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IOWA CONSERVATIONIST

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THE FOX AND THE BOUNTY QUESTION

Will Bounty Control Populations When Fox Are Abundant?

THE present high fox population in Iowa has not only stimulated all types of fox hunting, but has also seen agitation of the bounty question beyond any previous year.

Fox bounty in Iowa is optional with the county boards of supervisors. They may set a maximum bounty of \$5.00, or may discontinue it altogether. When foxes are numerous, heavy pressures are put on the boards of supervisors to exercise their powers and put a price on Br'er Fox's scalp.

Bounties paid by the board of supervisors come from the general tax funds of the county and are not paid by the State Conservation Commission. It is, therefore, not a drain on fish and game funds when bounties are paid.

Sometimes, as Clayton B. Sea-gears of the New York Conservation Department aptly expresses in his "The Fox in New York," there is "mutiny on the bounty" and the county authorities discontinue payment. If the fox population is low when such action is taken, there is little protest. If high, there is a loud clamor against its discontinuance.

Granted that sometimes fox populations when high do have some bearing on abundance of certain game species that the hunter would like to take for himself, and granted that "under certain conditions poultry predation may become severe," the question is whether bounty payments are effective in control of foxes when these conditions exist.

Does Bounty Eliminate Fox?

Douglas and Bradt in "The Red Fox—Friend or Foe?" recently published by the Michigan Department of Conservation, have this to say: "... the state game men feel



Every woodland draw contains fox sign at the present time. In spite of what we may do for or against Sir Reynard, Nature by some yet unknown biological hocus-pocus will automatically topple his vulpine majesty from the heights of abundance to relative depths of scarcity and bring them back again.

that a reduction in fox numbers is desirable (and inevitable), but that the bounty system just doesn't work.

"If this seems contrary to good common sense, let's hold back a moment and look at the argument

(Continued on page 20)

WINGS OVER IOWA

By Ellis A. Hicks
Cooperative Research Unit

THE big flight is on. Already geese have honked their way overhead. Mallards, pintails and bluebills have been flying north for some time. Smaller birds that we often do not associate with migration have already come back. You can see robins any day now as well as bluebirds, meadowlarks and blackbirds. If you know where to look, the killdeer, marsh hawk, and phoebe are also with us. Others are just beginning to arrive, and the flight will continue until well into May.

Birds come and go according to seasonal changes, but we don't think too much about the reasons for their movements. We know that birds arrive in spring and leave in fall, but why, where and how their flight is accomplished are questions which only recently have been answered partially or in full. Satisfactory answers for some questions have not yet been found.

Birds furnish one of the best examples of migration of any form of life. They are well fitted for extensive travel. With the atmosphere as their medium of travel, ordinary barriers such as mountains, rivers, seas, and deserts can be disregarded. Because of their greater freedom of movement, birds are more complicated to study than are other animals more stationary in their habits.

Seasonal bird movement creates bird populations which vary from season to season. The birds returning to Iowa now from winter homes in Central and South America are called summer visitants. The majority of our birds such as

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CONSERVATION EXHIBIT AT
SPORTS AND VACATION SHOW

The State Conservation Commission will install a major exhibit in the Iowa Sports and Vacation Show to be held in the Des Moines Coliseum, April 9th through April 17th. Major live fish and animal displays, numbering several hundred individuals, will predominate in the exhibit. Conservation officers are collecting birds and animals for the show and are anxious to know of the location of any native live snakes that can be used to complete the display.

Large carp go through spawning gyration with such gusto that they may throw water from five to six feet high and be mistaken for a man in trouble.

Fish, like humans, get seasick if left to the mercy of the waves for an extended period.



Many of us have the mistaken idea that to have abundant supplies of those birds and mammals which associate with forests, those forests must remain untouched.—Jim Sherman Photo.

TIMBER and GAME...Twin Crops

By Harold Titus

IN these few pages we are going to look at American forests—past, present and future—with our sights particularly trained on game birds and animals naturally associated with them.

We are going to touch on a few of the mistakes man made, from the point of view of wildlife welfare, in his use of the abundant forest resources he found on the continent.

We are going to deal with the gearing in of forest product and game interests and discuss some of the practices in both fields which are already yielding fruits for the nature lover and sportsman.

And perhaps, along toward the end, we'll get our courage up to a point where we'll try to forecast what may happen if understanding of both forestry and game management continues to generate momentum as it has in the recent past.

That, then, is something in the nature of a declaration of intent. **Must Forests Remain Untouched?**

When we—especially those of us who are sportsmen—remember that our founding fathers discovered that nearly one half of what is now the United States was forested, and when we realize that much of our virgin timber has been cut, that this harvest has accelerated, even in times of peace, and that vast areas of second growth timber probably will be operated about as fast as it attains commercial size—why, we're apt to despair.

We are apt to despair because we—at least too many of us—still entertain the idea that to have abundant supplies of those birds and mammals which associate with

forests, those forests must remain untouched by man.

This is one of our most popular misconceptions. Mature, dense stands of timber in large blocks make happy homes for almost none of those species of major importance. In his most noteworthy volume, "Wildlife Conservation," Ira N. Gabrielson, Chief of the United States Fish and Wildlife Service, points out the utter lack of game birds and animals in many of the virgin timber stands of the Pacific Northwest and cites the paucity of game sign in old stands of hardwood timber on the other upper corner of the country. Dr. Gabrielson holds that such deep woods are much nearer the status of biological deserts than are some of the southwestern areas which geographers classify as actual desert land.

Our forefathers did not find game everywhere in the primitive forests they explored simply because most game species cannot exist, let alone thrive, in deep woods. The long record of frontiersmen with the know-how of living off the country who perished of starvation in the unspoiled wilderness attests to that. Towering trees offer no forage for browsing animals, such as deer. The fruits and nuts their high tops may produce are available only for brief periods annually and, for most species, are only items in a diet, anyhow. The shade created by a dense canopy, combined with the demands made for nutrients and moisture by their interlocking root systems, discourages the growth of low plants which might render sustenance to animals. Such forests offer but one of the many things game needs and that is shelter—

shelter from extremes of weather and from enemies.

Game Seeks Forest "Edge"

Where, then, were the storied herds of deer and elk and moose located? Where did pioneers find the wild turkey and ruffed grouse and other life forms which enlivened the landscape and contributed to their food supplies? They found them just where the sportsman finds them today and no doubt always will find them: along and near the forest edge; in and about forest openings. Where outcroppings of rock made dense stands of great trees impossible and permitted ground cover to thrive. Where glaciers had put down moraines of lean soils so that forests, luxuriating on the richer plains, were interspersed by fingers of smaller and more varied growth. Where clearings created by fire started from lightning remained in grasses, scrub and shrub. Where marshes intrude on tree associations. A long list of species had to have forests to survive, mature, remain robust and multiply, yes; but those creatures had to have openings along with those forests or they faded from the picture.

