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# WILDLIFE MANUAL

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Wildlife Conservation  
and  
Outdoor Recreation

EXTENSION SERVICE  
UNIVERSITY OF NEBRASKA COLLEGE OF AGRICULTURE  
AND U. S. DEPARTMENT OF AGRICULTURE  
COOPERATING  
E. F. FROLIK, DEAN      E. W. JANIKE, DIRECTOR



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## YOUTH MANUAL FOR WORK IN WILDLIFE CONSERVATION & OUTDOOR RECREATION

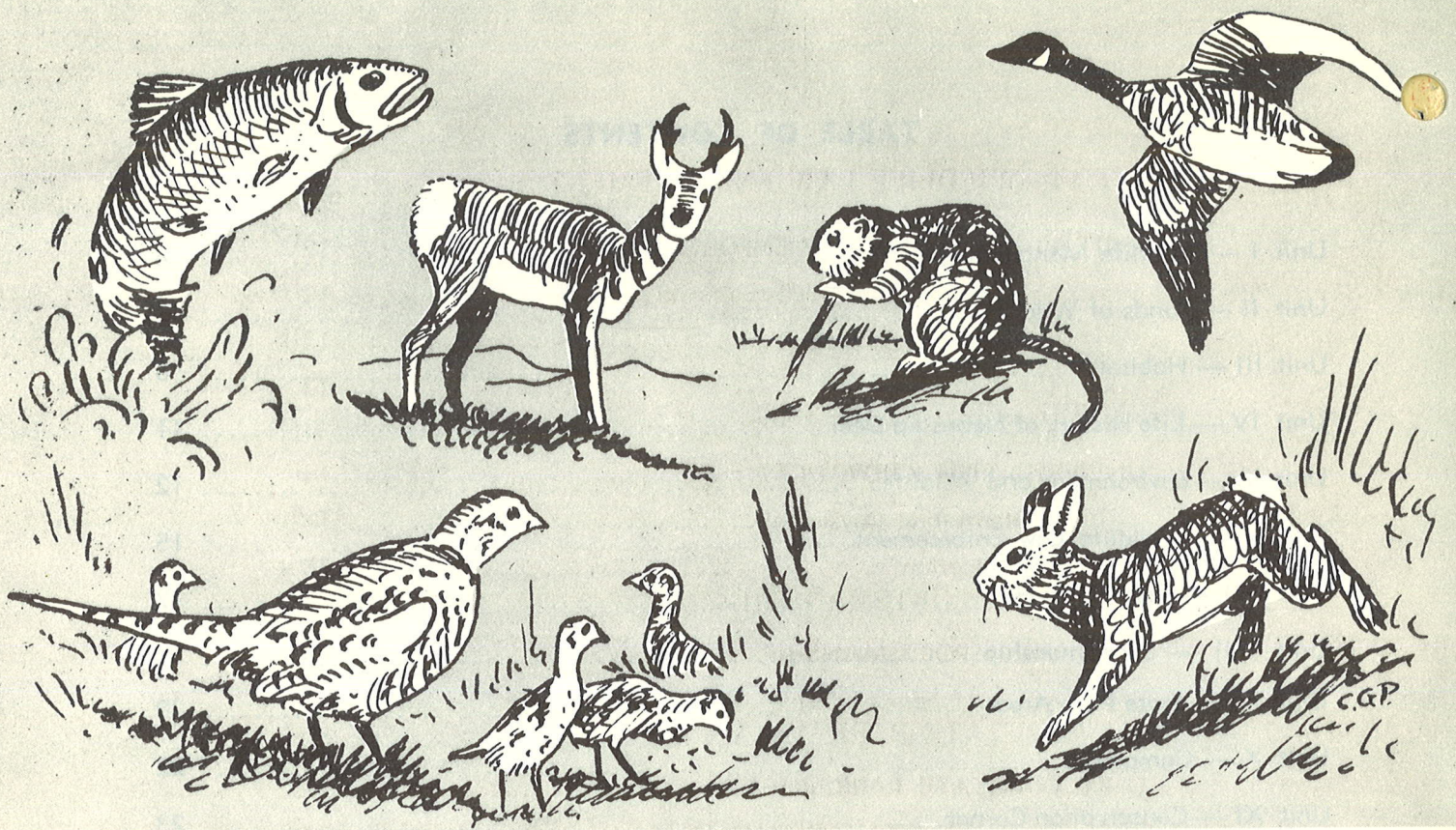
### Acknowledgments

The Nebraska Extension Service extends appreciation to the Nebraska Game, Forestation, and Parks Commission for the writing of this manual and the supporting materials necessary in carrying out project work in wildlife conservation.

Special appreciation is due the authors of this manual, James M. Tische, Journalist; and Dale R. Bree, Biologist, with the Nebraska Game, Forestation, and Parks Commission. Also cooperating in planning and preparing this material were the following individuals from Dawson County: Harold Stevens, County Extension Agent; Bill Trupp, County Superintendent of Rural Schools; G. D. Young, Work Unit Conservationist, Soil Conservation Service.

C. G. Pritchard, Nebraska Game Commission did the illustrations.





## UNIT I — WILDLIFE MANAGEMENT

### History

When white settlers arrived on the shores of the New World, North America possessed an abundance and variety of wildlife. It was so abundant that the white settlers had trouble finding words to describe it. This wildlife made a large contribution to the establishment of the New World economy. The pioneers were dependent on wild game for food while clearing land and getting settled in the new country. This was the pattern during the entire settlement of the United States.

There were reasons for the early abundance of game and birds. Wildlife populations are modified as habitat changes and varies in abundance according to climate, soil fertility, and altitudes. With fine cover and plenty of food, and a minimum of hunting pressure from Indian tribes, wildlife flourished in the new country.

As man made progress, animal life suffered. Clearing forests, draining lakes and swamps, building roads, and other steps in developing agriculture and industry have been of great benefit to man. But it

has also caused the disappearance of animals because of the destruction of their native habitat.

As man moved westward, fur trading and then market hunting began to take a heavy toll. Market hunting, following the Civil War, accounted for millions of killed wild animals. This type of hunting was carried on the year around. Passenger pigeons were eliminated and certain other species reduced.

Few persons raised their voices against this reckless destruction of wildlife until the late 1800's. Little was done until the early 1900's. Then refuges were started and laws passed to protect wildlife. The 1900's marked the start of this country's wildlife management program. In the 1930's, great strides were made in conservation. The applied science of wildlife management was formalized into a college curriculum in 1933. This opened the door for the training of individuals for professions in wildlife management.

History of the Nebraska Game Commission relates back to its origin on February 24, 1879, at which time the Governor nominated three resident



citizens to a Board of Fish Commissioners. The board had charge and supervision of public waters pertaining to the collection, production, cultivation, distribution, and protection of fish in the state.

The Nebraska Game, Forestation and Parks Commission, as it is known today, came into existence on April 22, 1929. The Commission is responsible for the protection, development, and management of Nebraska's wildlife resources. State Parks and certain areas of state lands are also under its control.

The Game, Forestation and Parks Commission has offices located in the State Capitol, Alliance, Bassett, Norfolk, North Platte, and the Wildlife Building, Lincoln.

### **Purpose and Objectives**

Wildlife management is the branch of conservation which has to do with making land and water produce sustained annual crops of wild animals. Essentially, this wildlife is for recreational use.

The objectives of wildlife management are:

- (1) Preserving species.
- (2) Managing wildlife to secure the maximum populations consistent with other uses of land and water.
- (3) To produce wildlife populations that will provide the greatest amount of recreation for people over the longest period of time.
- (4) Controlling populations of undesirable species.

### **Economic Importance**

Some useful values derived from wildlife are food, wearing apparel (made from feathers, furs, and hides), manufactured articles (made from furs, hides, and fish oil), and fertilizer.

Useful activities of animals in the wild state include: scavenger service, impoundment of water, and crop saving by insect destruction, and the control of harmful animal life.

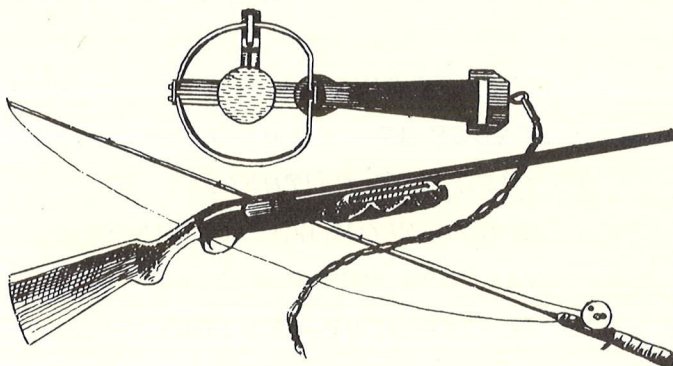
In captivity, animals are used for zoo specimens, circus exhibits, and for scientific experiments.

There are many ways in which wildlife has direct economic value. The hunter buys a gun or shells, thereby creating a demand for these supplies. A

member of a bird watchers' club buys a pair of field glasses, therefore creating additional demand on this type of goods.

The economic importance of our wildlife resources cannot be stressed highly enough. Today, more than 25,000,000 Americans hunt and fish annually. They spend over three billion dollars each year in pursuit of fish and game. One in every three households in the U. S. in 1955 had one or more fishermen or hunters.<sup>1</sup>

The development of our wildlife resource is big business in the United States, and the demand for more production of fish and game increases with each passing day.



The shorter work week and more leisure time will enable more people to seek recreation in some form. More and more sportsmen are taking to the field each year. Wildlife managers are continually faced with the task of sustaining wildlife populations in such quantity so as to insure recreation for the greatest number.

Increasing demands for more food and fiber to support the expanding population is placing tremendous hardships upon wildlife and causing the destruction of thousands of acres of wildlife habitat. Already, migratory waterfowl are suffering from the loss of habitat due to the drainage of marsh land for crop production. The prairie chicken populations of yesteryear have given way to the plow and the cow.

It is estimated that the population of the United States will be 343 million people by the year 2000.<sup>2</sup> This figure represents twice the present population of our country. We must realize the significance of this

<sup>1</sup> Information from: U.S. Department of the Interior, 1956, National Survey of Fishing and Hunting. U.S. Fish and Wildlife Service, Washington.

<sup>2</sup> Information from: Scott, T. G., 1959. The Ornithologist's Responsibility To The Future. The Wilson Bulletin, Vol. 70, No. 4, Urbana, Illinois.



