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Number 4

Spring, Water Phenomenon, and Early Fishing



Jack Kirstein Photo.

Your spring fishing will be more productive if you know how the fish are reacting to the changing water conditions.

This will help your spring fishing!

Jim Mayhew
Fisheries Biologist

ter several months of dismal solitude, isolation, and the doldrums winter, spring enters our world with magnificent splendor. 'Tis the time of the year that all of us that consider ourselves fishermen are afflicted by an unscratchable itch called "fishin' fever". The symptoms of this disease are easily identified, especially by those who have experienced an attack. Most of the victims exhibit a perpetual staring into space, with a far away look, deep set within their eyes as though they were recalling a past experience, perhaps at a nearby lake or stream. There is also a distinct tendency to associate with others that have the same symptoms. A majority of the spare time is spent gazing at newly developed gear with a wanton glare, or polishing the old reliable with care and attention. There is no cure for this disease, but there is a temporary relief which can come only from landing the first fish of the season. Spring is a very unstable period in the life of most fishes, too. Not only is their environment changing rapidly, but due to this, physically

they are undergoing rapid changes in biological processes. Fish are cold-blooded animals, which means their basal metabolism or the rate at which the body operates, such as heart beat, breathing, digestion, etc., is controlled entirely by environmental temperatures. When water temperatures fluctuate, the biological processes and activity of the fish also reacts at a similar rate. In other words the physical characteristics of water are directly responsible for the well-being of fish life, and of these temperature is the most important. If a vertical series of water temperature records were taken at regular intervals of depth from the surface to bottom just before the ice goes off, it would be found that the temperature immediately under the ice is very near the freezing point. At successive depth intervals it is gradually and very slightly warmer. Bottom temperatures differ somewhat in different lakes, but they tend to be near the temperature of maximum water density or 39.2° F. This condition is one of colder but less dense water on top of warmer but heavier water.

(Continued on page 30)

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CIRCULATION THIS ISSUE.....53,000

COMMISSION MINUTES

Des Moines, March 13

COUNTY CONSERVATION PROJECTS

Black Hawk County was given approval for a 24-acre addition to Popp Access to be used for an access road and parking area. Black Hawk County was also given approval for the acquisition of 20 acres at a cost of \$500 to be used for a fishing area and boat launching access to the Cedar River. The Commission did not approve a request by Black Hawk County for the acquisition of land for Myrtle Craft Park because of an unclear title.

Delaware County received approval for the acquisition of seven acres at a cost of \$500 for use as a fishing, picnicking, and boating access to the Maquoketa River.

Ida County received approval for the acquisition of ten acres by gift as an addition to Moorhead Park.

Cerro Gordo County received approval for the acquisition of sixty acres of marsh area at a cost of \$135 per acre.

Grundy County received approval for the acquisition of one acre under management agreement with the Highway Commission to be developed as a roadside park. A development plan for this park was approved.

The Commission met with a delegation from Story County concerning the possibility of adding \$200,000 to the capital improvements bill to be presented to the General Assembly. Such addition would be earmarked for the construction of a dam and spillway on a project by the Story County Conservation Board. The Commission approved the lake as a possible project, but recommended it be presented as a separate bill.

FISH & GAME

The Commission approved the retirement of George Kaufman and Charles Adamson from the Conservation Officer force effective April 1. The two men were invited to the April Commission Meeting.

Approval was given for the taking of bids on a steel service building to be built at the Otter Creek area.

Action on Policy No. 63 concern-

ing trapping by Commission employees was deferred pending an Attorney General's Opinion.

The Commission established the catch and possession limits on largemouth and smallmouth bass on the boundary waters of the State at 10 daily catch, 20 possession in aggregate.

An option was approved for the acquisition of 62 acres at a cost of \$40 per acre for use as a fishing access to the Iowa River in Iowa County.

A claim for crop damages on land adjacent to Big Marsh, Butler County was denied.

The acquisition of 3.8 acres including a residence near McIntosh Woods State Park was approved at a cost of \$17,500.

A report on deer crossing signs for state highways and the Highway Commission's offer to erect and maintain such signs if furnished by the Commission was accepted. Approval was given for the purchase of 278 signs at a total cost of \$4,865 as well as eighteen signs for the Interstate System at a total cost of \$6,845.

LANDS & WATERS

Additional information on the State Park Classification project was given to the Commission.

The removal of meters from refrigerators in State Park cabins was approved.

The Commission agreed to the cancellation by Ralph Marsh of a boat concession contract at Lake Manawa State Park. The contract was awarded to Dr. Benjamin Lynch.

A permit to two cottage owners on West Okoboji Lake, Dr. Donald Todawig and Walter Mendenhall, authorizing them to take water from the lake was approved providing proper electrical precautions are observed.

A request by Iowa-Illinois Gas and Electric Company to purchase state-owned land at Bettendorf was approved subject to Executive Council approval.

The Commission authorized the purchase of a school bus to transport prison labor from Anamosa to work sites.

The Commission approved the renewal of a permit for Clark and West, Incorporated to maintain a boat channel under the Venetian Village bridge at Clear Lake.

The Commission instructed the staff to plan another Conservation Officer's Candidate School for late spring.

After meeting with a delegation from the Oskaloosa Lions Club concerning the concession at Lake Keomah, the Commission instructed members of the staff to report back in April after studying the situation.

Approval was given for the letting of a contract for the Julien Dubuque Gravesite. The cost will be \$12,938.80 and includes construction of an access road and parking lot. Contract was awarded to Muscatine Construction Company.

REPORT FROM THE DIRECTOR

Glen G. Powers

Ed. Note: Beginning this month, Glen Powers, Director of the State Conservation Commission, will discuss some of the problems and programs facing the public on the state and national level. This month Powers discusses a few of the concepts in a changing outdoor recreation picture.

We are entering a new era in the field of outdoor recreation; an era that heralds a new approach to this vast national activity. We find the federal government becoming increasingly active in attempting to meet a demand that many states have been hard pressed to meet.