Those openings make what technicians call "edge," and edge, in this sense, is something more than just a border. Wildlife authorities such as Aldo Leopold, professor of game management at the University of Wisconsin, rate the amount and type of edge as one of the great determining factors in game abundance. It isn't only food which is offered by edge. Birds and mammals, just as other life forms, cannot live by bread alone. They must have more than food and shelter to remain healthy, happy and therefore able to reproduce their kinds. Fawning time for the white-tail deer is fly time in the woods, and does and their young need relief from these pests, just as does domestic stock, so the bald ridges and open flats which give wind a chance to disperse clouds of insects are necessary. The areas on which mating rites are performed by some species have rigid specifications. Opportunity to go through those ceremonies is of first importance. As an example, recent studies of the woodcock indicate that, unless openings suitable for use as the timber doodle's singing grounds are available, populations trend rapidly downward. The list of imperative needs supplied by this condition we call edge could be expanded much further but perhaps the point is established: that openings furnish all manner of requisites which unbroken forests never can offer.

So when the white man appropriated America, consciously or unconsciously, and so long as he was in forested areas, he took the flesh he consumed by grace of forest openings. We are not here concerned with the vast herds of buffalo nor the pronghorn antelope of the Great Plains; nor are we

(Continued on page 24)

Famous Iowa Trees

From Local Legend and
Historical Fact



The "Lincoln Elm" at McGregor.—Art
elberg Photo.

THE LINCOLN ELM

By Marion Carroll Rischmüller

TOWERING tall, stately, in the residential section of McGregor's Main Street, is a tree known as the "Lincoln Elm." The tree was planted in 1865 by J. R. Jarrett, a McGregor dry goods merchant. It was the original intention of the man who planted the elm to commemorate the Victory Day of eighty years ago marking the loss of the war and the victory of the north over the south. To posterity, the tree would be known as the "Victory Elm."

It was in April, the year 1865, Richmond had been taken . . . Petersburg had been taken . . . General Lee had surrendered. Demonstrations of victory were held in small town and city alike throughout the north, and McGregor was no exception. Weary of the strain of war, the town celebrated in gala style.

Wrote the editor of the North Iowa Times, McGregor's weekly newspaper, in the issue of April 2, 1865: "The Times office on Monday was favored with a dispatch from Dubuque per steamer fuscatione and from Weller of the fil. Telegraph office announcing the surrender of Lee and his army. We got out an extra, the town got up a hurrah, several 'veterans' with flags in their hats, joined the party, a four horse bus started, Capt. Mat took command, Lieut. did played orderly, Hopkins, Wash, and Miller, Metzger, Mathews and the Seminary were treated to music by the Cornet and the Military Band. At night, the city was illuminated. The Flanders House, early McGregor hostelry, was decorated in beautiful style and the band played two or three tunes in

honor of it. The American House, (likewise, an early hostelry), and hundreds of other houses, both public and private, were well got up in the window-line and their proprietors deserve credit. All other towns take credit to themselves, but we do not believe McGregor was exceeded in her demonstrations by any town in the west. P. S. If any neglect is observed in the issue of the Times, please attribute it to the cheering news of Monday morning last."

Then, suddenly, the scene changed. Tragedy struck . . . tragedy that changed the national scene from that of celebration to one of deep mourning. Wrote the editor of the North Iowa Times one week later, issue of April 19, 1865: "On Saturday A.M., our city was alarmed by the approach of Capt. Bisbee's Boat, with the flag at half-mast. By inquiry, we learned that the President had been shot in a theatre by a brigand named J. Wilkes Booth. Soon after, the following was published at this office: 'President Lincoln was shot April 14th at 10:00 P.M., and died at 7 A.M., the following morning. We have no particulars. In this terrible crisis of the Nation, this is a most lamentable report. The recent exhibition of Mr. Lincoln to restore the Union on the basis of kindness, endeared him to all real Union men, and we therefore sincerely mourn his death.'"

McGregor was stricken with grief. Wrote the editor of the Times: "On Monday, the City was draped in mourning; scarcely a business or private house lacked evidence of sorrow. At 1½ P.M., the appointed officers made their appearance and, as per programme, the citizens formed in procession. From two to 400 marched up Main and down Ann Street, headed by the Cornet Band in funeral order.

"Arriving at the Public Square, Mr. Calkins called the meeting to order, and the published exercises were gone through. There were more speeches than the programme called for and the McGregor vocalists did some excellent singing; but we cannot give a full report of the proceedings. The assemblage was the largest ever in one place, sadness was visible on every countenance, not a remark was made unkindly toward the eminent man whose death was the cause of a city's grief."

Thus, it came about that Mr. Jarrett, in the act of planting a tree to Victory, planted it instead, in honor of a great man.

Little information is available relative to the man who planted the "Lincoln Elm." It is believed that J. R. Jarrett came to McGregor in the fifties to open a dry goods establishment. The discovery of gold in California and the opening of farm lands west of the Mississippi, stimulated migration westward. McGregor was a focal point for the shipment of grain and hogs by steamboat, and likewise for the steady influx of immi-

grants who crossed the Mississippi by hundreds via ferry boat from Prairie du Chien, Wisconsin, to McGregor, Iowa, where they obtained wagons and supplies to continue the journey westward. Rumor was rife as to the fortune awaiting an enterprising merchant were he but to open an establishment in McGregor, and as a result, hotels were crowded to capacity, new mercantile houses, both wholesale and retail, carriage factories, harness shops, saloons, and eating houses were opening each day.

In search of a good business opportunity, Mr. Jarrett decided to settle in McGregor. According to old records, Mr. Jarrett was a member of the Town Council for five terms during the years 1861, '62, '69, '70 and '71, respectively. Mrs. Jarrett was an early member of the McGregor Methodist church, and the couple had one daughter, Amy.

It was in 1864, according to the records at the Clayton County Courthouse at Elkader, that Mr. Jarrett purchased the Main Street property where he planted the "Lincoln Elm." That Jarrett possessed business acumen is evident for "Lot 8, Block 9, in James McGregor Jr.'s Addition was transferred by John S. and Lois A. Wilcox to J. R. Jarrett on May 5, 1864" for a consideration of \$350. Six years later, in 1872, Mr. Jarrett sold the lot to one, Richard Jones for \$1,350, according to the abstract. Not long after, the Jarretts left McGregor to take up residence in Chicago, but the fine old "Lincoln Elm" still thrives in McGregor.

"The 'Lincoln Elm' and I have grown old together," said Rev. J. J. Horsfield, pastor of St. Mary's parish at McGregor for twenty-eight years, but now retired. "I learned the history of this tree when I came to McGregor and St. Mary's parish in 1916 and I've watched its growth down through the years. It is my hope that the present owner of the property will protect it from harm and that the McGregor Historical Society will place a marker at its base to acquaint our little children and visitors to McGregor with its history."