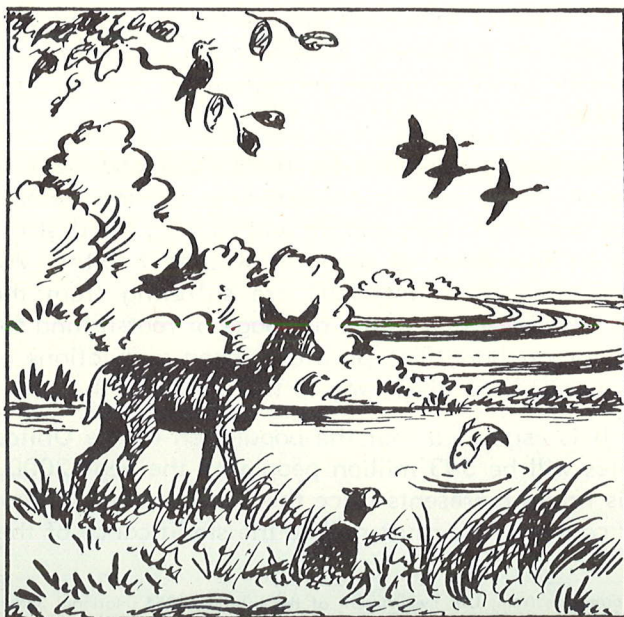
population increase. People will require more homes, food, clothing, living space, and other necessities of life. Wise and careful utilization of our natural resources is a must.

Competition and demand for the harvest and utilization of our wildlife resources is widely recognized by sportsmen today; yet, this demand is small compared to the material increase that our country will experience in the next 30 years.

Stop, think and realize that our very existence and prosperity is related to the wise use of our four great natural resources.

Let each of us take time to learn the meaning and significance of our "Conservation Pledge":

*I GIVE MY  
PLEDGE AS AN AMERICAN  
TO SAVE AND FAITHFULLY TO  
DEFEND FROM WASTE THE  
NATURAL RESOURCES OF  
MY COUNTRY—ITS SOIL  
AND MINERALS, ITS  
FORESTS, WATERS,  
AND WILDLIFE*



## Organizations That Aid Wildlife

Many professional and nonprofessional organizations are working constantly to improve present conditions in the wildlife field. Important to the management of wildlife is the United States Fish and Wildlife Service under the Department of Interior. State Game and Fish Departments work closely with this government agency to insure efficient management of our wildlife resources.

The Extension Service carries on educational programs for farmers, 4-H, and Extension Clubs. Clark McNary trees and shrubs are distributed through the County Agents' office. The Soil Conservation Service assists farmers in planning windbreaks, wildlife plantings, pond construction, and grass seeding. The Soil and Water Conservation Districts plant trees and shrubs for farmers. The County Agricultural Stabilization Committee assists farmers in cost-sharing on tree planting, pond construction, and grass seeding. Farmers maintain wildlife areas by cultivating trees and shrubs and planting grass for additional cover.

Some other national organizations that aid wildlife are: The Izaak Walton League of America, National Fisheries Institute, Inc., National Waterfowl Council, National Wildlife Federation, Sport Fishing Institute, Sporting Arms and Ammunition Manufacturers Institute, Water Safety Congress, The Wilderness Society, Wildlife Management Institute, The Wildlife Society, and many others.

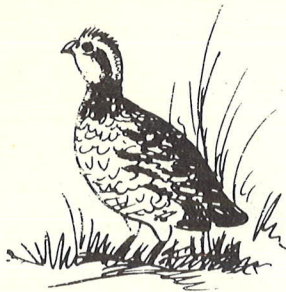
Many towns in Nebraska, large and small, have sportsman's clubs. Many of these clubs belong to a county organization. In some areas of the state, there may be one sportsman's club representing a number of small counties. Most of the clubs in the state belong to the Nebraska Council of Sportsman's Clubs. The clubs, large and small, meet periodically throughout the year in the interest of wildlife. The statewide organization meets once a year to discuss problems in the wildlife field. Delegates from each club belonging to the council attend the yearly meetings.



## UNIT II — KINDS OF WILDLIFE

### Classification of Game

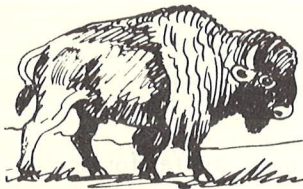
Modern civilization has made it possible to classify American game species with respect to their range requirement. Essentially, American game is classified by where it is produced and found. The four classes are: farm, forest and range, wilderness, and migratory.



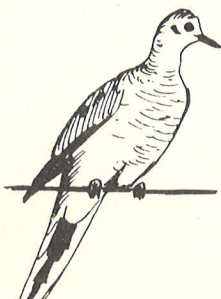
Farm game consists of species which, because of their short cruising radius and high requirements for cultivated land, are especially adapted to agriculture areas. Examples of farm game include the cottontail rabbit, bobwhite quail, and pheasant.



Forest and range game consists of species inhabiting wild land but compatible with forestry or livestock operations. Deer, antelope, sharp-tailed grouse, prairie chickens, and wild turkeys are examples of this classification.



Wilderness game consists of species harmful to or harmed by economic land uses, therefore suitable for preservation in public game reservations or wilderness areas. Elk, buffalo, moose, caribou, mountain sheep, and the grizzly bear are in this class.



Migratory game consists of species of such long cruising range that they usually leave the area on which they were raised. This group includes waterfowl, shore birds, migratory doves, and coturnix quail.

Nebraska has a fine population of most farm, forest and range, and migratory game in the wild. Only the wilderness animals are missing from the state picture.

In the wilderness class, herds of buffalo and elk are maintained by the state at the Wildcat Hills Game Refuge in western Nebraska, nine miles south of Gering. The Federal Government maintains buffalo and elk herds at the Valentine National Game Refuge. Pioneer Park in Lincoln also has some buffalo and elk.

Bobwhite quail, cottontails, pheasants, and fox squirrels are the farm game found in our state.

Whitetail deer, mule deer, fallow deer, wild turkey, prairie chicken, sharp-tailed grouse, antelope, and the gray squirrel are the forest and range game present. Wild turkeys were nearly exterminated from the state in early days and are now being restocked by the state and private interests. The Nebraska Game Commission carried on a turkey stocking program in western Nebraska during 1959. Gray squirrels are sometimes found along the bluffs of the Missouri River.

The different species of shorebirds, ducks, and geese which migrate through Nebraska each spring and fall are too numerous to mention. Many of the shorebirds and ducks stay in the state to nest. The principal nesting grounds for ducks are the Sand Hills in the north-central section of the state and the rain-water basin in the south-central region.

### Classification of Game by Law

All wild animals and birds are classified by state and federal laws. A game bird in one state may be a song bird in another state. Such is the case of the dove which is hunted in many states but is a song bird in our state.

The opening article in the laws of the Nebraska Game, Forestation and Parks Commission reads:

"As used in this act, unless otherwise specified or plainly intended, the word game shall include all game fish, bullfrogs, game animals, fur-bearing animals, game birds, and all other birds and creatures protected by this act; the term game fish shall in-

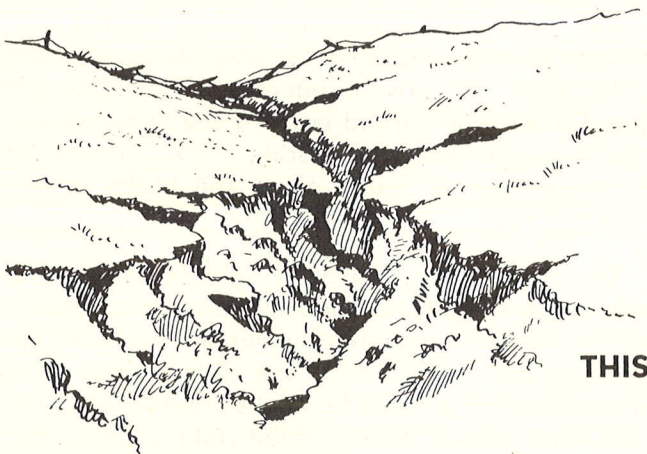


clude all fish except buffalo, carp, gar, minnow, squaw fish, sucker, and quill back; the term game animal shall include all antelope, buffaloes, cotton-tail rabbits, deer, elk, and squirrels; the term furbearing animal shall include all beavers, martens, minks, except mutation minks, muskrats, and otters; the term game birds shall include all migratory waterfowl, coots, cranes, curlew, doves, ducks, geese, grouse, partridge, pheasants, plovers, prairie chickens, snipe, swans, and wild turkeys . . ."

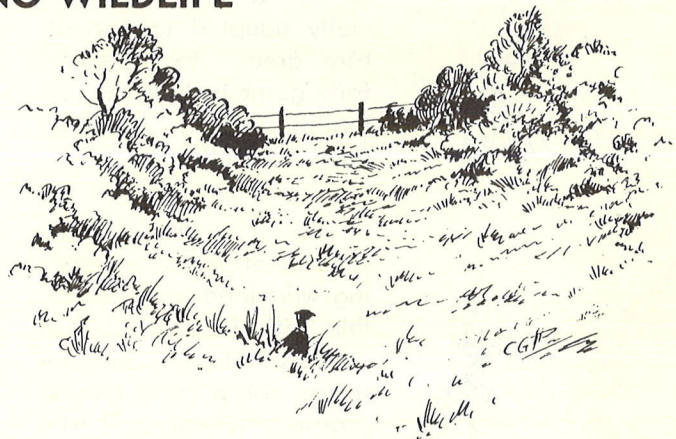
The state also protects non-game birds.

"It shall be unlawful for any person to shoot, kill, destroy, catch, attempt to shoot, or have in his possession, living or dead, any song, insectivorous, or non-game birds, including mourning doves, or part of any such birds, other than an English sparrow, blue jay, crow, Cooper's hawk, sharp-shinned hawk, goshawk, European starling, bronzed grackle, great horned owl, or magpie."

## NO COVER -- NO WILDLIFE



**THIS**



**OR THIS**

## UNIT III — HABITAT

### Wildlife Requirements

Wildlife is a product of the land. Nebraska with its fertile soil has a great potential for the production of wildlife. Yet rich soil alone is not the answer to productivity. We must not overlook the importance of water. For without this resource, we cannot produce plant life and without plant life there will be no game habitat.

Our ability to produce game in Nebraska is related to the amount of habitat available. When adequate cover is present, the land will support a good game population.