The tremendous increases we have seen in the tempo of outdoor activity have not been accidental. Governmental agencies have worked hard to sell the public on the various opportunities for leisure-time enjoyment outdoors. This selling job has paid off and we now find ourselves in the position of having to deliver the goods we have worked hard to sell.

This, coupled with the innate need of people to be in the outdoors and enjoy its many facets, has brought a "boom" in the whole recreation picture over the nation.

To meet this increasing demand for recreation areas as well as decreasing supply of available areas, we find a gradual change in a traditional approach to the citizen and recreation. The various agencies involved are now looking toward "paying" for the enjoyment of the outdoors.

The "duck stamp", hunting and fishing licenses, camping fees and the like are familiar fees most of us have paid. Now we find increasing support for "use stickers", a flat fee levied for the use or entrance on state or federal areas. We will discuss this "fee" concept in succeeding months.

The participation between state and federal agencies under the new Bureau of Outdoor Recreation will require a state to have an over-plan for recreational development. Iowa is ahead of most states in the development of such a plan. Our present plan is especially designed that it can be constantly up-dated. It is not a 25-year plan, or a other so-many-year plan. We will explain and review this plan in later issue of the CONSERVATIONIST.

GENERAL

The Superintendent of Engineering and Construction reported on the Small Lakes Cooperative Program.

Travel authorizations were approved for: U. S. Coast Guard School on Uniform Boating Laws at St. Louis, Missouri; The Midwest Pheasant Council at Detroit, Michigan; and the LaCrosse Sports Show at LaCrosse, Wisconsin.

Wilbur Rush, who recently resigned as Director of County Conservation Activities, was commended for his years of service.

WILD POISONS

The poisons of most insects and reptiles are highly complex organic chemicals. And while the venom of some ants is simple, honest formic acid, the poisons of most stinging insects are acids that are further beefed up with toxic proteins.

Bee venom, for example, is made up of several poisons. The main jolt is caused by apitoxin which, when injected by the sting of a bee, breaks down cell protoplasm. At the same time, certain complex enzymes cause the liberation of histamine in the bite area. It's this histamine that causes the severe local allergy and many of the symptoms of a bee sting.

Chigger irritation isn't caused wholly by burrowing into human skin, but by a severe local irritation caused by chigger spit. The chigger exudes saliva at the base of a human hair, causing a breakdown of skin cells. The resultant puddle of saliva and skin cells is

devoured by the chigger, and certain enzymes remain to cause swelling and intense itching.

Snake venom is also a highly modified saliva. It is a clear, thick fluid that dries to a crystalline solid.

It is a mixture of proteins involved to be accurately analyzed. The venom is readily digestible and might even be said to be nourishing.

Snake venom does various jobs. Some of its elements may have overall "haemotoxic" effect, destroying red blood corpuscles, the walls of blood capillaries. It is the dominant property of viper venoms—the rattlers, copperheads and water moccasins. Other snake groups—such as coral snakes, cobras and mammoths—possess "neurotoxic" venoms that paralyze the nerves controlling respiration and heartbeat. But all poisonous snakes, to some degree, combine these two venoms. The big Gaboon viper of North Africa is the ultimate, with a lethal venom that's almost equally neurotoxic and haemotoxic.

Some of our tiny shrews have modified salivary glands that liberate neurotoxic venom. This venom is not dangerous to man but it occurs in such tiny quantities but it's rough on bugs and mammals.

It may even aid shrews in eating small snakes, and it's comforting to know that some of us mammals can give as good as we

—Madson and Kozicky, Oil Mathieson Company.



Opossum

Jim Sherman Photo.

IOWA MAMMALS

Eldie Mustard
Game Biologist

OPOSSUM

Didelphis marsupialis

Identification—Total lengths of adults range from 24-34 inches including 10-13 inch tail. Weights vary from 4-14 pounds. Opossums are about house cat size with a white face, pointed nose, rounded ears, and nearly naked prehensile (grasping) tail.

Range—Throughout Iowa.

Habitat—Lowland to upland areas, preferably near water.

Reproduction—Breeding occurs from April-May and after a 12.5-day incubation period 5-18 young are born. These young are actually no larger than embryos and 20 of them can easily fit into a teaspoon. The young must find their way out of the mother's pouch where they attach to the 13 or fewer nipples for 65-70 days. Those which do not attach to a nipple do not survive. Opossums have one litter annually.

Habits—Primarily a nocturnal creature, the opossum is solitary and does not mate during mating. Its food habits are so varied the opossum is well called an omnivore—it will literally eat anything including fruits, corn and insects, small mammals, fish, and all types of carrion. Besides being Iowa's only marsupial mammal, its main claim to fame, for which it is notorious, is its habit of "playing possum", feigning death, when endangered. Opossums are good climbers and use their prehensile tails to their advantage. They are usually inactive during winter cold spells, but individual opossum may pound out even during the coldest weather. This often results in freezing of their ears and tail and the subsequent loss of portions of these. It is slow and

stupid, therefore it has many predators such as dogs, foxes, and great horned owls.

Status—Perhaps the main function of the opossum is to serve as Nature's garbage can in the removal of carrion. Its fur, which is not valuable, is coarse but is used for coats and trim. In the South some consider its flesh a delicacy, especially when roasted and served with sweet potatoes. Iowa has a hunting and trapping season for opossum.

BADGER

Taxidea taxus

Identification—Male badgers are from 25-30 inches in length, including a 5-6 inch tail, and weigh 12-24 pounds. Females are somewhat smaller. Badgers are equipped by nature for digging and have short powerful front legs with extremely long heavy claws. They have a white stripe on forehead and have black feet.

Range—Throughout Iowa.

Habitat—Dry rolling uplands.