BROWN CROW SHOT IN OHIO

Howard McKay, crow-shooting Ohioan, made history last year, the Sportsmen's Service Bureau reports, when he shot a brown crow in a rookery some seven miles north of Celino, Ohio. Thirty-five other crows, taken at the same spot, were clothed in the usual conventional black. The freak bird was brownish-red in color, without a single black feather. Legs and bill were brown also.

Young of the year white bass are generally found on the leeward side of the lake on a windy day, while older fish are almost invariably on the windward side.

One pinch of snuff will kill a fish or snake almost instantly. It will anesthetize a turtle for several hours.

Outdoor Oddities

BY WALT HARVEY

**DOGFISH, COMMON TO IOWA,
CAN LIVE OUT OF WATER
LONGER THAN ANY OTHER
AMERICAN FISH.**



NEW FOX BOOKLET

How to capture foxes where they have become too abundant, and thus prevent the destruction of poultry and game, is the subject of a new publication announced by the Fish and Wildlife Service of the Department of the Interior.

Because of the increase in population of foxes throughout the United States during recent years, it is not always possible to keep this animal in check solely by sportsmen with guns and dogs and by fur hunters, according to the Service.

Heavy infestations of foxes are a menace to human beings and domestic stock because they spread rabies in infected areas, which may originate from domestic dogs. During 1945 a severe and widespread outbreak of rabies in foxes and dogs in Georgia and other southern states took the lives of several persons.

The new publication summarizes general information on foxes and gives instructions for trapping and other methods of taking them. Fur hunters will find the suggestions on trapping useful to them.

The Service stresses the fact that in moderate numbers foxes are not excessively destructive and, in fact, do some good through their consumption of mice and other creatures that damage crops. Individual foxes, however, that prey on poultry or other domestic animals should be removed by trapping.

A copy of the publication, Circular No. 8, "Capturing Foxes," can be obtained at 5 cents a copy from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. The circular is not for sale by the Fish and Wildlife Service.

Schools of young white bass were decoyed in close to shore by throwing sand in the water.

A small black bass has been observed to strike at a wasp, but avoid its prey at the last moment.

Frog migration in 1942 began September 30th. Garter snakes began moving to winter quarters at about the same time.



Does anyone think that the men as shown in this typical section drive group would get out any more enthusiastically because of a \$2.00 bounty?—Geo. Swanson Photo.

The Fox . . .

(Continued from page 17)

for a bounty. The idea is that a bounty will (1) get more fellows out to hunt or trap foxes and (2) they'll kill more foxes and so (3) there will be fewer foxes. We can let No. 1 ride for a time, though it is certainly open to dispute, and pass up No. 2. It's in regard to the conclusion, No. 3, that most people go off the deep end. It seems so logical, but it ain't necessarily so.

"With game species it's a well-established principle that there is an annual surplus which can be shot off without affecting next year's supply. The same is undoubtedly true of the red fox also . . . obviously, unless our hunting and trapping gets rid of more than the surplus of red foxes, we aren't going to see any real effect on the fox population. It is doubtful that the 22,450 red foxes estimated to have been taken last year (1943-44) in Michigan made serious inroads on the surplus except in local areas of intensive hunting and trapping. In short, it's good common sense that killing more foxes this year may not mean fewer foxes next year."

Fox bounties to be effective must not only take all the annual surplus, but also must cut deeply into the breeding stock. If it does not, bounty payment does not justify the expense.

"The Fox in New York" says: "As far as the New York State Conservation Department is concerned, the haphazard payment of bounties on foxes (either red or gray) represents little more than money straight down the drainpipe. That's a strong statement, but intensive study of fox bounty results have made it possible."

Why Foxes Are Hunted

There are three primary reasons why foxes are hunted: for sport, for cash, and to protect property.

Let us see what effect a \$2.00 bounty (the average paid by counties that pay bounties) has on increasing the fox kill in each case.

To be successful a section drive hunt needs a minimum of 40 men,

10 per mile, for each of four sides of the section. Assume these 40 men hunt three hours and bag six fox. The bounty payment of \$12.00 would give a cut to each participant of 10 cents per hour for his time. Even if the maximum bounty fee of \$5.00 were paid it would be ridiculous to expect anyone, when corn is selling for from \$1.00 to \$1.25 per bushel, if he did not hunt for the sport, to take the physical punishment "enjoyed" on a fox hunt for 25 cents per hour. Does anyone think that such a group of men would get out any more enthusiastically because of the \$2.00 bounty?

Scientific stalking and still-hunting of foxes, too, is little affected by bounty payment, for this "sport supreme" is as popular in non-bounty counties as anywhere else in the state.

Good Trappers Sitting by the Fire

Foxes killed for cash make up a large part of the take when pelt prices are high or when jobs are scarce. There are plenty of 50 and 100 fox trappers in Iowa, but they are staying close by the fire, or rather, close to their regular jobs, and have been for the past few seasons. Ask one why and he will reply something to this effect, "Fox would have to bring \$20.00 this year to get me out. You know fox pelts are only four bucks. A few years ago they were 30, and that



It is safe to say that practically all the fox that were taken during the past winter would have been taken, bounty or no.—Geo. Swanson Photo.

just shows what women can do with a nod of their contrary heads. They send mink up to \$40.00 and fox down to \$4.00.

"Bounty? For \$16.00 I would, yeah, but for \$2.00 or \$5.00, no—but who'd pay a \$16.00 bounty on foxes that would cost a fortune on Iowa fox alone, and there wouldn't be enough transportation in America to carry all the out-of-state foxes to our county seat towns to collect payment."

What about the poultry loser? Bounty or no bounty, he'll wait out the marauder that's stealing his hens. Sure, he'll collect the bounty if it's paid in his county, but he'll chuckle under his breath as he pockets the two bucks.

Fox Would Be Taken Regardless

It is safe to say that practically all the fox that were taken last winter would have been taken, bounty or no, for the three reasons given above. A \$2.00 bounty on all foxes taken during the winter would have cost \$24,000 in 1944, \$24,000 "down the drain."

It can be flatly stated that any reasonable fox bounty paid one winter will have little to do with the number of fox the next winter. For nature has wonderful ways of making up for winter losses until populations reach, or approach, maximum densities. (It is believed the fox in Iowa is reaching this point.) Then her methods of elimination are no less mysterious and spectacular.

Fox Highs and Lows

That the fox population has definite highs and lows may be shown by the records of the Hudson's Bay Company, reaching back 100 years. In the North trapping pressure is relatively constant from year to year in spite of prices, for the outpost trappers must trap to live. Seagears says, "Canadian red fox populations simply build up, regardless of the trappers' constant efforts, to a peak. Then—bang—they drop off in a few years to relative lows."