Cover means vegetative or other shelter for game. Functions of cover include shelter, escape, refuge, loafing, nesting, roosting and shade. The five common functions of cover are listed as: winter cover, refuge cover, loafing cover, nesting cover, and roosting cover. There is some overlap in the use of the terms. The term escape is often applied to winter and refuge cover.

Environment is the key to wildlife abundance. Game populations are governed by the carrying capacity of the particular environment in which a species lives.

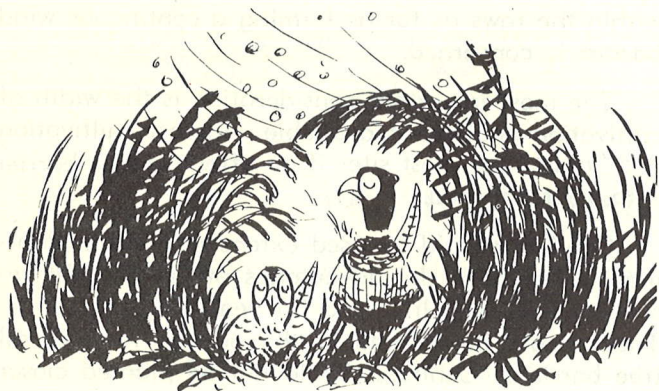


Wildlife managers have determined that one of the main causes for lower wildlife populations is lack of habitat of all kinds required to produce game or fish.

The people of our country use the land and water to produce the food and fiber needed to support them. In this, man modifies environment for wildlife and hence wildlife populations.

Barren fields, naked fence rows, and denuded stream banks will neither harbor nor produce a crop of game.

### Winter Cover



Winter cover is vegetation which offers protection during snow. The most essential property of this cover is dense foliage. Idle fields with heavy weed growths (sunflowers, horse weed, etc.), brushy woodlots, brush growing along roadsides, ditches and streams, shelterbelts of sufficient depth, shrubs growing along fence rows, all provide cover against most winter storms. Severe winter weather can be harsh on any game species and without cover, losses can sometimes be heavy.

### Roosting Cover

Game will often use different types of roosting cover during the year. For instance, during the summer, pheasants will desert marsh, brush, and heavy cover where they have roosted during the winter for more open habitat like hay land and other areas of light cover.

Fall roosting cover is little or no different from the summer cover. However, late in the fall, the birds will begin their movement back to areas of "heavy" cover in preparation for winter.

### Travel Lanes

Important to wildlife creatures are travel lanes and streets. These are convenient routes of reaching or leaving cover. These routes should connect with feeding grounds and should be clear enough to be traveled with ease. But it should have obstructions enough to be traveled with safety.

Brushy fence rows, gullies, and other strips of vegetation are travel lanes. When there is no safe route of travel, most game birds fly to the feeding grounds.

Streets left for game serve to bring isolated areas together, providing nesting sites and travel routes, and help to build populations.

### Nesting Cover

It is logical to conclude that unless a given wildlife environment possesses sufficient cover to facilitate nesting of upland game, the game population living in that environment has little chance of increasing or sustaining its numbers. Most of the breeding ranges offer a large amount and variety of nesting cover after the new green growth has started. But most of our waterfowl and game birds tend to start nesting before the new green growth becomes serviceable.

A bird building a nest in old grass, not of sufficient depth, is an easy prey for a predator. Once the nest is destroyed, the bird will most likely attempt to find another nesting site. Early spring growth of alfalfa provides an attractive nesting site for the pheasant. The birds readily utilize alfalfa and many nests are destroyed during the first cutting.

Providing bait cover is one way to insure better nesting. Marginal strips of hay or grain left standing from the previous year can serve as bait. The establishment of grass species which have a tendency to remain erect throughout the winter and into the nesting season will provide excellent nesting cover. Also we can act to lessen this problem through the development of safe nesting cover in such sites as field borders, roadsides, waterways, and the more nonextensive cultivated areas.

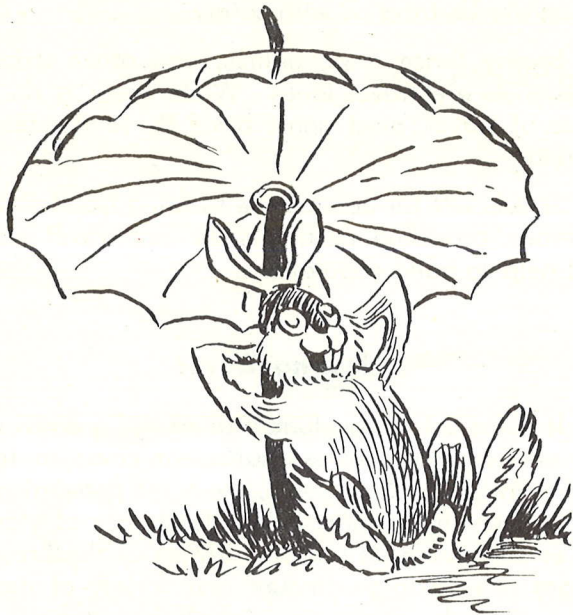


## Refuge Cover

Refuge is cover from which game cannot be driven. It protects wildlife by concealing it from enemies, or hinders them in pursuing it, or protects it from severe weather.

## Loafing Cover

This is a place, not necessarily large, that offers shade in the summer and wind protection in the



winter. Such places are often located near the sites of winter and refuge cover.

## Farm Windbreaks

It is generally recognized that trees are planted on the plains for the primary purpose of reducing wind velocity. Benefits are: (1) reduction of wind and water erosion, (2) reduction of soil moisture evaporation, (3) protection of growing crops from wind damage, (4) control of snow drifting, and (5) to furnish food and cover for wildlife.

To be effective a tree planting must be dense and continuous. Open spaces in the planting caused by poor survival or destruction by grazing reduce its effectiveness. All wildlife and windbreak plantings must be fenced to keep out livestock.

Trees and shrubs vary in their ability to grow in the many different soil types found in Nebraska. To

produce a satisfactory wind barrier we need first to choose tree and shrub species that will grow well on the type of soil in the particular area.

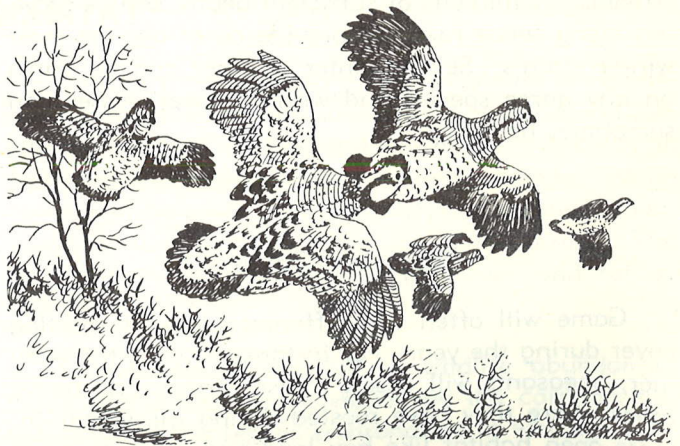
The second consideration should be the spacing between trees and shrubs in the row and spacing between the rows. To produce a dense and continuous wind barrier, the trees must be planted in such a manner that their tops will join closely together by the time the trees have grown to their normal height. This produces a forest condition which offers good protection to game animals and birds.

Trees planted from 6-10 feet apart within the rows will accomplish this if all survive. Shrubs and red cedar when used in the outside rows should be planted 3 to 4 feet apart. Shrubs that furnish food and cover for game should be used in all plantings. Spacing between rows is less important than spacing within the rows as far as forming a continuous wind barrier is concerned.

The most important consideration is the width of cultivation equipment available. Intense cultivation is a "must" for most sites if an effective tree barrier is to be established.

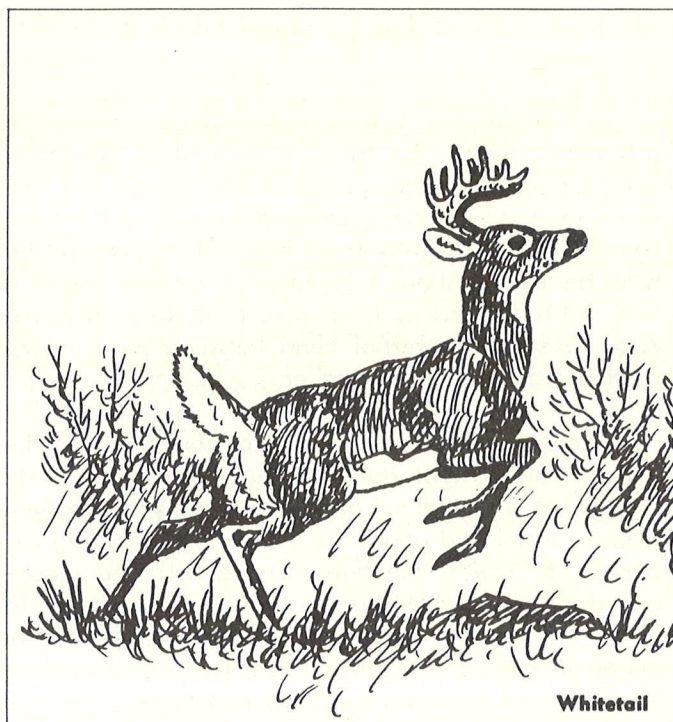
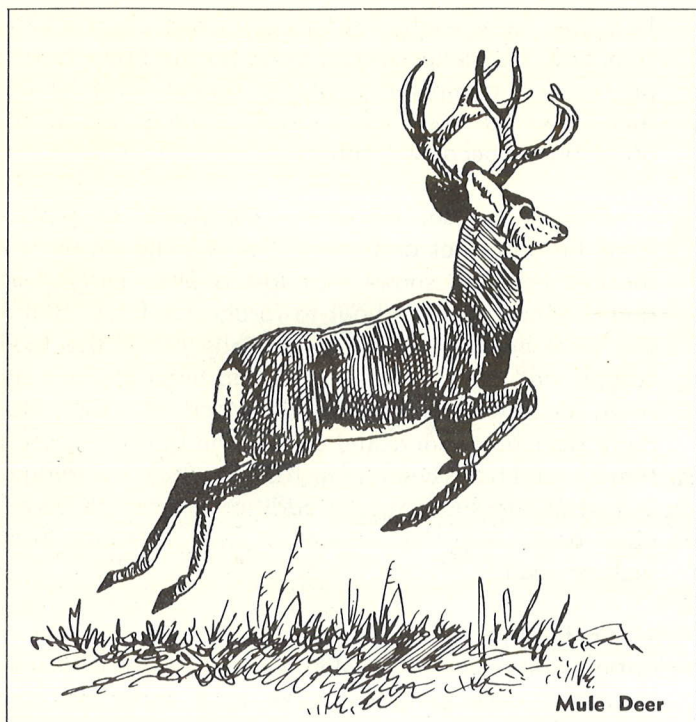
Conifers should be used extensively in all plantings. They have the advantages of (1) drought resistance, (2) long life, and (3) year long protection. They should be planted in the outside rows of all tree barriers. Conifers should not be planted closer than 20 feet to fast growing deciduous trees.