Reproduction—One litter per year varying in number from 1-10 and averaging 2-3. Badgers breed in fall but there is almost no embryonic development until mid-February with the young born in May and June. This lack of early embryonic growth is typical of the weasel-skunk family (Mustelidae) and is called "delayed implantation". The den may be 2-6 feet below ground and from 6-30 feet from the burrow entrance. Young remain with mother until late summer.

Habits—The food habits of the badger make him a true friend of the farmer for included in his diet are meadow mice, ground squirrels, pocket gophers, moles, and insects. It also eats rabbits, birds, eggs, snakes, lizards, snails, and carrion. This animal is a powerful digger and digs out most of the

rodents it eats. A solitary nocturnal creature, badgers are rarely seen, but evidence of their presence is readily observed when one sights the holes the animal digs when hunting its prey. If a large mammal, such as a skunk or rabbit, is obtained, a badger may dig a hole and take its food in with it and remain underground for several days. In the north, badgers sleep part of the winter, with perhaps an occasional hunting trip during this time. It can emit a strong musk odor, if cornered, from glands near the anus; a cornered badger is the picture of ferocity and can easily handle most dogs.

Status—In days gone by, when men depended on horses for transportation, holes dug by badgers were often the cause of a horse breaking its leg. Modern farmers may think the badger holes on his farm are unsightly, but the benefits from the destruction of rodents more than offsets any damages badgers may do. The holes which badgers dig are universally utilized by other animals for escape or dens, thus the badger is beneficial to many forms of wildlife. Presently an unimportant fur species, there was a time when badger hair was used for fine shaving brushes and the fur commanded a high price, but modern technology, with synthetic bristles, brushless shave cream, and electric razors changed that. Badgers may be taken in Iowa during the open trapping season.

WOODCHUCK (Ground Hog)

Marmota monax

Identification—A large stocky rodent with a flattened head, woodchucks are 18-26 inches long with a furred 5-6 inch tail. They weigh from 4-10 pounds with large ones up to 14 pounds. Color varies from yellowish to dark reddish-brown.

Range—Throughout Iowa.

Habitat—Dry soil in fields, open wooded areas, rocky slopes and clearings.

Reproduction—Males mate with several females in March and April with the annual litter of 3-5 young born after a 31-32-day gestation period.

Habits—The woodchuck is a rather solitary animal and is most commonly abroad in the early

morning and evening. Burrows built by woodchucks are up to 30 feet long and may be 5-6 feet deep. Food consists of a variety of green plants. They have a period of hibernation in the winter.

Status—Woodchucks are hunted for sport in some areas, but their primary value comes from the burrows they construct which are used by cottontails, foxes, skunks, and other wildlife. They can be a pest around a garden because they savor fresh greens. They are not protected in Iowa, but perhaps should be because their dens are an asset to many forms of wildlife.

TURN WORMS FREQUENTLY

A couple of days after gathering nightcrawlers, check them by removing dirt from the top of your worm bucket or box. Remove those that may have been injured in capture. Every now and then, take worms that work to the bottom of their container and move them to the top.

Pick a night during or after a rain to gather nightcrawlers. If you are not equipped with a shaded lens on your flashlight, do not put the beam directly on the nightcrawler. Keep just the edge of the beam on the crawler giving just enough light to make your move. A direct light will put them down in a hurry.

KEEP TIP UP

When playing a fish on light tackle, keep your rod tip pointing at the fish at about the 10 o'clock position. Let the rod tip do the work and keep the pressure on. A one-pound test leader will whip a big fish if you keep these points in mind.

Do not stand in boats, rock boats or engage in other horseplay. A boat in deep water is no place to take careless chances. Remain seated, even when pulling in the anchor, and change seating positions only in shallow water.

STRINGING FISH

When stringing fish, put the stringer through both jaws or lips. After all, a fish keeps both jaws clamped tight while in nature. Stringing through the bottom jaw or lip only pries the fish's mouth open in an unnatural position causing drowning.





Spring burning is costly in terms of soil damage that is done.

FIRE, BURN . . .

Bruce Plum
District Forester

Most forest and grass fires occurring in Iowa are man-caused. Carelessness in burning refuse or piles of brush often results in wildfire. Other causes of wildfire are: careless smokers, campfires left burning, and some intentional fires.

Most fires in Iowa occur during dry periods in the spring just before new vegetation makes its appearance and in the autumn during the period between leaf fall and snow fall. Spring fires are more likely to be dangerous and destructive due to high winds which are characteristic at this time of year.

We are fortunate here in Iowa in that our fire danger periods are normally short. During exceptionally dry years the fire danger period can extend over several months including the entire winter.

Prevention

Most fires are preventable. Burning brush piles when there is a light blanket of snow or after new vegetation has developed in late spring will normally prevent fires from spreading. One should pick a day with little wind to be further assured of retaining the fire in the desired location. Disposing of smoking materials and recently used matches in a proper manner may prevent a good deal of destruction and save many man hours of labor in fire suppression.

Hunters and other hikers can prevent a fire by taking a few seconds to clear away debris with a foot and using a heel to make a dent in mineral soil to bury their burning tobacco. Breaking a match in two before tossing it away will be assurance the match is no longer burning. Automobile passengers using the car ashtray can prevent roadside fires.

Campers should make sure their fire is out before leaving it. Dous-

ing it with water, stirring with a stick and dousing with more water will make it safe to leave.

Fire raging through the woods will injure and kill large trees. An injured tree will develop a scar that is an entrance for wood rotting fungi. Trees injured in this manner will rot from within and become useless for lumber or any other forest product.

Wildfire in the woods destroys the seedling trees which would make tomorrow's timber. It also destroys food and cover for wildlife.

Fire on the forest floor destroys the litter and humus which is a huge sponge for holding back excess rain water. Rain falling on recently burned timberland or grassland results in quick run-off of water which carries with it precious top soil. This top soil, priceless in its natural setting, becomes a liability as it clogs our streams.