"Thus we can presume that regardless of what we in New York State do about our fox populations, nature by some yet unknown biological hocus-pocus will automatically topple his vulpine majesty from the heights of abundance to relative depths of scarcity and bring them back again."

What, then, shall we do—stand at the wall and wail? The answer is no. Enjoy the fox hunting method you like best for the sport when his pelt is prime. Destroy the individual marauder, and stand by in the wings with a better understanding of the drama as nature presents the inevitable next act.

The heat of a lightning bolt turns the moisture of the wood cells to steam, exploding the wood. Lightning sometimes completely girdles the tree.

More than two million American people are directly dependent on forest products for their livelihood.



Professor Peabody says that fishermen kin roughly be derided into two classes; them that goes fishin' cause they aint got nothin' better to do, and them that goes fishin' cause there aint nothin' better to do.

When a feller hez bin fishin' all day and aint ketched nary a fish it don't make his supper taste enny better to have some feller up an' tell him that "a couple o' the boys ketched twenty-seven crappies up in dynamite snag this afternoon."

"Now I've seen everything," Granpa Miles remarked when he seen Andy Gillam cutting down the weeds in front o' his house the other day.

SPORTING GOODS STILL SHORT

THOSE who expected to find the sporting goods stores loaded with all the gadgets not available during the war years, are doomed to some disappointment.

Very little new merchandise has reached the retailer's shelves as yet. Reels, both fly and bait, of good quality, remain in tight supply. Steel rods, those new ones, lighter than bamboo and more durable, promised to us in the postwar years, are hardly more than on the drawing boards. Lines are in fair supply, with lots of nylon coming up later on. Many artificial lures, embodying the plastics, will be on the shelves in 60 to 90 days.

In the gun department it is much the same. Some .22 caliber rifles are coming through from the manufacturer, but the better grade of shotguns are not yet in production. Shotgun shells, bugaboo of the war years, are still not plentiful, due to the critical lead situation. We are a nation definitely short of lead, and will have to import this important metal.

Outboard motors are not available in all models. Some of the makers are fully converted to peace time production, but quantities are limited, not because of a shortage in aluminum, but because of shortages of other component parts.

Patience will prove to be a virtue if you have your heart set on some of the new things.

—The Nomad.

Many of the famous PT boats are plywood. Those initials could stand for "plywood terror."

America's forests grow about 21,500 cubic feet of wood per minute—and still we need more.

TRUMPETER SWAN'S BATTLE AGAINST EXTINCTION

CONTINUING to win its battle against extinction, the trumpeter swan, largest migratory waterfowl of the North American continent, has increased its population four-fold in the past 10 years until it now numbers at least 301 birds, exclusive of those in the Canadian colonies, according to Dr. Ira N. Gabrielson, Director, Fish and Wildlife Service.

The latest count showed 60 birds on the Yellowstone National Park and 163 on the Red Rock Lakes National Wildlife Refuge in Montana. The remainder were scattered in the general vicinity of these two areas and on the National Elk Refuge in Wyoming and Malheur National Wildlife Refuge in Oregon.

In 1944 the estimated number of trumpeter swans in the United States was 283; in 1943, 221.

In 1935 only 73 of these magnificent birds, which have a wingspread of 8 feet, remained in the United States. In that year the Fish and Wildlife Service established the Red Rock Lakes Refuge, in southwestern Montana, and began the long struggle to save this swan from almost certain extinction.



The mute swan commonly seen on park lagoons is not a native American, but is a close relative of our magnificent trumpeter swan, now battling against extinction.

Trumpeter swan populations since annual counts have been made are as follows: 73 in 1935; 114 in 1936; 168 in 1937; 148 in 1938; 199 in 1939; 185 in 1940; 211 in 1941; and 199 in 1942.

With the hope of starting new nesting colonies, the Service transplanted some of the birds in 1939 to the National Elk Refuge in Wyoming and to the Malheur Refuge in Oregon, both congenial areas within the trumpeter's ancient breeding range.

Nesting occurred on the National Elk Refuge in both 1944 and 1945 and, barring some unexpected event, Service scientists believe that the species will continue to breed at this location. So far no nesting has been noted on the Malheur Refuge.

During the 1945 nesting season on the Red Rock Lakes Refuge, the activities of the swans were carefully checked by Dr. Ward M. Sharp, refuge manager. To reduce



The crayfish spends most of its life in the water, usually in a muddy pond where there is an abundance of food and although some of its meals are live prey, it prefers carrion.

THE AWAKENING OF THE POND

IT'S MARCH. A red-winged blackbird carols from a willow and there is a stir of life in the pond. Almost all winter it was frozen and apparently lifeless, yet even under the ice there was some life, some motion. As winter passed, the dead cattail stalks thrusting through the ice grew more and more bleached and battered under snows and winds and winter rains. The bare willows on shore rattled in the wind and a lone sparrow sang a wintery song that yet had something of the quality of June.

But now in March at last there comes the final thaw. For a while the waters are cold and sluggish, but soon an impatient surge stirs in the mud, moves through the pond. There are invisible protozoa and tiny crustaceans, the daphnia, cyclops, and fairy shrimp, which move with jerky, nervous motion through the water. There are small copepods, too, and the startling pure scarlet dot of Hydrachna, the water mite.

nest disturbance to a minimum, certain lookout points were selected which had access to the nesting areas and the birds were studied through a telescope.

"The first broods were seen on the Lower Red Rock Lake on June 25th," reported Dr. Sharp, "approximately 10 days later than in the two previous nesting seasons. By late July all broods were off the nests and total of 17 adult pairs were counted leading broods which numbered from one to six young about the refuge lakes and marshes. Fifty young were reared in 1945. Of interest was the finding of two nests with clutches containing seven eggs each. Twenty-one nests were located during the

There is more life in the waters as spring days move onward. Clams buried in the mud move about on their strange white "feet." Frogs and salamanders lay their eggs in the warming waters, and there in the mud are the crayfish, big and little. Green-brown and muddy-looking, they are well concealed in the pond.

The crayfish spends most of his life in the water, usually in a muddy pond where there is an abundance of food, alive or dead; carrion usually is preferred. The two big front claws grasp the prey, while some of the lesser pairs of nippers (there are ten legs on a crayfish, each with its own function) tear the food and thrust it into the mouth. The legs also assist in swimming, as does the fan-shaped tail. When doubled under the body, the tail acts as a catapult to shoot the crayfish swiftly backward into the mud and thrust up a protective "smokescreen" of roiled water concealment. The crayfish has a jointed shell which covers the body, two pairs of sensitive antennae which explore behind or ahead for danger, and compound

nesting season, of which three failed to hatch."