Tree plantings should be made up of a combination of species that will furnish density and height. Windbreak plantings consisting of several rows of a single broad leaf species do not make effective wind barriers and are not in accordance with good forestry practices.



A Covey





## UNIT IV — LIFE HISTORY OF NEBRASKA DEER

How long deer have been in Nebraska we cannot say, but investigators have found that they were of great importance to the inhabitants of this region as early as 300 A.D. During the 1800's, trappers, explorers, and early white settlers entering the Nebraska Territory found both whitetailed and mule deer, the same species as seen today. During the last 100 years or so, the deer population has ranged from abundant to near extinction but it is now abundant again.

The mule deer was so named because of the appearance of his ears. Compared to a whitetail's, the mule's ears are noticeably oversized, measuring fully one-fourth larger. The whitetail is also well named, for its most distinctive feature is the large tail or "flag". The upper surface of the tail is similar to the rest of the coat in color, but the underside is pure white and is often exposed when the deer is fleeing. This bobbing white flag probably relays alarm to other deer.

Both the mule and the whitetail can be seen over much of the deer range in the state, but the picture of predominance changes from east to west.

Whitetails dominate the eastern part of the state. Traveling north in the state, the mule and whitetail are about equal in numbers in Antelope County. Holt County is the transition area where the mule deer be-

come the dominant species from there on west. Deer occur throughout the Sand Hills. The Pine Ridge is the most productive deer range in the state and has the highest deer populations. Deer are relatively abundant along the North Platte River and in the Wildcat Hills. They are fairly well distributed throughout the Platte River system and chances of observing whitetails increase as a person moves east.

### Life of A Deer

Did you ever admire a big buck as he bounded gracefully across the road or field? Did you also wonder about his life in the wild? Most young, the fawns, are born the latter part of June.

Not always a large majestic animal, he weighed only about seven pounds when born and for a few days was weak, helpless, and unable to follow his mother as she foraged for food. Often she left him hidden in low ground cover, where his spotted coat served as a camouflage. But she always returned at intervals to check and feed him.

The fawn began to forage as soon as he became physically able. The summer was weeks of growing and learning the many rules of survival. In October,



the fawn received the first hard knock of life—he was weaned.

In October, the fawn's mother began to pay less attention to him and then in November she mated with a buck. Another phase of the fawn's life took place in April. Antlers, covered by a brown, velvety sheath, began to grow from his skull above and behind his eyes. About this time his mother began to seek solitude, and in June gave birth to twin fawns. After this, the maternal bond between him and his mother was completely broken.

The young buck's antlers continued to develop throughout most of the summer and by August he had grown a typical set of antlers for a yearling mule deer—forked and about 12 inches long. During this period of growth, the antlers were soft and tender, and the buck avoided bumps that might injure them. Later the antlers hardened, and during August he began to rub them against trees, tearing the velvety covering and exposing the hardened bone.

In October he was about 17 months old and was entering the mating season for the first time as a mature buck. He was successful in taking a small year-

ling doe for a mate. Hunting opened shortly after that and the inexperienced buck hardly knew how to pit his skill against that of the hunter. But he was lucky and survived the season, while some of the other bucks became trophies.

During the second winter the buck ran with a large herd of does and young bucks. The winter was marked by deep snows that lasted until early April and the herd was hard-put to forage for food. Before the snow began to thaw, practically all of the food, forage, and browse in the area had been utilized and many deer were suffering from lack of food. Had more deer been harvested during the hunting season, there would have been more food for those remaining. But after the snow melted additional food was available, decreasing the number of deer suffering from lack of food.

In February, the young buck lost his first set of antlers and began to develop a new set. But this time, instead of developing just forks, each antler had four points. He would again shed the velvet in August and take a mate or mates in November. Then would come the hunting season again. If he successfully escaped the hunters, the cycle would start over again.

## UNIT V — ENVIRONMENT AND WILDLIFE

Once upon a time, and it wasn't so long ago, wildlife in wonderful variety was abundant in America. Some of the animals and birds were present in numbers almost beyond belief.

But then we started to change the face of America. Forests were cut down, prairies were plowed, sheep and cattle were pastured on the plains, and swamps and marshes were drained for more land.

These things were done to make a richer and better life for the people. But what we did also changed the wildlife, as well as the land. With these changes and too much shooting (there were no laws to protect game and fish in the early days) the wildlife began to decrease in numbers. The passenger pigeon, which had a population in the billions 150 years ago, is extinct and the buffalo almost disappeared from the scene.

Too much killing is not the whole story. Fewer homes for the wildlife is also an important part of the

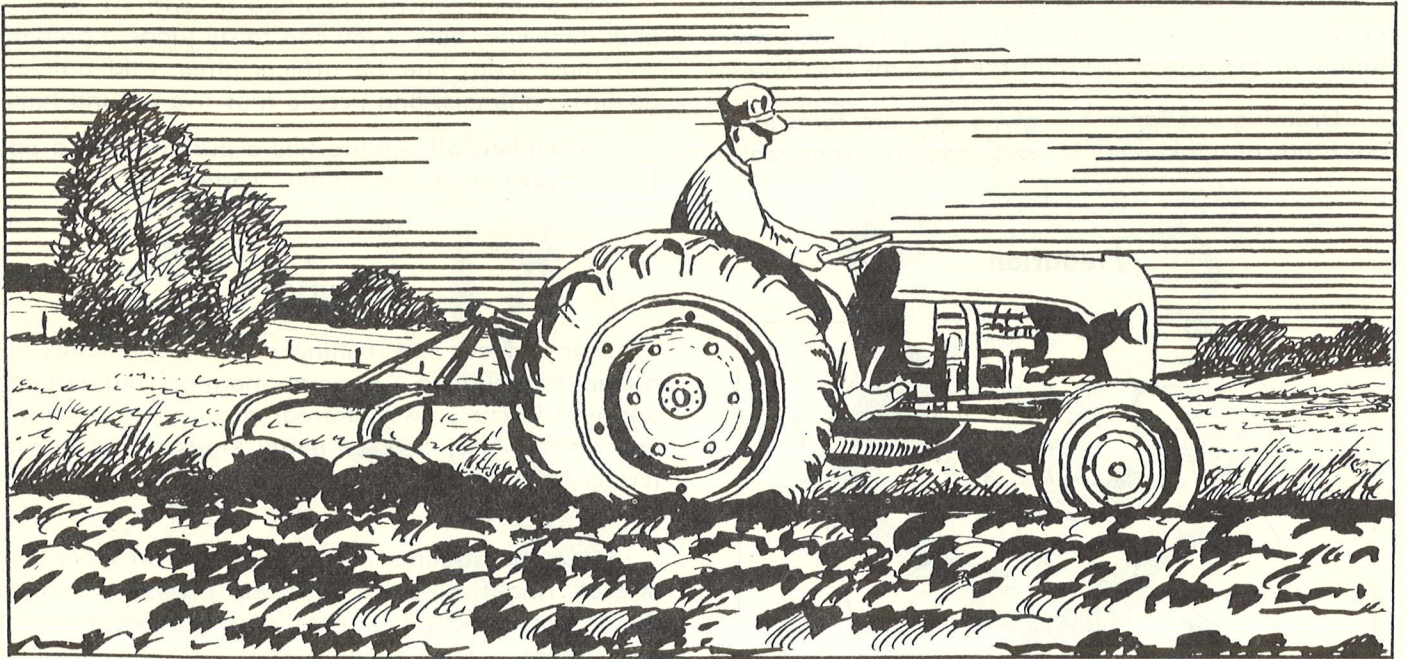
story. All animals have to have places to live. Different animals need different kinds of homes. When man utilizes the land to produce the food and fiber needed to support him, he also brings a change to wildlife environment.

### Forest Homes

Many of our animals have forest homes. In the early days, the forests held many species such as deer, elk, bear, wild turkey, and passenger pigeons.

As more and more early settlers pushed into the wilderness, trees were cut and burned. The timber they destroyed would be very valuable today. But the timber was removed because the settlers had to plow the land to plant crops. They cut trees to get logs for their homes. The early settlers cut down millions of trees.





With more and more trees being cut down, it became harder for these animals to find a place to live. Most of the early settlers did not realize the importance of planting new trees in areas where cutting had taken place. It was also harder for the animals to get food because most of the animals that live in forests get food from the forest vegetation.

Also the animals in the forests were used for food and the dangerous animals—mountain lions, bears and wolves—were tracked down and killed.

Forest fires also have taken away homes of the forest animals. Most forest fires are caused by man's carelessness.

Men are still cutting down trees as we need wood for such things as houses, furniture, and paper. To save the wild animals of our forests, we do not need to stop cutting trees. Some trees can be cut without taking away homes, and most animals get along best in forests that are not too thick. Tree harvesting should be controlled and planned by people who have an understanding of the needs of our wildlife.

### **Fewer Grass Homes**

Not only the forests, but our grasslands were once a wonderful place for wild animals. Deer, antelope, prairie chickens, and buffalo were among the wildlife found in great abundance on the grasslands.

The lands were turned into farms and the land was plowed. Where the land was too dry to farm, water was brought in and the land irrigated. Not all of the grassland was plowed and some was used to graze cattle and sheep. Many times the land was overgrazed. Some of the dry lands should never have been plowed. The soil was light and blew away, causing dust storms.

When the heavy grass disappeared before the plow, grazing, and blowing, it left birds with fewer places to nest and hide. As these homes disappeared, the grassland animals also became fewer. In places where soil was carried away by wind, no plants would grow, so no wildlife could live there. Good soil is very important for all kinds of wildlife and saving soil is one of the important parts of saving our wildlife.