Burning Is Harmful

A few people persist in burning fields and fence rows to remove last season's vegetation. This is one of the quickest ways to rob the land of valuable organic material that should be returned to the soil. Two reasons often cited for it are the mistaken beliefs fire will control weeds and improve the grass stand. Weed seeds are already in the soil. Burning makes an ideal seed bed for a weed crop. Green grass coming in on fire blackened soil only looks greener. Burning actually reduces yield as much as 50 to 70 per cent.

Burning fence rows can be costly. Fire will work around the base of fence posts hastening rot and shortening their period of usefulness. Even with metal posts burning removes protective coatings and speeds rusting of both posts and wire.

Some farmers burn dry litter to remove the fire hazard. A double

furrow near the road ditch or other places where fire may originate will be effective in preventing accidental fires from spreading into the field or timber.

Fire Breaks

Many pine plantations are being established in Iowa. Where they are being established near public roads a fire break should be made along the fence row. Also fire breaks should be placed through the plantations to divide them into blocks. These fire breaks are usually the width of a disc. They can be maintained by pulling discs through the break several times during the growing season to keep down vegetation which could become a fire hazard in autumn and spring. Providing there is no high wind this break will stop the advance of a fire. The additional work in maintaining a fire break is well worth it when one considers the havoc one cigarette could cause if it were tossed out of a car by a passing motorist.

Care in the use of fire will bring about greater productivity in our timbers and grasslands. Fire prevention will also enhance our wildlife heritage. To paraphrase an old adage: A minute for prevention is worth many hours donated by volunteer firemen in fire suppression.

THINGS YOU MAY NOT KNOW

By pushing their trunks up above the surface of the water and breathing through them, elephants can walk on the bottom of a river.

The orange coloring in a prairie dog's eyes permits that animal to withstand the intense glare of the sun.

Buffle-head ducks use old woodpecker holes or natural hollows in trees as nesting sites.

PREMEDITATED CAMPING SURPRISES!

Jack Kirstein

To add spice to your camping this summer, try planning for the unexpected in a way of itinerary.

If you enjoy finding a bit of beauty or an unusual or unique area while traveling, if the old beat roads and rural scenery appeal to you, then why not plan to go on an exploring side trip part of your next camping excursion.

Camping should be more than a weekend of sleeping in a tent trailer. The state park campsite is an ideal base of operations from which you can take many enjoyable side trips to see even more of Iowa's interesting and beautiful scenery.

Once the campsite is set up, and the kids have chased up and down the park trails until they have them memorized, it's time to plan for an exciting and eventful day of travel on the back roads of the county or area you choose.

Variety

Rare indeed is the Iowa county that does not boast at least three or four distinctly different types of terrain inside its county limits. Many counties also are providing their own roadside parks for your enjoyment. Visit the county seat and get a list of these areas and parks. You'll find that the Courthouse Historical Society has many items of interest also, from completely restored buildings of interest down to an old briar pipe or spinning wheel owned by an illustrious resident. Some of these are small museums, others maintained on their original sites.

This is the kind of trip that cameras can record to open the eyes of your camping friends. Without a picture, who would believe that such beauty or interest could exist just a half mile or so

(Continued on page 31)



A rig like this makes short work of setting up camp. Off-the-ground camping is becoming increasingly popular.

Teachers' Camp—Learning, Credits, and Fun

Carol Buckmann

Have you been looking for a way to get the needed graduate or undergraduate science credits but still want a fun-packed summer while you learn? If this fits your situation, then read on, this may be the solution.

Teachers' Conservation Camp at Springbrook State Park, seven miles north of Guthrie Center, offers three paths to an enjoyable summer—learning, credits and fun. They learn about Iowa conservation teachers and students plan to teach after graduation for three or six hours credit. At the end of a stay at camp, students find they're not only richer in credits and knowledge but have made one of the most memorable summers of a lifetime, as any former camper will verify.

Three Sessions

Three hours credit are all you need, then one three-week session will fill the bill. There are two sessions offered and six credits can be earned by staying for both.

For those who find it impossible to attend the first session starting June 9 to June 29, there's a three-week session starting July 10 to August 10. This last session is a repeat of the first.

The first and third sessions are Biology 104 and forest resources, Biology 105, fish and wildlife management are taught. In the middle weeks, Biology 105, June 30 to July 2, rocks and minerals, soil and land management, and water conservation are stressed. These courses are taught by experts in various phases of conservation.

The school is different from the one to which you're accustomed. The lectures are taught outdoors. The lecture room is used for rain-

evening lectures and programs. The outdoors serves as the classroom and "learning by doing" is the theme. It is sponsored by the State Conservation Commission, State College of Iowa, and Department of Public Instruction.

Students live at the group camp at the 680-acre Springbrook State Park where the sparkling lake provides fishing or swimming at a supervised beach. There is also hiking, hiking and sports for several hours.

The park's abundance of native plant, animal and bird life as well as dense wooded areas, open grasslands and nearby Sheeder prairie make the area an ideal laboratory for an outdoor school. But not all that is done at the park, students travel approximately 1,000 miles in various areas to see examples of conservation in action. Don't worry, 50-mile physical fitness is not necessary. The students travel in a bus, affectionately called the "Green Hornet", taking them within short walking distance of points of interest.



Fred Kent Photo.

IOWA'S LARGEST STATE PARK—LAKE MACBRIDE

To many eastern Iowans, Lake MacBride near Solon, between Iowa City and Cedar Rapids, is a favorite summer haunt. MacBride is Iowa's largest state park with the largest state-owned artificial lake. The lake is 950 acres, which when combined with state-owned lands and lands under license from the Army Corps of Engineers, adds up to a total of approximately 3,000 acres.

A new campground with primitive facilities is being added this year in addition to the existing camping area. This second camp-

ground will be located on the north shore of the south fork. It will have a boat ramp and docks for those campers who bring their own boats.

The existing campground with modern restroom and shower facilities has been enlarged and the entrance road to the park has been blacktopped.