The winter care received by the birds on the Red Rock Lakes Refuge and vicinity has undoubtedly contributed much to the steady increase in their numbers, Service officials said. Open water for the birds can usually be found each winter near the spring heads which feed the refuge lakes. The swans spend considerable time at such points and during the most severe winter weather hundreds of bushels of grain are distributed at these concentration areas. In the winter of 1944-45, approximately 170 swans, including 33 cygnets, wintered on these refuge feeding grounds.

eyes which are on stalks. On its underside, the crayfish has a number of feathery swimmerets which are used in swimming; in late spring the female plasters them with a gluey substance and to them attaches masses of globular eggs. These travel safely around with her until they hatch. The young cling to their mother until they are old enough to care for themselves in the pond.

Crayfish burrow into the earth near a pond and sometimes erect a chimney of mud pellets around the mouth of the hole. Seepage water gathers in the bottom, where in dry weather the crayfish sits in darkness and cool silence.

—Living Museum.

MINNESOTA JOINS POLLUTION ABATEMENT LIST

With the passage of a water-pollution-control act during the recent legislative session, Minnesota now has an established Water Pollution Control Commission.

The act defines the specific duties of the Commission as follows: (1) Administration and enforcement of laws relating to pollution of waters of the state; (2) Investigation of the extent, character and effect of pollution of the waters of the state, and such classification of said waters as is deemed advisable; (3) Establishment and alterations of pollution standards and of orders requiring discontinuance of discharges resulting in pollution; (4) Approval of plans for an inspection of construction of disposal systems; (5) Issuance of permits for the discharge of sewage, industrial and other wastes in accordance with pollution prevention or abatement policies.

GOOD SOIL THE KEYSTONE

Fish do not live by water alone, and wildlife cannot prosper where the land is ravished—there is no short-cut method of establishing fish and game populations. Creation and perpetuation of proper habitat is fundamental. It is futile to try to have wildlife without the means and places for its living.

A writer in the Tennessee Conservationist has well said: "Basically, behind all wildlife, or our own existence for that matter, is soil. You can't by-pass that for it is the banquet table of all living organisms. Wildlife is but a by-product of proper land use, as are human beings, national forests, and the yarn for the Ladies' Aid Society."

Our largest cities are no more than clearing houses for the distribution of the products of the soil.

To push our pet project—wildlife—is noble, but our cause is not one of interest to the sportsman alone. It reaches into every home in America, for the very existence of our people is dependent upon land use. Whether we prosper as a nation, or drop behind into poverty and degeneration is entirely dependent upon the wise use of our natural resources.

—The Ohio Conservation Bulletin.



Pelicans are classed as migrants, and they stay with us from a few days to a few weeks each fall. Here a flight of "belly can birds" is about to alight on Lake Manawa.

Wings Over Iowa

(Continued from page 17)

the oriole, mallard, sparrow hawk, and bluebird are in this group.

Residents are those birds which stay with us throughout the year. Examples are the crow, English sparrow, pheasant and downy woodpecker.

A third group contains those birds, known as winter visitants, which come here from northern latitudes to spend the winter where storms are less severe and food is more plentiful. The snowy owl, junco, rough-legged hawk, snow-bunting, redpoll and lapland longspur visit us in winter, but with the approach of spring they return to their breeding areas in Canada.

There is another group of birds classed as migrants that may remain in Iowa a few days or weeks in spring and fall, but after a short time pass out of the state to the northern nesting areas or to the south for the winter season. Included here are the Canada goose, golden plover, and several of the warblers.

When explanations are offered on subjects or activities which are not fully understood, they often sound ridiculous as more information is accumulated. An examination of the earliest man-given reasons for bird migration brings to light elements of absurdity. The habit that certain birds have of congregating around marshy vegetation just before they begin their migratory flight might easily lead one to think that the birds hibernated in the mud. The bending of reeds and rushes under a bird's weight so that it disappeared from view would lead an unknowing person to think the bird had dived into the water and mud to begin its winter hibernation.

For years it was the accepted thing that birds which disappeared in a season were hibernating in the mud. Some naturalists even described how the birds changed to frogs in fall and back to birds again in spring. One early scientist even went so far as to show a winter fishing scene in which the netmen were hauling up a mixed catch of fish and birds.

At first the idea of mass flight of small birds did not occur to naturalists. They readily understood how the ducks, geese, hawks and other larger birds could fly for hundreds and even thousands of miles. But they could not understand how the weaker birds and poorer flyers could ever travel that distance, parts of which were over extensive stretches of water. So, by popular notion, it was decided that a transport system was used whereby the geese, cranes, and swans allowed the small, weaker birds to mount their backs. Thus supported, the small birds were carried across the seas and difficult land areas.

To go a step farther into the preposterous, one naturalist described how birds flew to the moon, but his explanation of what they ate and how they rested on the way was a bit weak.

All of these early statements were guesses with more or less reasoning to bear them out. Today other causes for migration are given. These causes are also guesses, but they are backed by study, observation and reasoning so that they sound much more plausible. However, no one knows why these millions of birds are now coming back to Iowa to feed, nest, raise their young, then make the return journey next fall.

Diminishing food supplies, extreme changes in temperature, ancestral homes before the ice age, and changes in quantity and quality of sunlight are several of the most important modern reasons which have been advanced in an attempt to explain bird migration. Each one has flaws, however, and does not completely ring true.

Since prolonged flight requires much energy, some birds spend considerable time before their flight in eating and becoming fat for the journey. Those birds which do not make extended flights over either land or water may not make any special preparations before starting to migrate. Instead they may eat as they go by alternating their periods of flight with periods of eating and resting.

Migratory flight may be accom-

plished either by day or by night. We would naturally expect those birds to migrate by day which are swift and untiring in their flight in order to elude any enemies. This is partly the reason. Time of feeding also determines time of flight. A partial but representative list of day migrators is given below.

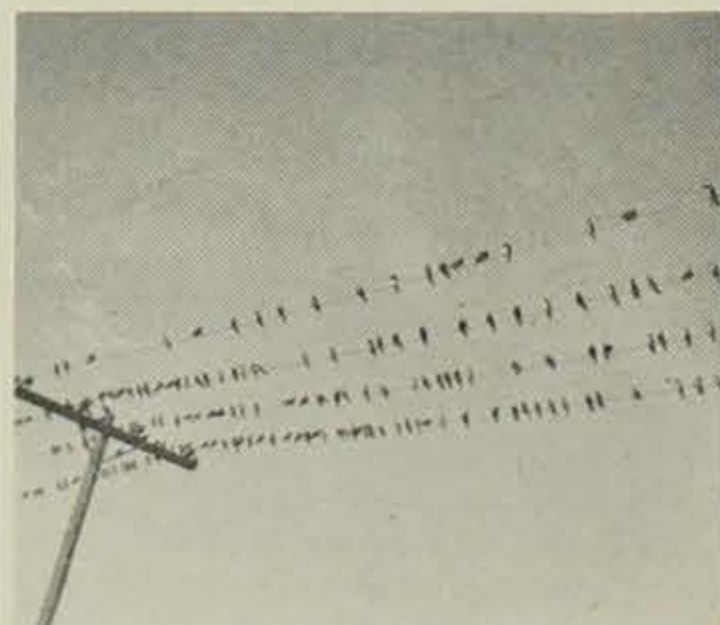
Loons	Nighthawks
Cranes	Swifts
Ducks	Swallows
Geese	Jays
Hawks	Kingbirds
Turkey vultures	Hummingbirds
Gulls	Finches
Shore birds	

Nighthawks cover the most distance in late afternoon and early morning. As is true of the swifts and swallows, their manner of flight is loose, languid and erratic since they feed as they fly and perform many kinds of aerial acrobatics along their course. Many of the waterfowl are capable of feeding at night so that flight by day works in very handily. Other such rugged birds as hawks and vultures do not undergo serious physical damage if they fast for a day or even more. Other day flyers may feed intermittently during the day and rest at night as well. This requires a longer period for migration, but is best suited to the needs of the birds.