### **Fewer Water Homes**

The wildlife of our ponds, lakes, and streams was once as abundant as that of the forests and grasslands. There were ducks, swans, cranes, geese, herons, pelicans, and plovers in great numbers.

But as our people needed more land for farms, the lakes, ponds, and marshes were drained. Fewer water spots meant fewer homes for the water wildlife.

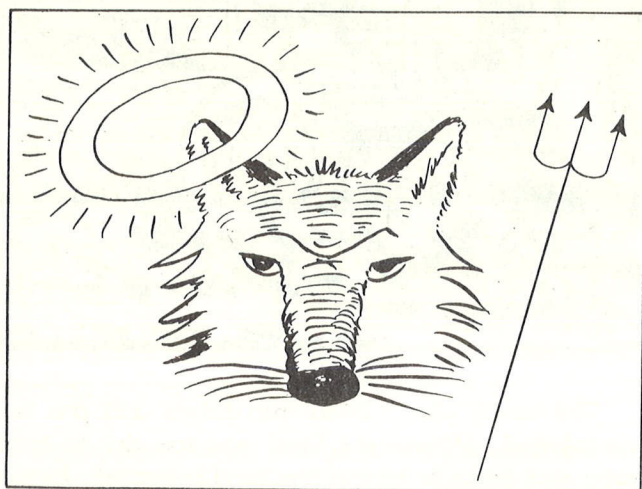
Birds were not the only ones to suffer as the water spots disappeared. Fish, frogs, and fur animals lost



their homes. Many waterways that were left were made unfit for animals and fish. Dumping waste materials in the waters polluted the streams and lakes.

Draining wet lands has given us more farm land but it has also taken homes away from many animals.

## Predation



Many people believe that wildlife has disappeared because of predation. The coyote, bobcat, mountain lion, and wolf were blamed for disappearing wildlife. These meat-eaters are known as prey animals. It was felt that the way to save the wildlife was to kill the unwanted wildlife such as the coyote and mountain lion.

But in many cases, the idea that the best way to save our wildlife is to kill the animals of prey has turned out wrong. Ranchers kill coyotes and their lands then become overrun with rodents and jack rabbits.

It has been found that when people leave a region alone, the number of animals in it stay about the same year after year. There is a balance among the living things in the region. Mother Nature provides this law of balance and often man does great harm when he attempts to change it.

Most studies show that the predators normally feed upon surplus numbers of the prey species for which there is not sufficient habitat. The loss from predation does not usually become so great as to threaten breeding populations or to interfere with the production of a normal crop under average food and cover conditions.

No animal can be classified as entirely good or bad. Likewise, before you can fairly judge a predator you must learn how he affects other wild animals, domestic animals, and people that live around him.

Remember, all wildlife has a purpose and a particular function in the animal world.

## Pollution

Many of our fine fishing streams and lakes are ruined by pollution. A great many of our streams are used to carry away untreated sewage from towns and cities. Also, a great many kinds of waste materials from industry are discharged into our waterways.

Once the streams in our country ran clear and offered fine fishing. Now many are spoiled. We should not be happy or proud with the way we treat our streams. They become dirty and the smell of some is almost unbearable.

Many of the wastes dumped into the streams kill fish quickly. Other wastes kill the living things which fish eat. Soon there are no fish in the streams. When sewage enters the water, decay bacteria begin breaking it down. This process utilizes the oxygen in the water, and fish—like us—need some quantity of oxygen in order to live. They soon suffocate in waters where pollution is heavy.

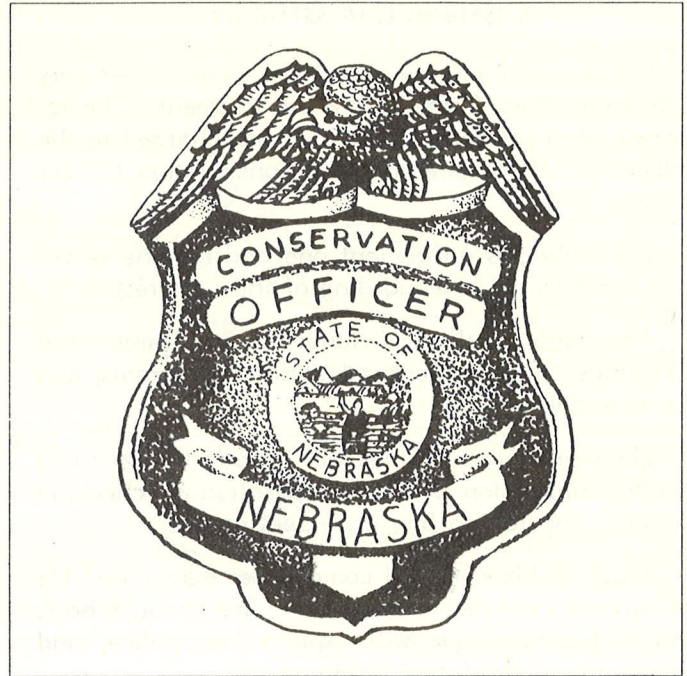
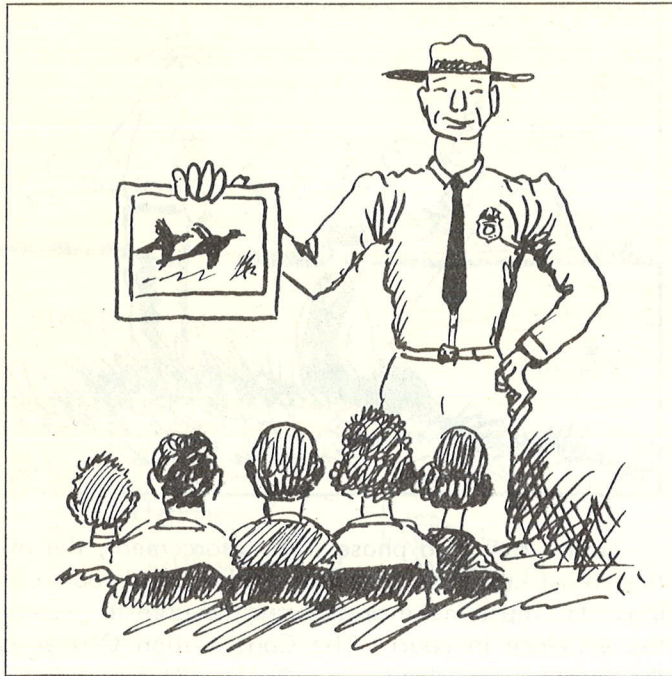
The dumping of untreated sewage and waste materials in a stream creates a public health problem. Health workers are learning new and better methods to prevent and treat pollution. We should do all we can to give these people backing. We will gain, in return, more and better recreation and clean water for home use.

In recent years conservation groups have helped to have laws passed to control stream pollution. Private citizens, state government, and the federal government are now cooperating to do this job of cleaning up the streams.

A clean stream means less hazard to public health, more places to swim, boat, fish, hunt, and trap.

When we use the outdoors we are often guilty of setting a bad example. We sometimes leave trash that tends to clutter our camping, picnicking, and wilderness spots. It is the duty of each of us to help keep our outdoor recreation areas clean and free from spoil.





## UNIT VI — WILDLIFE LAW ENFORCEMENT

The state controls the right to govern the taking of all fish and game, with the exception of migratory birds. At the Constitutional Convention of 1787 the state delegates invested the Federal Government with certain powers but did not include control of wildlife. Therefore, except for migratory birds or wildlife on federal lands, the control belongs to the state.

"Wherever the paramount interests of the people are concerned, the authority of the Federal Government takes precedence over that of the states. This principle applies to all areas of interest, including the area of wildlife control."<sup>3</sup>

Waterfowl—ducks, geese, swans—are migratory and cross state lines and international borders. Control and management is an international problem and subject to treaty power. The power of making treaties is invested in the Federal Government.

Control of wildlife in Nebraska is invested in the Game Commission by the Legislature. The laws are contained in the Statutes of Nebraska. The Game Commission issues a book of Nebraska Game Laws which is available on request. Fishing, hunting, boating, and trapping regulation books are issued each year for all interested persons. The books can be ob-

tained in your home town from conservation officers, permit vendors, and most sporting goods stores.

Federal regulations can be obtained from the U.S. Fish and Wildlife Service, Washington, D.C. Each year this division of government sends out pamphlets on migratory bird regulations.

### Laws and Purpose

Laws and enforcement are all a part of good wildlife management. Law enforcement is an aid in wildlife preservation.

Regulations which concern fish and wildlife have three functions. First, the protection of the public interest. Animals of the wild belong to the people as a whole, not just to the people who hunt and fish. The interest of future generations put the obligations upon our generation to assure continuance of wildlife.

Another function is to provide the necessary control over the hunters and fishermen for maximum care of wildlife. Seasons and bag limits are set according to the harvestable number of birds or animals on hand.

And third, by having laws, each citizen, without infringing upon the rights of others, has equal opportunity to exercise any privileges of citizenship if he so desires.

<sup>3</sup> Information from: Sigler, W. F., 1956. Wildlife Law Enforcement. William C. Brown Company, Dubuque, Iowa.



## Conservation Officers

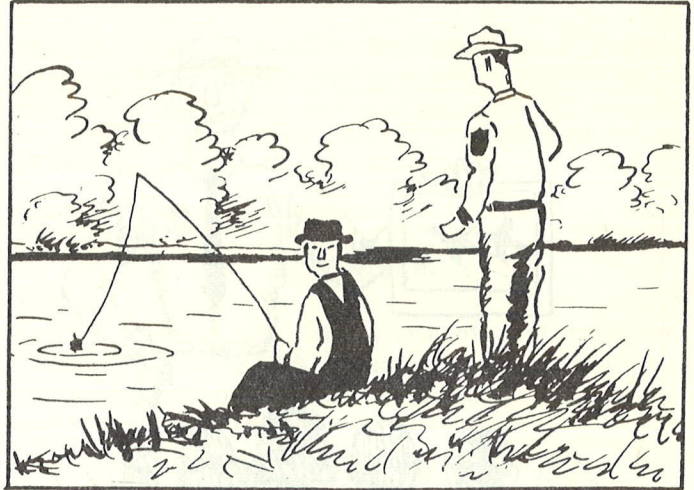
Enforcement of game and fish laws differ very little from other forms of law enforcement. The responsibility of enforcing the laws are charged to the individual officer, known as a Conservation Officer in Nebraska.