The dam in the foreground marks the division between Lake MacBride and the Coralville Reservoir. The cleared area to the lower left of the dam will be the

site of a new facility planned by the Commission. Proposed is a Fish Management Station to serve Lake MacBride, Coralville Reservoir, and other fish management responsibilities in that part of the state. Access would come from the park road leading to the present camping area. There would be a parking lot and a boat ramp for those using the Coralville facility.

The fisheries station would provide office space for the Water Safety Lake Patrol on Coralville.

More Than a School

From Saturday noon until Sunday evening, weekends are free. The abundance of bluegills, sunfish, crappies and occasionally a big bull bass in Springbrook Lake and nearby Bays Branch, Sunday morning cookouts, square dances and other activities entice many

to stay during the weekend. There are no facilities for students to bring their families but visitors are always welcome.

As for food—it's excellent and prepared by the cooking staff. (KP duty is not included on the campers' agenda.)

Teachers' Camp is more than just a way to get credits, learn about the outdoors and how to teach conservation—teachers with this type of training have found a definite place of leadership in their communities. Attitudes and enthusiasm gained toward our bountiful natural resources and the importance of conservation are contagious after camp and are passed on to students and other teachers for years to come.

No other place offers such an opportunity to learn about the outdoors, conservation methods and ways to teach conservation to youngsters and young adults.

All this sounds good, you're thinking, but what about the cost? There are scholarships offered, some paying the full cost and almost 80 per cent of last year's

students used them. District Soil Conservation Services Offices in each county, sportsmen's groups and garden clubs often offer scholarships usually ranging from \$15 to \$70 per teacher.

Cost Is Low

Each session costs \$112.50 for graduates and \$106.50 for undergraduates. Broken down, this means tuition for undergrads \$42, industrial arts fee \$1.50, room \$3, and board \$60. Graduates pay the same except tuition is \$48.

Sound interesting? Here's how to apply. Write Chuck Haman, Director, Teachers' Conservation Camp, State College of Iowa, Cedar Falls, for an application blank. He'll write back, give you the details and tell you who to contact for a scholarship. Then contact the group and reserve a scholarship.

That's all there is to it. Facilities are limited to 50 teachers each session but there's still room and time to apply. Make summer, 1963, your summer to attend Teachers' Camp—conservation can't wait.



SPRING FISHING

(Continued from page 25)

Water Is Mixed

With the coming of spring, and its gradually rising atmospheric temperatures, surface water temperatures rise slowly until they also reach maximum density. At this point the heavier water being on the surface tends to sink through the cooler lighter water which is immediately below, causing a series of convection currents. This continues until the

whole lake becomes homothermous (same temperature) and therefore of the same density. With the water at the same density and lowered thermal resistance spring winds mix the entire lake from surface to bottom. This is called the spring overturn or spring circulation.

Eventually, rising air temperatures begin to affect the surface water to a greater extent. After the time that the lake becomes homothermous, every degree of heat added to the water makes it less dense and thereby lighter. Being lighter the tendency to sink no longer exists. The warmer, lighter water stays on top; and as the surface water temperature continues to rise and becomes correspondingly lighter, more and more resistance is offered to mixing wind action until the surface water temperature is much above that of the underlying strata. In other words the entire lake is warmed from the surface to bottom, but at a much faster rate on the surface.

Study Fish Reaction

During 1958, 1959, and 1960 a study was conducted at Red Haw Lake near Chariton to determine the reaction of fish to changing environmental conditions in the spring of the year. Experimental gill nets were placed in the lake from mid-winter until late spring. These nets were marked into two foot depth intervals so when fish were caught they could easily be assigned a specific depth of occupation. A total of 2,451 fish were captured in 180 days of netting.

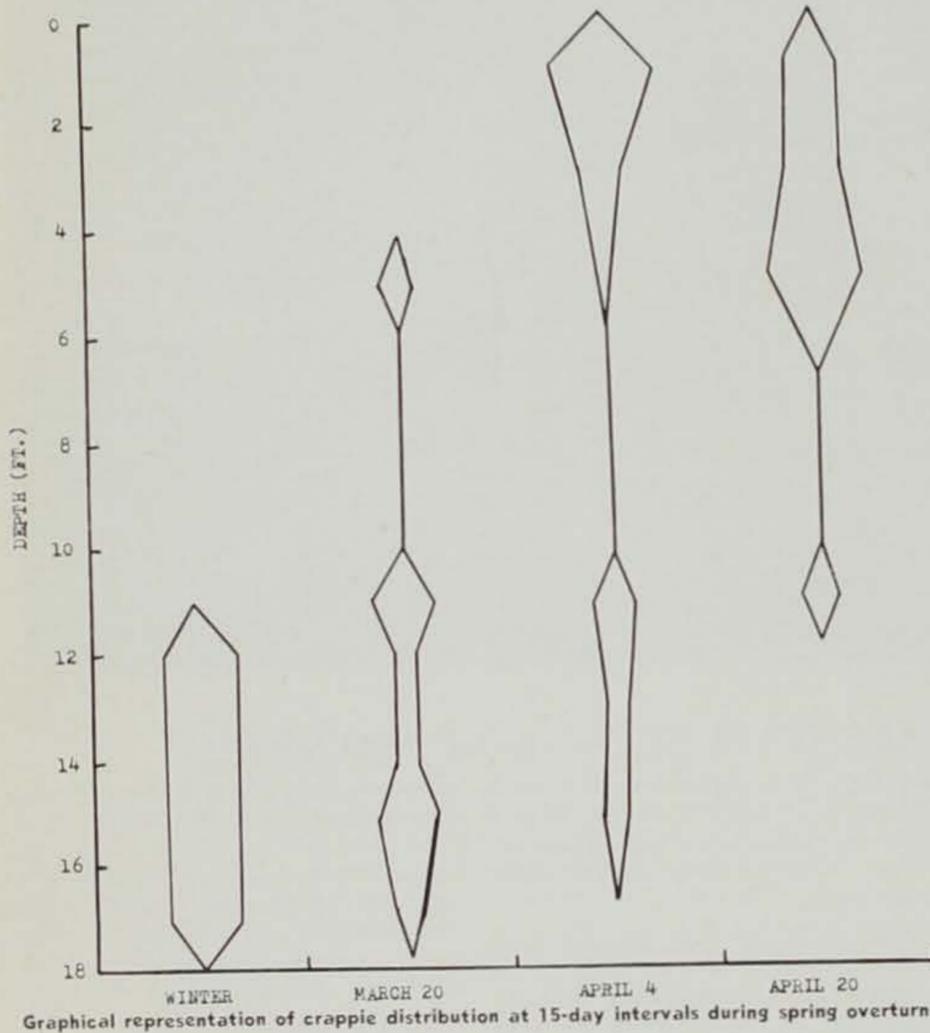
In relation to the depth that fish were located in the winter, different species reacted to environmental changes to a different degree. Several species expanded from cooler strata into warmer regions immediately after the ice melted. Others expanded into the opposite direction, that is from warmer strata (from the surface) to cooler strata (near the bottom). The former example was characteristic of crappie, bluegill, channel catfish, largemouth bass, and sunfish; while the latter was characteristic of bullhead and yellow perch.