At times evidence of flight is difficult to establish, depending upon the height at which the birds travel and the degree of flocking during flight. Since sound travels much farther vertically than it does parallel to the earth's surface, birds can often be heard calling as they fly overhead even though they are invisible.

The larger portion of our birds migrate during the night. They use daytime for feeding and resting. It seems strange to think of some of our smallest birds, wrens, warblers and sparrows, which are usually very quiet at night, as night flyers. Some of the night migrators are listed below:

Warblers	Woodpeckers
Flycatchers	Vireos
Sparrows	Orioles
Rails	Wrens
Cuckoos	Thrushes



For many years it was believed that when swallows disappeared in the fall that they were hibernating in the mud. Some naturalist even described how the birds changed into frogs with the approach of winter, and back again to birds in the spring.

Through years of observation it has been determined that the hours from 8:00 p.m. to midnight and from 4:00 to 6:00 in the morning are the times at which the air is densest with migrating birds. One of the best ways to gain some idea of the number of birds that may be in the air at these hours is to select a point of high elevation such as a hill or watch tower and listen for the passing night noises. A low power telescope and a full moon can be used to great advantage in determining if night migration is in progress.

More is known about night flying than day migration, because in almost every instance flight at night is truly migratory. Also, a greater number of birds migrate at night rather than during the day.

In addition to the two general classes of day and night migrants there are those which travel at both times. Ducks, geese, gulls, plovers, snipes and terns are representatives of this group. With them continuous migration is necessary because of large bodies of water spanned during the course of flight.

During the migration seasons there are certain flyways over which the majority of migrating birds take their course. One of the most important of these is the Mississippi Valley flyway. It is famous as the waterfowl's favorite. Canadas, pintails, mallards, ring-necks, scaups, gadwalls, teal and blue geese all course this flyway by the thousands. In addition to the waterfowl, it is a favorite of shore birds, blackbirds, sparrows, warblers and thrushes. We are fortunate in being located in the middle of this flyway; bounded in Iowa, by the Mississippi to the east and the Missouri to the west. The fall duck and goose flights from northern breeding grounds make the Iowa waterfowl hunting season, for the ducks raised on Iowa marshes and sloughs are far from sufficient to afford a good hunting season.

Many accidents can befall migrating birds. In extended flights they often encounter adverse weather condition which may take large numbers of them. During the spring migration bad storms sometimes reach down into the Gulf of Mexico and so exhaust the flyers that they are unable to reach land. Even the Great Lakes take a surprisingly large number of birds made helpless by severe winds and cold. Bright lights such as those from lighthouses, searchlights and industrial centers seem to have a peculiar attraction for birds. They often dash themselves to death against obstructions while flying toward the source of light.

Spring migrants begin to arrive in Iowa around the first day of March, and the flights continue for about three months. During this period all the summer visitants arrive at fairly definite dates. Average arrival dates for the more common birds have been determined and are presented in the fol-

following list with the respective average dates of departure.

Bird	Avg. Date of Arrival	Avg. Date of Departure
Great blue heron	March 20	Nov. 1
Black-crowned night heron	April 8	Nov. 1
American bittern	April 10	Nov. 15
Canada goose	March 8	Oct. 25
White-fronted goose	March 25	Nov. 1
Lesser snow goose	March 16	Nov. 15
Blue goose	March 22	Oct. 25
Mallard	March 5	Nov. 28
Gadwall	March 15	Nov. 4
Baldpate	March 20	Oct. 14
Pintail	March 5	Nov. 16
Green-winged teal	March 12	Nov. 8
Blue-winged teal	March 18	Nov. 4
Shoveller	March 18	Nov. 9
Redhead	March 18	Oct. 25
Canvasback	March 18	Nov. 3
Ruddy duck	April 5	Oct. 28
Turkey vulture	April 1	Oct. 18
Red-tailed hawk	March 12	Nov. 16
Marsh hawk	March 1	Nov. 14
Sparrow hawk	March 14	Oct. 12
Coot	March 25	Nov. 20
Killdeer	March 10	Nov. 4
Wilson's snipe	March 25	Nov. 25
Upland plover	April 16	Aug. 31
Spotted sandpiper	April 21	Oct. 17
Greater yellowlegs	April 10	Sept. 25
Lesser yellowlegs	April 7	Sept. 20
Franklin's gull	April 2	Oct. 10
Black tern	May 3	Sept. 12
Mourning dove	March 24	Oct. 25
Yellow-billed cuckoo	May 16	Sept. 25
Whip-poor-will	April 26	Sept. 18
Nighthawk	May 3	Sept. 25
Chimney swift	April 18	Sept. 16
Ruby-throated hummingbird	May 7	Oct. 1
Belted kingfisher	March 27	Nov. 18
Flicker	March 20	Oct. 22
Red-headed woodpecker	May 1	Nov. 20
Yellow-bellied sapsucker	April 3	Oct. 15
Eastern kingbird	May 1	Sept. 12
Crested flycatcher	May 8	Sept. 15
Eastern phoebe	March 18	Oct. 14
Wood peewee	May 7	Oct. 1
Barn swallow	April 20	Sept. 24
Purple martin	April 8	Sept. 3
House wren	April 26	Oct. 5
Catbird	May 1	Oct. 3
Brown thrasher	April 16	Oct. 1
Robin	March 8	Nov. 12
Wood thrush	May 3	Sept. 22
Bluebird	March 8	Oct. 30
Golden-crowned kinglet	April 2	Oct. 16
Ruby-crowned kinglet	April 10	Oct. 8
Cedar waxwing	March 7	Oct. 12
Migrant shrike	March 28	Oct. 26
Red-eyed vireo	May 6	Sept. 21
Yellow warbler	May 3	Sept. 12
Ovenbird	May 5	Sept. 25
Northern yellowthroat	May 7	Sept. 29
Canada warbler	May 15	Aug. 30
American redstart	May 8	Sept. 25
Bobolink	May 1	Sept. 28
Eastern meadowlark	March 10	Oct. 20
Western meadowlark	March 12	Oct. 18
Red-wing blackbird	March 12	Nov. 17
Orchard oriole	May 10	Aug. 2
Baltimore oriole	May 1	Sept. 7
Bronzed grackle	March 14	Nov. 11
Cowbird	April 10	Aug. 24
Scarlet tanager	May 8	Sept. 15
Rose-breasted grosbeak	May 1	Sept. 21
Indigo bunting	May 6	Sept. 27
Dickcissel	May 16	Sept. 6
Red-eyed towhee	April 14	Oct. 17
Chipping sparrow	April 1	Oct. 18
Field sparrow	April 11	Oct. 12
White-throated sparrow	April 26	Sept. 30
Song sparrow	March 20	Nov. 9