His calling is an ancient one and now he serves the people in the safeguarding of their interests.

The duties of this individual fall into three main categories: management, educational programs, and law enforcement.

His management duties will include taking game counts, supervision of hunts, operation of checking stations, and taking bag and creel census.

Much of his work will come under education. He will attend meetings such as civic, boy scout, school, and 4-H groups. He will explain law, policy, and procedures of the Game Commission.



Under the third phase, law enforcement, the officer must know the state wildlife laws and court rulings. He must make arrests and be able to present the evidence in court. The Conservation Officer is the sportsman's friend.

## The Biologist

Few, if any, will disagree with the statement that "wildlife is important"—that it serves a purpose and it is a resource to be used "wisely".

When wildlife affairs were first brought under negotiation we had no technology. One man's opinion was as good as his neighbors. They saw only the surface of management problems and were concerned with methods rather than with basic causes and effects.

We can expand on the old management theory but it is obvious that wildlife management can no longer move along in the horse and buggy fashion, especially in this modern age.

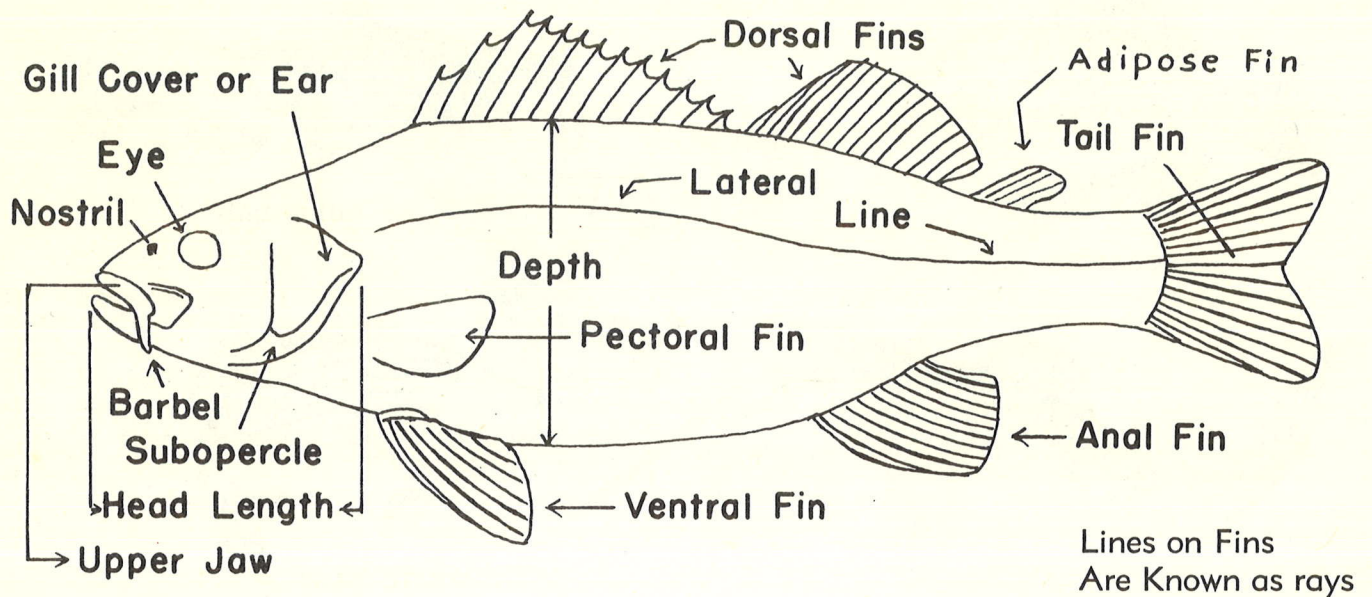
Wildlife "biologists" are specialists trained in the field of game and fish management. These technicians use research, training, and scientific knowhow to advance the management of wildlife. Many unknown and unpredictable problems are dealt with, both in human and in animal nature. Through science, wildlife managers have overcome many of the old hit-and-miss techniques. Science is not casual observation, snap judgment, or emotion.

The Nebraska Game Commission employs "biologists" who work for the development and improvement of Nebraska's wildlife resource.



Banding





## UNIT VII — FISH KNOW-HOW

### Anatomy and Physiology

Most of the parts of a fish used in identification are shown above. However, all fish do not have all the parts illustrated. For instance, most of them do not have barbels and some have only a single dorsal fin.

Fish require oxygen to live. Fish have a bony skeleton and are cold-blooded animals.

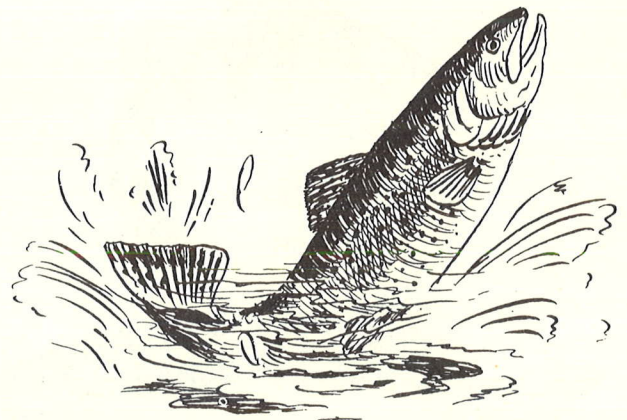
Fish use their gills to breathe. The gills are covered with filaments that have the ability to absorb oxygen from the water. Fish get oxygen to the filaments by taking water into the mouth and expelling it out through the gill openings.

The "ear" is really the extension of the gill cover; it has nothing to do with hearing. Fish are sensitive to vibrations in the water, but they pick up such vibrations with their lateral lines instead of their ears, the latter being an organ of balance in the fish.

Fish use their fins to help them swim and maintain balance. Scales covering the body of the fish provide protection against diseases and growths.

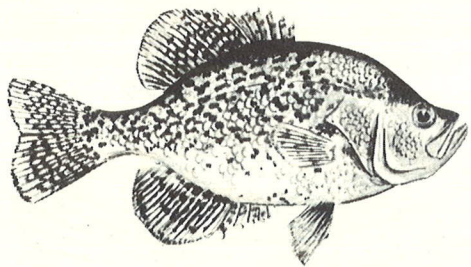
In Nebraska waters there are about 97 different kinds of fish. Of the 97 kinds of fish, about 25 provide sport fishing. The remaining 70-plus species provide food for the larger fish, and are often referred to as "forage fish" and "rough fish".

### Identification

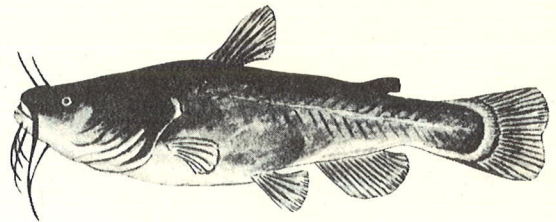


Let us turn our attention to the subject of fish identification. Note the illustrations (page 15) of some fish types that are found in Nebraska. Study the diagrams and learn to recognize each type.

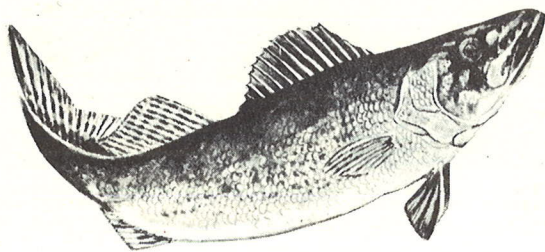




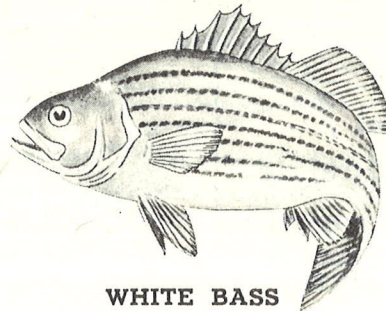
CRAPPIE



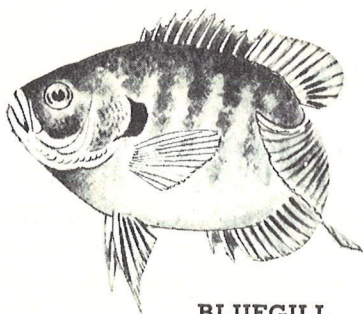
BULLHEAD



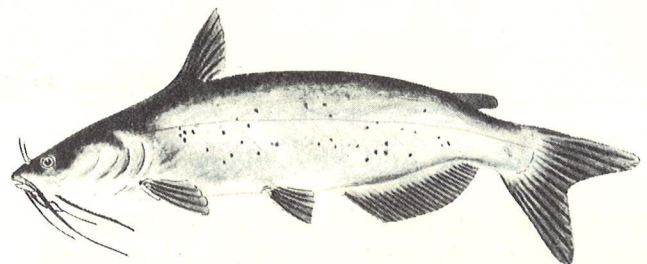
WALLEYE



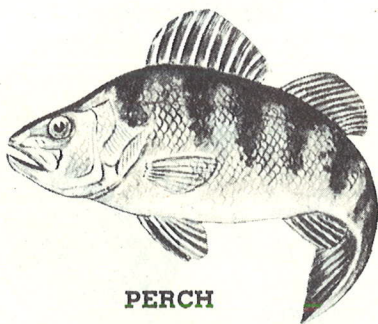
WHITE BASS



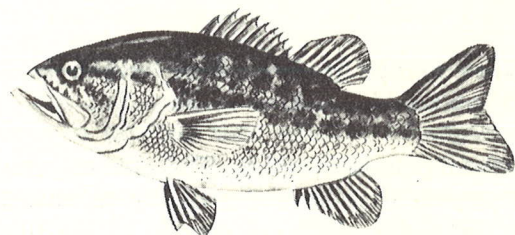
BLUEGILL



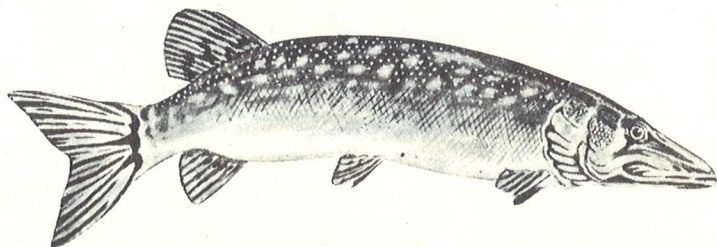
CHANNEL CAT



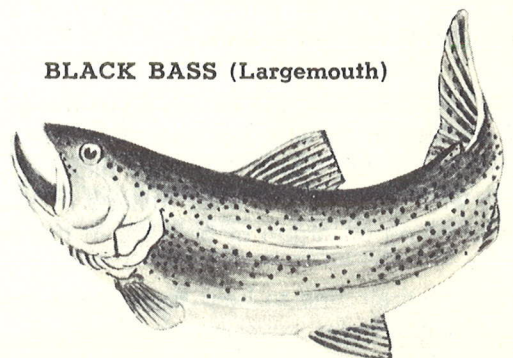
PERCH



BLACK BASS (Largemouth)