What This Means to Fishermen

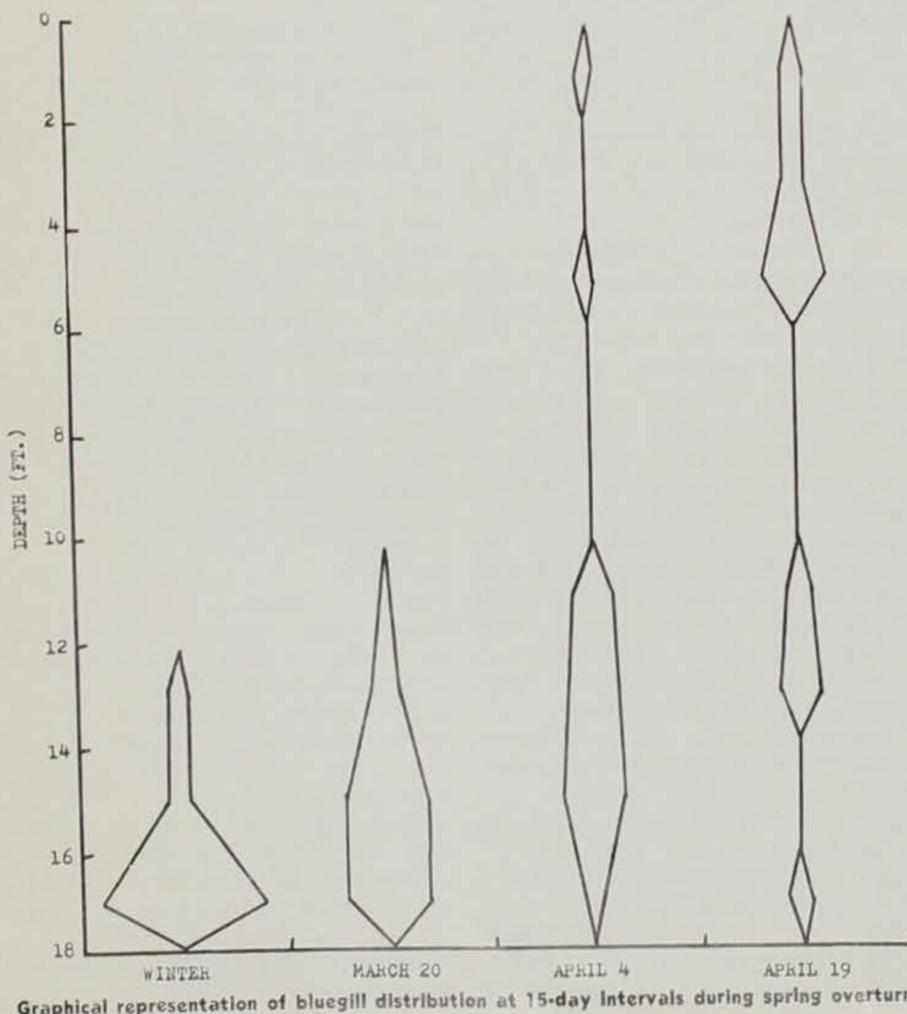
Crappie and bluegill were probably affected to a greater extent than any of the other species. As surface waters were warmed in the spring there was a generalized but progressive movement into the warmer regions. During winter stagnation these species were concentrated in a narrow stratum near the bottom of the lake. As surface temperatures increased the frequency of occurrence in the warmer zones became progressively greater. This is demonstrated by the graphical representation of the catch of these two species in Red Haw Lake from winter until the middle of April. It can be easily noted that an angler would have to change the depth at which he was fishing repeatedly throughout this period in relationship to the change in water temperatures.

During the winter bullheads were found in abundance within six feet of the ice surface. As this region was warmed in the spring the vertical expansion of the population occurred into the cooler stratum in deeper water. This would mean that the productive fisherman should fish the deeper waters of a lake as the surface water is warmed in the spring.

The purpose of studies such as this is to obtain basic information on the habits of fish that can enable the sport fisherman to increase his catch. In most of our lakes the fish crops for the most part are underharvested. Increasing the catch of anglers can only be accomplished by increasing his knowledge of the effects of related phenomenon on fish habits. The use of such information would ultimately increase the sport fishery by manyfold. With this improvement of angler success, Red Haw Lake and the other lakes in Iowa could become the center of a vast and virtually untapped natural resource.



Graphical representation of crappie distribution at 15-day intervals during spring overturn.



Graphical representation of bluegill distribution at 15-day intervals during spring overturn.



