for graduate or under-graduate.

### June 17-27

Three semester hours — Science Education 131. Elements of Environmental Education. Section 601.

Three semester hours — Science Education 199. Prairie and Woodland Plants.

### June 30 - July 9

Three semester hours — Science Education 199. Wildlife and Insects.

Three semester hours — Science Education 199. Geology and Soils.

### July 22-31

Three semester hours — Science Education 131. Elements of Environmental Education. Section 701.

Three semester hours — Science Education 199. Water Plants and Animals.

### August 5-14

Three semester hours — Science Education 199. Prairie and Woodland Plants.

Three semester hours — Science Education 199. Wildlife and Insects.

For more information concerning registration forms and fees contact Dr. Robert Vanden Branden, College of Education, Drake University, Des Moines, Iowa, or the Conservation Education Center, Route 1, Box 138C, Guthrie Center, Iowa 50115, or call toll free — 1-800-362-2416 and ask for the Summer Sessions Office. ☆



**PRAIRIE FIRE . . .**

(Continued from Page 11)

Walking across the prairie in August one could easily observe differences in the two halves. Big bluestem, averaging shoulder height, grew in profusion on the burned half, but was sparse on the unburned half. Likewise, wildflowers seemed overwhelming on the burned side, which also seemed to harbor good broods of pheasants.

All of this so far seems to imply that burning may be the answer to all our pheasant production problems. This is definitely not the case. While fire is an excellent habitat management tool for native grasses, it can have just the opposite effect on grasslands and roadside ditches comprised entirely of brome and other cool season grasses. The best pheasant nesting cover in brome, for example, is often the residual dead grass from the previous year. When this is burned, it usually prevents the cool season grass from growing until it is too warm and dry for the plant to add much growth. There is, as a result, almost no suitable cover during the peak of the pheasant nesting season. Because of this the Conservation Commission will continue to oppose burning of most private grasslands and the illegal practice of roadside burning. These areas are far too important to the future of the pheasant in Iowa.

Our native prairies, however, can logically be maintained as the unique areas they are through the use of controlled fires. Continuing studies on burning will tell us more about the long-term effects and most practical means to go about the job. And for years to come Iowans will be able to visit these prairies to recall the grandeur of nature before our ancestors settled this great land.★

**SPIRIT LAKE FISH HATCHERY (Continued from Page 9)**

numbers of adult walleye, and it is possible to observe all phases of walleye hatching.

During the summer and fall months, there are muskie being reared in the hatchery. The hatchery contains a lobby which features five aquariums displaying many species of fish found in Iowa.

Commission personnel are always available to answer your questions and to explain the hatchery operation. A narrated slide series about the hatchery

operation will be shown to any group that has obtained a reservation.

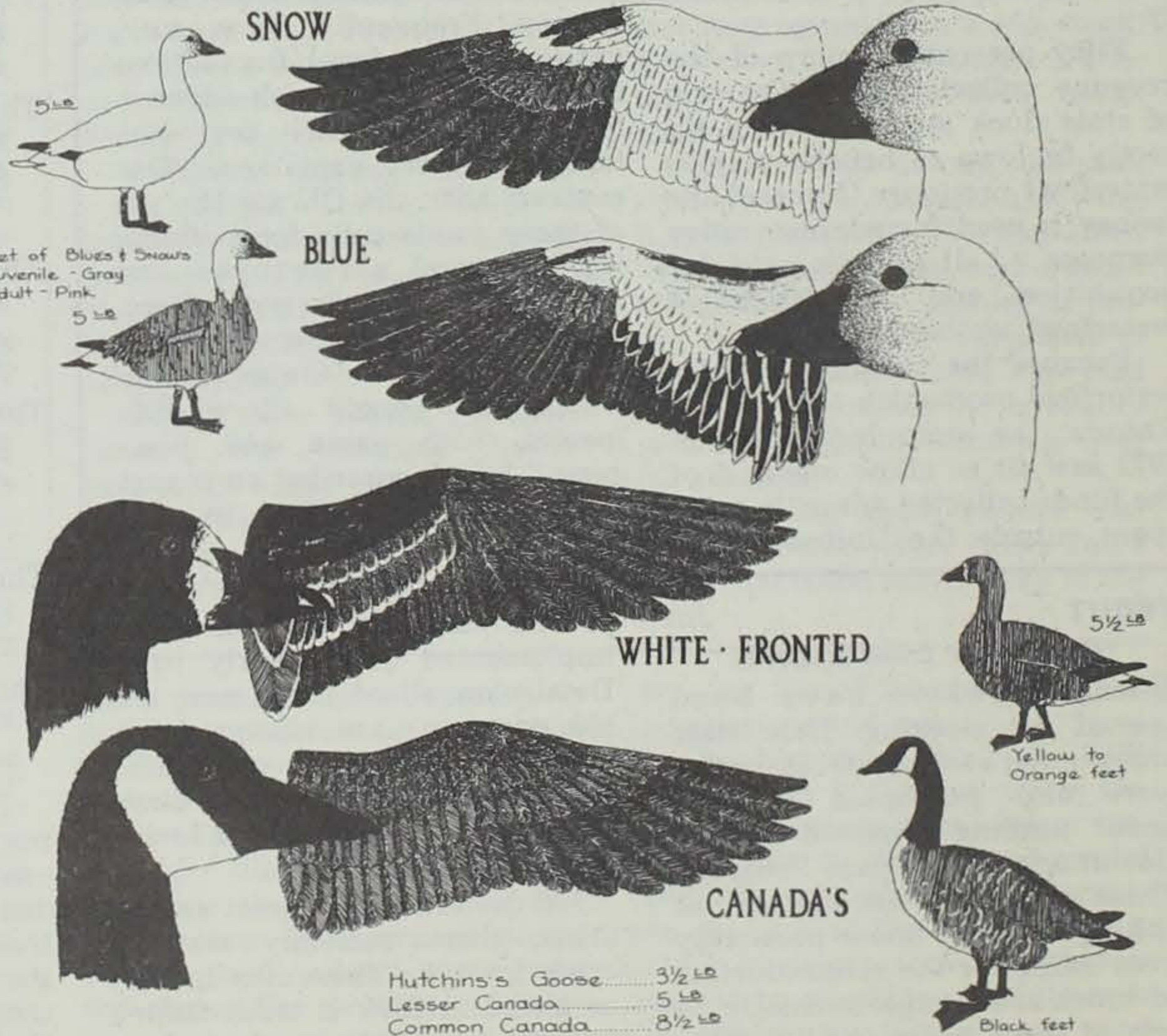
When walleye hatching is in full swing, the hatchery is open to the public 24 hours a day 7 days a week. Between Memorial Day and Labor Day the hatchery is open from 8:00 a.m. to 4:00 p.m. on weekdays and from 10:00 a.m. to 6:00 p.m. on weekends and holidays. The remainder of the year it is open from 8:00 a.m. to 4:00 p.m. on weekdays.

Come and see your fishing license money in action. ★



**KNOW YOUR GEESE ?**

These geese commonly migrate through Iowa. They provide an exciting spectacle to observers each spring and a challenge to hunters during the fall season. Some unusual migrating waterfowl to watch for are the Ross's Goose (similar to Snow Goose, but smaller) and the large Whistling Swan.



Hutchins's Goose..... 3 1/2 lb  
 Lesser Canada..... 5 lb  
 Common Canada..... 8 1/2 lb

Yellow to Orange feet

Black feet