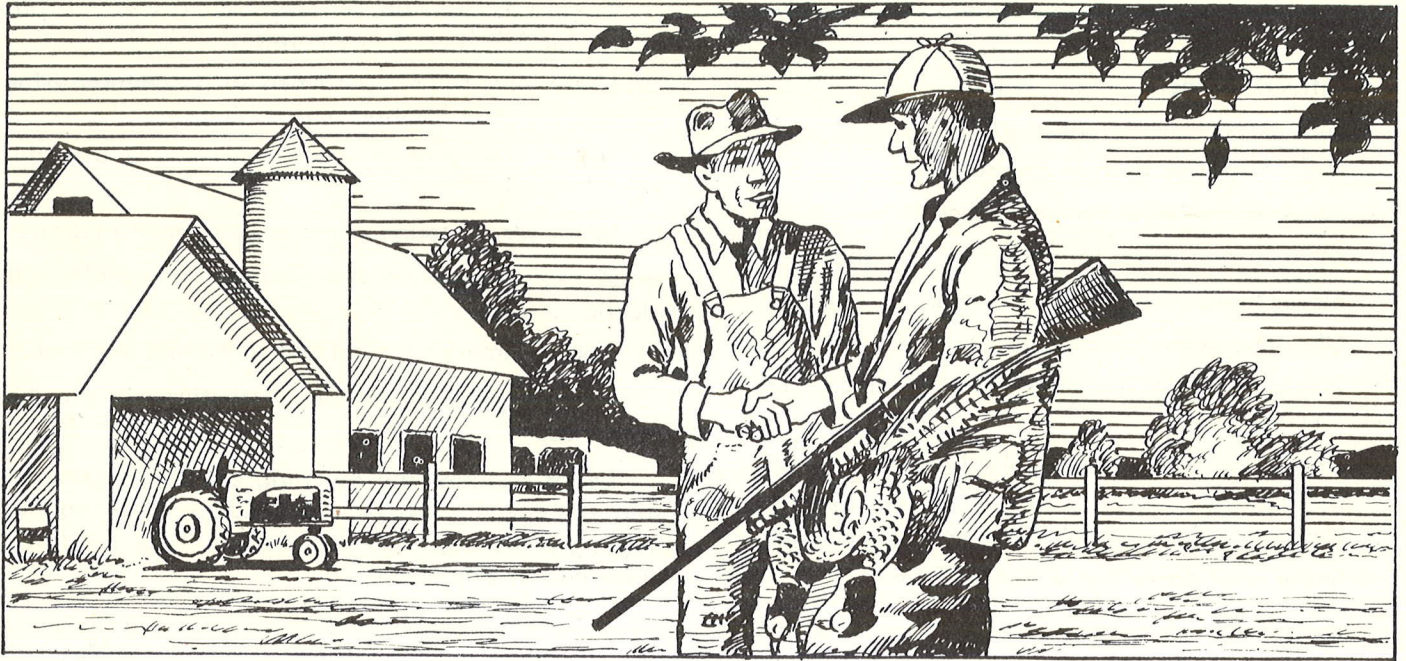


NORTHERN PIKE



TROUT





## UNIT VIII — SPORTSMANSHIP

Sportsmanship may be defined as conduct becoming to a sportsman, involving honest competition and graceful acceptance of results.

One method of building citizenship towards the prevention of law violations on the part of minors is the guidance offered by parents and teachers. This includes stressing to young people the unfairness and misdoing involved when game and fish laws are violated. Select hunting and fishing companions who set a proper example in the field. Know, in your own mind, how important it is to show a high degree of sportsmanship. Game laws are made for a purpose. Laws are devised to control the harvest and to insure "wise use" and to enhance the development of wildlife. A person who purposely violates a game law, cheats himself and every other hunter or fisherman in his community.

Good game management and good conservation require that a spirit of cooperation, respect, and appreciation exist between the sportsman, landowner, and the Game and Fish Department.

All sportsmen are the beneficiaries of the wildlife conservation effort.

On the other hand, many people in agricultural work have little time for hunting and fishing, yet they sometimes endure considerable loss supporting game animals on their own deeded land without re-

imbursement for the food consumed. They are further inconvenienced many times by thoughtless sportsmen who leave dirty camp grounds and open fences behind them, and in other ways cause damage to personal property.

Wildlife conservation and management has a common interest, whereby it works to benefit our state and our people. Hunting and fishing should be conducted for enjoyment and pleasure, a product of individual respect, character, and sportsmanship.

Respect the rights of the landowner, in doing so, he will in turn recognize and respect you as a true sportsman.

### ABC's of Sportsmanship

Always practice safe gunhandling.

Be considerate of the landowner. You are his guest.

Conduct yourself as a SPORTSMAN should.

Don't be a game hog.

Educate yourself in the principles of sportsmanship.

Favor the fellow who is hunting with you.

Give wildlife a break. Work for its conservation.



Have the location of your hunting partner always in mind.

Influence others to hunt safely.

Join a sportsman's organization.

Keep that gun muzzle elevated.

Leave some game for seed-stock.

Make sure of your target before you shoot.

Never leave a cripple go to waste.

Obey the game laws to the letter.

Put yourself in the other fellow's place. Treat him accordingly.

Quit harping about game shortages and do something about it.

Retrieve every piece of game you knock down.

Share your game bag with the farmer.

Take a friend hunting and fishing and tell him about the ABC's of Sportsmanship.

Unite your fellow sportsmen in a common effort to provide better hunting and fishing.

Value, and protect, your privilege to own and bear firearms.

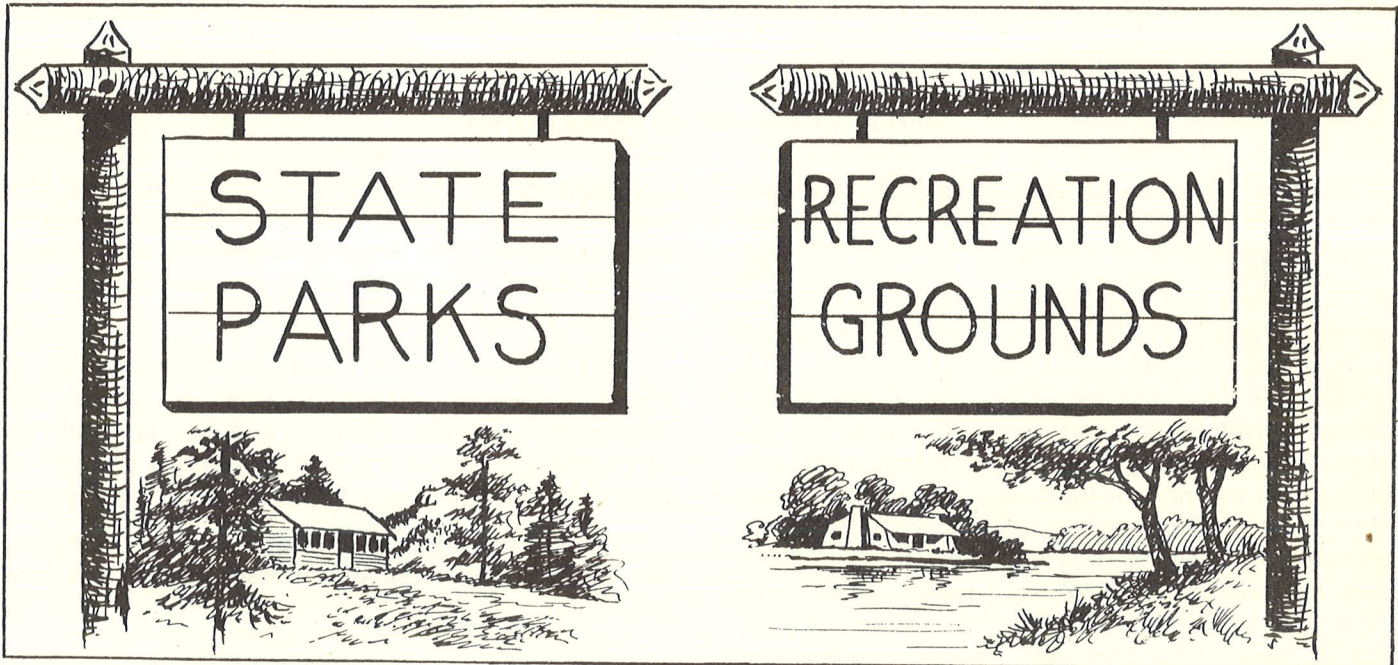
Work for all sound game management measures.

X may mark the spot if you mix gunpowder with alcohol.

Young America's field sport depends on You.

Zeal in game restoration activities will pay big dividends.

Learn to know the meaning of the "sportsmanship alphabet". Practice the ABC's when you go hunting or fishing. Tell your family about the ABC's presented in this lesson.



## UNIT IX — STATE PARK AREAS

### Economics and Location

The world is moving in a new swift modern era. Standards of living are rising, work hours are shorter, and time for recreation is bountiful. Distance is no barrier to travel. Cars are better and faster, and jet airliners span the oceans in a few hours.

Space for public recreation is shrinking each day. Industry, highways, cities, agriculture, and other developments close more acres of land each passing

month. There is a growing need for greater supplies of land, trees, grass, water, wild animals, and park facilities.

More people are using and enjoying State Parks and recreation areas every year. Here people camp, picnic, hike, swim, fish, boat ride, and enjoy the outdoors. According to the Outdoor Recreation Resources Review Commission, about 90 percent of all Americans participate in some form of outdoor recreation in the summer months. The outdoors is an



important part of life in America. Whether it be forest, lake, river, mountain or hill, the outdoors creates inspiration, and offers true recreation.

It has been said that the value of hours enjoyed in the out-of-doors cannot be measured in terms of dollars and cents. It can be added that we cannot have a healthy society without healthy recreational outlets, and that there is no better recreational medicine for man than that which he finds outdoors.