OUT-SEASON GOOSE EGG

Another item "for the book" is quoted by the Sportmen's Service Bureau from Bob Wilson's column in the Washington Times-Herald. This tells of a Canada goose shot by Dr. Carleton Vaughan in November, on the Sassafras River, Maryland. This goose was found to contain a mature, fully developed, hard-shelled egg.

Both Clarence Cottam, U. S. Fish and Wildlife Service, and C. S. Williams of the Service's Bear River Migratory Bird Refuge, two outstanding waterfowl experts, reported they had never heard of a similar instance, and termed it a "freak."

COMMISSION ACTION JANUARY, '46

The January meeting of the State Conservation Commission was held at the central office, Des Moines, January 14 and 15, 1946. Members present were E. B. Gaunitz, F. W. Mattes, Mrs. Addison Parker, F. J. Poyneer, R. E. Stewart, and Ewald G. Trost.

The Commission:

Approved a contract submitted by the Highway Commission for a change in the location of the road at Lepley Wayside in Hardin County.

Approved construction of an REA line to service Geode State Park and adjacent farm residences, subject to application for such line.

Directed that a formal request be made to the State Highway Commission for a five-acre tract at the entrance to Heery Woods Recreational Reserve. The tract is no longer used for highway purposes since relocation of the road.

Approved a one day a week vacation for park conservation officers, who in the past were on 365-day work schedules.

Disapproved the application of A. G. Fuller, Jr., Arnolds Park, for permission to use the state pier at Arnolds Park for a commercial sailboat landing, pointing out that the pier had been designated for the use of the general public and not for commercial passenger craft.

Authorized the attendance of G. B. McDonald, State Forester, at the regional forestry meeting at St. Louis the latter part of January, subject to Executive Council approval.

Authorized the Director to make necessary arrangements with the town of Lake View granting them permission to hold their Ice Carnival at Black Hawk Lake and charge an admission fee therefor.

Granted a commercial dock permit on the northwest shore of North Twin Lake to J. G. Helwig of Pocahontas.

Authorized Mrs. Parker and Mr. Flickinger of the Commission, Dr. Hayden and Dr. Racken, of Iowa State College, to make necessary investigations and compile a report on the prairie areas to be acquired and recommend priority for purchase.

Authorized purchase of two motor boats for the use of the Lands and Waters Division for lake patrol, and one boat for the Fish and Game Division.

Approved the Henry F. Swenson option on 12.40 acres in Forney Lake Area in Fremont County to be paid from Pittman-Robertson participation funds.

Authorized the purchase from the Burlington Railway Company of 5.84 acres adjacent to the Mount Ayr game area in Ringgold County.

Authorized the attendance of two members of the Commission and two members of the staff to attend the North American Wildlife Conference in New York City, March

TIMELY HINTS FOR THE HUNTER

A hunter popped a partridge on a hill;
It made a great to-do and then was still.
It seems, when later on his game he spied—
It was his guide.

And one dispatched a rabbit for his haul
That later proved to measure six feet tall.
And, lest you think I'm handing you a myth,
Its name was Smith.

Another nimrod slew the champion fox,
He saw him lurking in among the rocks.
One rapid shot—he never spoke nor moved
The inquest proved.

A cautious man espied a gleam of brown;
Was it a deer or Jones, a friend from town?
But while he pondered by the river's brim,
Jones potted him.

—Colorado Conservation Comments.

11, 12 and 13, subject to approval of the Executive Council.

Approved memorandum of understanding between the State Conservation Commission and the Warren County Soil Conservation District.

Approved George W. Cunnea option for approximately 70 acres of submarginal Emmet County game land.

Approved Charles Poncine's option on approximately 27 acres of submarginal land adjoining Wall Lake in Wright County.

Endorsed the Izaak Walton League's recommendations in regard to federal legislation on stream pollution control. Authorized the Director to write to persons concerned relative to this matter.

Approved an efficiency rating system to be used for conservation officers and employees.

Approved the development plan for East Swan Lake in Emmet County as presented in a detailed report by the Chief of Fish and Game.

Adopted regulations and set dates for conservation officers' examinations.

Established Woodthrush Preserve in Jefferson County as a wildlife refuge.

Authorized posting all trout streams with signs prohibiting minnow removal.

Approved a repair budget for the state game bird hatchery, Ledges State Park.

Authorized printing of 20,000 copies of "Iowa Outdoor Map."

Ordered necessary steps be taken toward acquisition of the Del Rio Park Area in Polk County for a public fishing access.

Authorized design and construction of permanent animal and reptile pens for the State Fair exhibit building.

Adjourned.

The brook trout is not a trout. It is a charr. So is the Dolly Varden.

Enough wood to build a new home grows in America every 12 seconds.

HUNTERS SWAMP RABBIT MARKET

As usually happens during a good cottontail year in Missouri, the dead rabbit market collapsed after hunters reaped a bumper harvest in the deep snows of December.

"During the big snow rabbits were brought in by the sackful," reported Agent Pat Adams of Warsaw. "They flooded the market and caused the dead-rabbit price to drop from 30 cents to 5 cents apiece within six days."



A bumper crop flooded the dead rabbit market during the past season and caused the price of cottontails to drop to 5 cents each.

Supervisor Robert Worthington reported that dealers in the big rabbit market center of Springfield had almost stopped buying by the end of December. Some were paying less than a dime at that time. One dealer told Worthington that a Southern city had 5,000 barrels of rabbits in storage and had cancelled further orders.

Reflecting both rabbit abundance and good hunting conditions, Harvey Shatzer, produce and dead-rabbit dealer of Paris, reported to Agent Maschmann the following shipments: Dec. 15, 870 rabbits; Dec. 17, 2,150; Dec. 18, 883; Dec. 19, 1,120; Dec. 22, 1,135; Dec. 24, 980; Dec. 26, 1,550; Dec. 28, 1,548; a total of 10,236 rabbits shipped in 16 days. In addition to the rabbits Shatzer bought and sold 162 raccoon carcasses and 69 opossums for food.