Shelter and Shade—A Home For Quail

M. E. Stempel
Game Biologist

Quail cover" is a portion of the main picture in southern Iowa; associated with a dog, a weedy field, and a corn field. In the quail shelters quail from rain, wind, and animals; the cover also provides edible sprouts, fruits, and dried seeds. In summer and early fall there is shade, a nesting place, and plenty of bugs. In winter, the brush along with hanging creek banks is the remaining protection from driving winds and the lethal, killing snow.

Dense coverts are lightly hunted; a tangled mass prevents shooting from finding quail. If too dense, the quail flush wild. If just right, the quail are found fairly easily. In any case, the man ignores the apple and locust thorns, pierces clothing and he disregards the plum branch that whips his face as he steps back to that one quick shot.

Thus, preservation of cover has angles; to a shooter it is necessary in order to have the quail; to quail it is a home and a place to hide; to many farmers do not hunt it is an obstacle to farming.

What Is Good Cover?

One can reconcile the wishes of the hunter with the need of the quail but first we must further consider what constitutes good cover. It must furnish shelter and food throughout the year. It contains five or more 20 to 30-year-old trees. A single (one acre) covert must have a perimeter measurement of one mile or more. Measurement can be a single continuous line along the perimeter of one area, or it may be made up of many small patches of brush, berry, grape and other plants. Ditches or eroded areas have crumbling banks and hanging chunks of sod are also included. Quail are most numerous where several coverts adjoin.

The large trees mentioned above are the squirrels who in deep snow can dig out the ears of corn and bring them into the cover. Quail are reluctant to leave. Creek banks or creek banks furnish dirt for dusting or for roosting in the deadliest winter. Dense brush, weeds and grass furnish good places where quail escape eyes and the noses of enemies. We take a moment to look back and see if we can expect to always have some choice cover. A good example is in the older counties of Europe where even after centuries of farming, native upland birds are still shot. In Germany it is the "auerhenne," in France the "perdiz," in England the "partridge," and in the United States the grouse. However, the all-important cover for these birds is maintained by constant work, and the coverts become more valuable as the number of shooters



A good quail covert needs one mile of perimeter be it a continuous edge of a cover area or the combination of several small areas.

increases and cover decreases.

Realities must be faced. In Iowa the quail persisted in most of their original range in spite of rapid depletion of cover. As in Europe, some shelter must give way to the need for housing and food for humans.

During a ten-year period beginning about 1910, almost one-half of the cover needed by quail was destroyed to make way for more grain and more pasture land. In spite of the losses, quail made temporary increases which were most noticeable in 1938, 1946 and 1958.

Increases spread into poor cover. This was within the best quail range in the loess areas of southern, eastern, and western Iowa. This is also the rougher, cheaper land. Best production of crops and of brush was in the fertile river-bottoms and the wide upland flats; and these were first to be farmed.

Small-scale examples of what took place are in Wapello County where in 1910 there were 37,743 people with about 15,000 of them in rural areas. Farms were small; cornfields were small; coverts of plum, grape, sumac, and similar native plants were a part of every small farm. By 1959 there were 45,566 people with 5,000 in the rural areas. Farms were bigger and cleaner. Entire townships were denuded of cover.

In 1913, in the flatlands near Centerville, a quail shooter told me that he and friends shot 25 quail each in a single day in the osage orange hedges that bordered the small cornfields. Most of these are gone. Since 1946, the federal government promoted clearing which amounted to over 15,000 acres of pasture land in one county. This might amount to as much as \$300 on a 115 acre farm. Very little, if any, money was spent on restoring cover.

What Do We Now Have?

In late autumn, fly at high alti-

tude over southern Iowa. You see a charming patchwork of roads, fields, and streams. Descend to 500 feet and you see that much of the landscape is denuded hills, close-cropped pastures, and barren ditch banks. Roadsides have little brush. Take a closer look as you get into an auto at the Ottumwa airport, and drive southwest of town. In a single section of rough land, along the road, there are five small patches identified by tree stumps, log piles, ash heaps, and bulldozer tread marks. Two years ago these were beautiful coverts which housed two coveys of quail. Now drive on westward and go south at Chariton. There are some rough, brushy areas remaining. But go farther south until you find better grade land where only a little scattered brush remains. Here, in 1958, along a 14 mile long route we counted 44 cock quail giving the "Bob-white" call during the July brooding season. After the bad 1960 winter only 12 cocks were calling. This is an area very similar to that where in 1913 a hunter shot 25 quail in one day.

What Will the Future Hold?

Where there is quail environment, the mild winters followed by early spring and moderate summer weather will furnish fair to good quail populations. Our Iowa quail range is mostly within the four tiers of southern Iowa counties. Here almost every farm has a creek, a stream, a rough area, or a slough which could furnish cover without robbing the farmland of productive areas.

While the farmer depends on his land, he is not always forced to clean out all the cover. Thus, there is almost no limit of opportunity for a hunter who really wants to create quail cover.

Through the Farmer-Sportsman cooperative effort we can help. The Feed-Grain program will yield temporary shelter in some places. County Conservation boards in

CAMPING—

(Continued from page 28)

off the main roads? Anyone can enjoy making pictures of the many covered bridges in Madison county, or the fine caves and waterfalls in Winneshiek county, the site of the first train robbery in the west near Adair, the West Bend Grotto, the Galland School replica in Lee County, first Iowa school, and many others.

Other Areas

This also is a good time to plan on side trips to the other interesting spots maintained by the State Conservation Commission. One day each could be spent in visits to the Game section areas such as Big Marsh near Parkersburg, Sweet's Marsh east of Tripoli, Forneys Lake a few minutes from Waubonsie State Park, the State Fish Hatchery at Spirit Lake, Clear Lake, or Big Springs. Many other state owned areas provide variety to your side trips. These can be planned by using the folders available from the Conservation Commission listing the fishing and hunting access areas.