Recent legislation for a long range plan of development established four classifications of state park areas: (1) State Parks, (2) State Historical Parks, (3) State Recreation Areas, and (4) State Wayside Areas.

State Parks are areas of substantial size and state-wide significance with a complete development potential. The facilities of parks are directed toward serving family vacation needs.

State Historical Parks include sites of various size and type which have notable state-wide historical significance. The purpose of these areas is to preserve and perpetuate certain historical areas, and to interpret their significance.

State Recreation Areas might well be called secondary state parks. In general, they are neither as large nor as extensively developed as the primary parks, and facilities are largely of day-use variety.

State Wayside Areas are small tracts located immediately adjacent to the major highways. The primary purpose of these areas is to provide rest stops and picnic areas for the traveling public.

## **Management of State Park Areas**

Management of the various state park areas is the responsibility of the Game Commission's Division of State Parks which is headed by a Division Chief, one of the Commission's staff members.

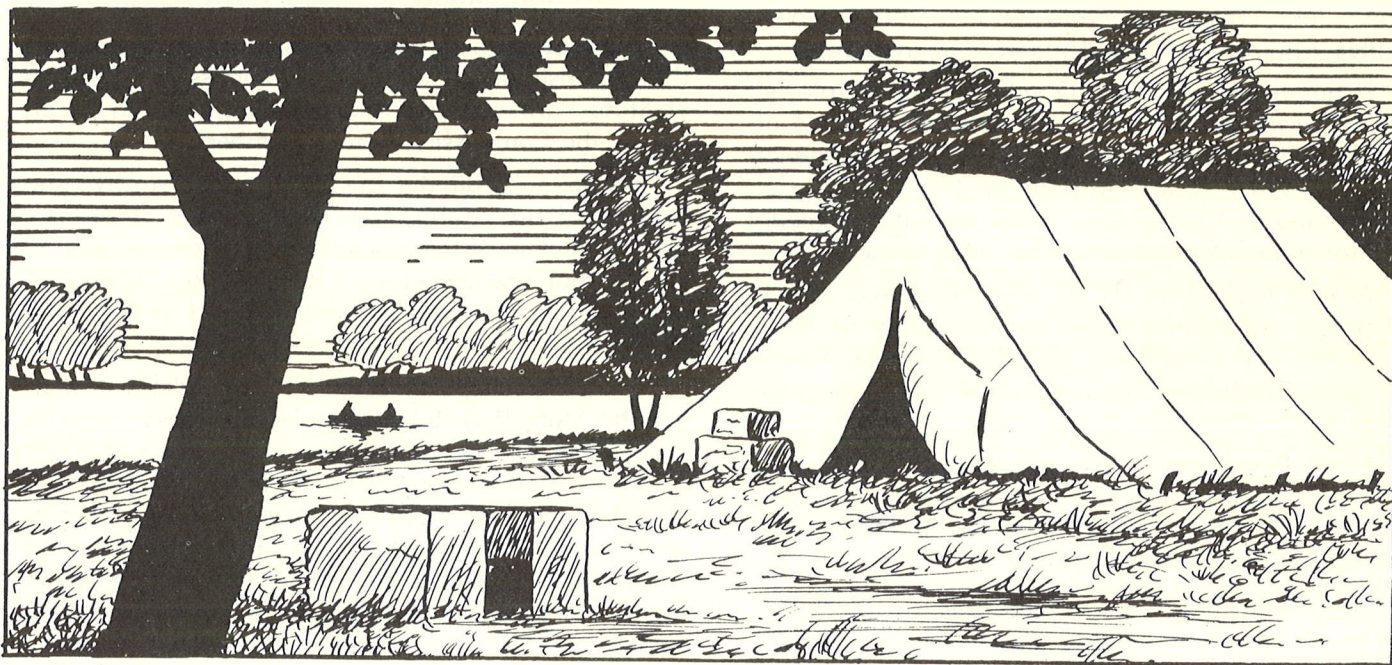
He has subordinates in certain administrative and technical fields to help him supervise the State Park System, and works closely with other Commission Divisions that are concerned with the many phases of management and development involved in the State Park System.

Of utmost importance in over-all administration are the State Park Superintendents. These men are responsible for the temporary safety and well-being of over a half-million people a year. They are required to operate electrical, water and sewage systems, as complex and as large as those of many small towns, and are responsible for the expenditure of tax funds. In addition to their other duties, they are called upon to be swimming pool managers, carpenters, electricians, plumbers, auto mechanics, playground supervisors, police officers, museum keepers, silviculturists, and personnel managers.

Further, park superintendents are required to maintain books of accounting, and originate and forward administration reports for auditing purposes.

Next time you visit a state park, stop and talk to the superintendent in charge. He will be glad to assist you in any way he can.





## UNIT X — CAMPING

### Equipment

Camping is a lot of fun. And the way to get the most fun out of a camping trip is to make the right preparations. Know what kind of clothes to wear for the weather and place, and know what equipment to take.

Clothing should be selected for comfort. It should fit loosely enough to allow easy movement of arms and legs. The clothing should also be tough and strong enough to protect you from snags, rocks, or brush.

Equipment necessary for a camping trip will include a tent and sleeping bag or blankets. Pajamas, extra clothing and a toilet kit which includes soap, towel, tooth paste, tooth brush, and metal mirror. A flashlight is also a needed item.

For cooking equipment you can get by with several pots and pans. The pots can be retinned iron and aluminum and if possible the pans should be iron. You should also have the various kitchen knives, spoons, and a can opener.

Portable camp stoves, lanterns, and cots make cooking and camping easier than in earlier days. Perishable food may be kept in portable ice chests which also serve to transport fish and game from the field. Canned and condensed foods make menu planning for the camper an easy task.

### Camp Construction

Probably the ideal camp site is a recreation ground or state park. Here you are assured of good drinking water, sanitary facilities, and clean camp grounds.

But in setting up a camp, there are several things to look into. The perfect camp site will probably never be found as it includes many things.

Pick a camp site which has a gentle slope. In case of rain, the water will drain off. If you have to camp on level ground, pick a spot that will absorb the rain water.

Grass-covered, dry, sandy, or gravelly soils are okay to camp on. Heavy grass indicates water-filled ground and probably swarms of mosquitoes at night. Too much sand is not good and too much clay means mud in wet weather.

Your tent should be pitched in a clearing where free circulation of air will ventilate the tent. If possible, camp near some trees but not directly under them. The trees will give you shelter against wind. If you are under the trees, dead branches may tumble down without warning.

For safety sake there should be no dead trees, nor live trees with dead branches, that may topple over in a storm.



## Outdoor Cooking

Safe water, for drinking and cooking, should be near at hand. If there is any doubt, boil all water.

There's nothing like a warm meal to revive flagging spirits. Take along such items for a hot meal. Soups, stews, hot coffee, tea, or cocoa are fine. You'll enjoy the instant soups and drinks, for they are easy to prepare, requiring only hot water.

Avoid taking any food in glass containers as they are easily cracked or broken. Canned goods are preferred as they can be heated easily. Place the can in a pan of warm water, or on a stove. Heat the canned goods gradually.

If you want to cook over an open fire it can be fun. Success depends on taking the proper foods and careful attention to the cooking while on the fire. Before leaving home make sure you have studied your menus thoroughly and have everything that is needed, such as salt, sugar, grease for frying an egg, and syrup for pancakes. Matches should be taken along in a waterproof container.

Cooking over an open fire requires constant watching. Food must be turned to keep it from burning. If the pan or skillet gets too hot, it must be moved.

A short guide to camp cooking would be incomplete without a ration list for those who prefer to use it.

Here is a ration list for two men, for ten days. This list allows the individuals a comfortable menu for this period:

4 loaves of bread	2 cans pork and beans
2-lb. canned butter	2 cans tomatoes
1/2-lb. cheese	2 cans carrots and peas
1-lb. lard or Crisco	20 candy bars
3-lb. bacon	1-lb. coffee or cocoa
3-lb. Canadian bacon	2-lb. potatoes
3 dozen eggs	3-lb. onions
1 1/2-lb. oatmeal	1/2-lb. tea
1-lb. dried milk	2-lb. sugar
2 pkg. bisquick	1 can pepper
1 small can syrup	1/4-lb. salt
2 cans corned beef hash	

Here is another "light" basic list, which gives an adequate ration for one man for a week:

2-lb. Canadian bacon	1-lb. milk, dried
1/2-lb. ham	9 fresh or 1/8-lb. dried eggs
1-lb. dried beef	1 1/2-lb. dried fruit
1-lb. salami	1/2-lb. raisins
1/2-lb. potatoes, dried	1-lb. cheese
1/8-lb. onions, dried	1-lb. coffee
1/2-lb. soups, dried	or
1-lb. rice	1/8-lb. tea
1-lb. beans, dried	8 candy bars
2-lb. flour, prepared	2-lb. sugar
1 pkg. rye crisp	1/8-lb. salt
1/2 pkg. crackers	1/2-lb. shelled nuts
1/2-lb. butter	and the spice bag

The ration lists are provided only as an outline for prospective campers. Everyone does not like the same foods. Revise the grub list if it does not suit you or your fellow campers.

Here are a couple of handy recipes for the trail!

### Texas Stew

1 can corned beef	1 medium can tomatoes
1 can red kidney beans	1 onion, minced

Brown minced onion in bacon fat, add beans and tomatoes, and simmer for a few minutes. Put in corned beef and cook five minutes. Season and serve four.

### Super Flapjacks

1 egg	1/2 tsp. salt
1 1/2 tsp. baking powder	2 tsp. sugar
1 1/2 cup milk	2 tbsp. melted shortening
1 1/2 cup flour	

Beat well the egg, milk, flour, and baking powder; add salt, sugar, and melted shortening. And then, if you have the heat of the griddle right, you'll have cakes that are really fine.

## UNIT XI — CONSERVATION CORNER

The collection of materials for the construction of a conservation corner in your schoolroom or meeting place can be an important and interesting part of your work in wildlife conservation and outdoor recreation. It can be made to show kinds of wildlife, good conservation and management, forms of outdoor recreation, and the interrelationship of wildlife to environment.

Some suggestions for exhibits include: a wildlife conservation bulletin board, scrap book, art activities portraying conservation and better results, study specimens, visual aids, and reading references.

Refer to Unit XI in the record book for completion of this requirement.

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