—The Missouri Conservationist.



By Wm. G. Stump
Farm Forester

OAK wilt is establishing itself as a major problem in all states of the corn belt, according to Dr. S. M. Dietz, Research professor in Plant Pathology, Iowa State College.

In the first stage of oak wilt, the leaves of the red oak group turn brown, or bronze in the upper part of the tree while the lower leaves might still be green. In about 30 days, all of the leaves will have turned brown.

It has been found that no oak recovers when once attacked. The disease moves slowly through the woods, leaving dead oak trees as evidence of its destructive nature.

Last fall, data was obtained from 45 woodlots in northeast Iowa with a combined acreage of 1933 acres. The average woodlot was 45 acres in size. The percent of volume of the red oak group in these woodlots ranged from 0 per cent to 93 per cent and the per cent of merchantable trees in these woodlots ranged from 0 per cent to 92 per cent. The average per cent of volume per acre in the red oak group was 58 per cent, and the average per cent of trees per acre was 51 per cent.

Three areas, where diseased trees are being removed each year, were checked for trees killed in 1945. One area is a 70 acre woodlot. This past year there were 32 red oaks and one white oak killed by the disease. The total volume of these trees was 8,500 board feet, or 69 per cent of the total growth of the timber in 1945.

On the second area of 40 acres, six red oaks were killed. The total net volume of these trees was 1,650 board feet or 20 per cent of the total growth of the timber in 1945.

The third area was a 20 acre woodlot. Oak wilt killed seven trees last year and the total net volume of these trees was 1,550 board feet or 50 per cent of the total growth of the timber in 1945.

These figures are an indication of the activity of the disease in the woodlots where it is present. They also bear out the statement of Dr. Dietz that oak wilt is establishing itself as a major problem in all states of the corn belt.

Three methods of control are being tried:

1st. Modified sanitation. Mark and remove all dead trees. Cut a perimeter of the green trees and use sanitation measures in disposing of brush and dead wood.

2nd. Roguing. Cutting of dead trees and all green trees showing signs of wilt to be removed at once.

ASK \$3,000,000 PITTMAN-ROBERTSON FUNDS FOR 1947

Congress has been asked to appropriate \$3,000,000 in Pittman-Robertson funds for the 1947 fiscal year, beginning July 1, 1946. If approved, this will represent the largest appropriation yet made under the Pittman-Robertson Act.

Under the provisions of this Act, excise taxes on sporting arms and ammunition are earmarked for wildlife restoration, but may only be expended after they have been appropriated by Congress. They are then allocated to the states through a formula based on geographic area and number of licensed hunters. The various states must add one-third to the amounts allocated to them, after which the total may be used for projects which have been approved by the U. S. Fish and Wildlife Service.

Another animal traditionally associated with early American history, the American bison or buffalo, seems to have been rescued from the threat of extinction. From an estimated population of more than 50,000,000 at the time of the early settlements, buffalo were reduced to about 500 individuals in 1889. From this low point, they have been brought back to the present population of 6,047 animals in the United States and some 2,000 in Canada.

The American elk now occurs in 25 states and is considered huntable game in eleven of them. The elk, which is one of the largest American members of the deer family, once occurred in territory corresponding to 42 of the present states. By 1910 the elk were reduced from original millions to about 60,000 animals in only seven states. The elk population has increased to 233,714.

Although moose show a 25 per cent increase compared with 1941, the continued welfare of this animal of the wilds is in doubt.

Grizzly bears, once found in 15 states, now occur in five. Montana has 632 grizzlies and Wyoming 575; in Colorado, Idaho, and Washington there are only a few scattered individuals.

Bull moose shed their antlers just after the autumn rutting season. The new set becomes full-grown about four months later.

Raccoons are listed as among the chief enemies of the crow.

3rd. Topping. This method is applied to white and burr oaks where the disease is found in the tops. The diseased areas are cut and the spread of the disease is either delayed or completely stopped in that particular tree.

In the farm woodlot, the best known method of control at this time is to get the woods cleaned up and then cut infected trees as soon as possible. This method removes the sources of future infection at an early date and does not burden the woodlot owner with a lot of trees to cut in any one year.



Our ancestors found an abundance of game just where the sportsman finds it today, and no doubt, always will, along the edge and in and about forest openings.

Timber and Game . . .

(Continued from page 18)

dealing with the involved subject of waterfowl nor the upland species such as prairie chicken which thrived in extensive native grasslands. We are sticking to types of game which demand forest growth as a component of habitat.

Now, what man did by way of altering that balance of forest and opening is history. Plenty of it, in the light of today's understanding of game needs alone, was shameful; but, at the same time, some of it happened to fill so completely the needs of game that it formed rough patterns which, refined and developed, we are following currently and seem destined to follow far into the future—provided we are smart enough to learn from experience.

One of the first activities of our ancestors was to create clearings in the forests, for home, farm and village; and wherever a clearing was made there was new and man-created edge for the birds and animals of the vicinity. Nesting sites, food supplies, mating and playing and resting places that never before existed began to dot the map, with dense woods always adjacent for shelter and escape. That was all to the good.

But when, as forest products came into greater demand, those clearings spread and multiplied and came together and over wide areas stands of thick timber became things of the past—why then our supply of forests openings became too much of a good thing. Our edge was no longer present. The shift from deep woods to choppings was complete. In county after county and state after state the game environment was completely out of balance.

Where the land thus stripped of its natural cover was suitable and needed for agriculture or any other sound social purpose there was of course justification for such a radical altering of the landscape. But

where the land was neither suitable nor needed for a new and specific use, such exploitation we now agree was shortsighted and wasteful. The practice of the times was to walk off and leave the choppings and let fire run which killed off the seed trees and baked the fertility from the soil itself. The only excuse of course is that with normal pioneer enthusiasm for the opportunities of the moment and facing a continent so rich in natural resources we thought there'd be enough to last everybody forever. We just didn't know any better.

Pioneer Traders Found Little Game

No more did those pioneers realize what they were doing for game and forests in those few regions where deforestation was neither so rapid, complete nor permanent. The disastrous mistakes of the past have had plenty of well deserved attention. The fortuitous happenings as increasing population put most of the country to use, however, have often been neglected.

It is interesting and enlightening to study the diaries of certain old fur traders who were in many instances a century or more ahead of the loggers' axes. Michillimackinac—Mackinac Island, perhaps, to you—was one of the great fur depots before and shortly after 1800. From the headquarters on the strait between Lakes Michigan and Huron, brigades dispersed north and west and south in search of peltries. Many of those which went west proceeded up the St. Mary's river to Lake Superior and then coasted along what are now the boundaries of Michigan, Wisconsin and Minnesota.

(Continued next month)

The playful beaver builds his lodge Along the river rim; He wears a bathing suit of fur When he goes in to swim.

The common superstition that a person handling toads will get warts is untrue.