The prairie pothole areas in the northwestern part of the state show a historical significance of their own as does the rugged hills in southern Iowa. The fine state forests and the unusual state preserved prairie areas will give you some insights into the beauty that was Iowa's in the beginning, when the white man began to journey into the realm of Indian and wild west.

The two mightiest rivers in the nation border Iowa and a trip along either is an event to be remembered.

You'll find more as you travel, but remember that all this and more lie waiting for you to see if you will but pack a picnic lunch, tie the strings on your tent flaps, and take off into the Iowa beyond the concrete and asphalt highways.

planning some local projects can supply assistance in furnishing places to find quail. None of these offer a quick cure, but remember, since 1848 we spent much time and huge sums of money to destroy the brush.

We now know how to restore good coverts. The Conservation Commission has fine examples in such places as Brown's Slough and the Colyn Area south of Chariton, and in the Eldon Area near Eldon. The Game Section has some fine plans for assisting in creating cover. In addition we have some private shooting preserves where large amounts of game can be retained in comparatively small cover areas.

Finally, the biologist can show you where other cover was purposely created at low cost to give high populations of quail. We can have "Do It Yourself" quail cover, but the method matters little—it is the need for cover that must be satisfied.

BRACKEN, MAIDENHAIR, AND WALKING FERNS

Robert Mann

A year ago, we pointed out that ferns were the first plants on earth to have a true root system and a system of channels—vascular tissues—that conduct water and dissolved chemicals from the roots to the leaves where food is manufactured by means of specialized cells containing chlorophyll.

We also described how ferns, instead of having flowers followed by seeds, reproduce by means of spores so tiny and light that, like dust, they are carried everywhere by winds; sometimes around the world in jet streams at high altitudes. However, some kinds, notably the Bracken, Maidenhair and Sensitive ferns, also spread widely by means of creeping rootstocks called rhizomes.

Bracken

The Bracken or Brake, most widely distributed of all ferns, is common in Great Britain, continental Europe, Africa, and throughout North America. Most ferns are found in rich, moist shady places and limestone cliffs but not bracken. It prefers and thrives on poor barren soils, sandy semi-shaded ridges, old pastures, dry open woodlands and burned-over areas.

It is one of the earliest ferns to appear in spring and continues to produce big coarse leathery leaves, some erect and some nearly horizontal, until killed by the first frost in autumn. The leaves, from 3 to 5 feet tall, have three triangular parts and each of these is cut into segments which, except near their tips, are cut again into narrow subleaflets.

This is one of the few kinds of ferns with any practical value. It is used for packing fruits and vegetables because it seems to retard mildew and decay, and by florists. In Europe, where in some places it becomes much taller, bracken is extensively used for thatching roofs and as bedding for animals. The Japanese relish the coiled fronds or "fiddleheads" when they appear in spring, as tender and delicious as asparagus tips, and Ojibwe Indians use them in soup. Their hunters eat nothing but that soup when stalking deer. Ojibwe women drink a tea made from its toasting leaves to relieve headaches; and make a strong decoction of the leaves for expelling worms. The long tough rhizomes were woven into baskets.

The lovely Maidenhair Fern is famous for the unique pattern, like a lacy fan, of its delicate leaves. Most abundant in limestone country, it grows in the rich moist soil of deep woods and often in ravines. The slender stalk, sometimes two feet tall, is black or reddish-black and shiny. At the top it divides into two oppositely curving branches that bear 5 or 6 leaflets on their outer rims, and the leaflets are divided into fragile bluish-green subleaflets.

There are 226 species of maidenhair ferns, all but 5 of them tropical, and some of those are giants. Ours is widely distributed from Alaska and northern Canada to Georgia and Louisiana. The Southern or Venus Maidenhair Fern, equally lovely, extends from tropical America to Florida and California.



Jack Kirstein Photo

IS THIS IOWA'S LARGEST TREE?

The latest entry in our search for the state's largest tree in circumference comes from near Percival in southwest Iowa. This giant cottonwood measures 26 feet, 7 inches.

When measuring a tree, the measurement should be taken four and one-half feet above the ground. In the case of a growth or a branch on the trunk at this point, the circumference is measured at the point below this where the circumference is least. In case the tree branches below four and one-half feet, it is considered as two trees and the larger fork is measured above the branching. Circumference is rounded to the nearest inch.

According to records compiled by the American Forestry Association the largest cottonwood on record is at Kearney, Nebraska, with circumference of thirty feet.

Walking Fern

There are several peculiar kinds of ferns that do not look like ferns at all. One of those oddities is the unique and rather rare Walking Fern.

It produces clusters of narrow tapering evergreen leaves that are not divided into leaflets and have slender tips. It not only produces spores but each tip, arching outward and hairlike at the end, may take root on mossy rock and start a new plant. Eventually those new plants, each with its own leaves and shallow roots, separates from the parent's leaf tip. None of our other ferns do this.

Never disturb a fern. Love 'em and leave 'em.

LOOK OUT! LITTERBIRDS ARE ON THE WING

And lo; though the skies were unblackened, the trash around us bears mute witness that the migration of litterbirds is nearing its peak. Scrap paper by the ton, jagged bottles and flashing tin cans among the violets and phlox

evidence the arrival of the fast moving host.

The litterbird is a species, rather sub-species (sappy leavelay), closely related and associated with man (homo sapiens). The principal difference between the two lies just below the forehead piece of the cranium; the poor "sappies" have no conscience.

Before the sappies can be hunted, strung and mounted (as some judges have done on provocation) they must be identified. This usually amounts to catching one exhibiting the characteristic twitching hand or finger flicking action. Often movements are very unobtrusive, seemingly practiced with a wary eye scanning the vicinity.

Perhaps the most productive method of collecting this relative (or should we say poor relative) of man is to look for bits of garbage dropping through the trees. After carefully estimating the trajectory, fasten your gaze on the culprit. Pay no mind to vehement protests of innocence or sheep statements about not thinking this is a part of their natural protective coloration.



"Fiddleheads"

George Tovey Photo.