



Iowa Association of Naturalists

The Iowa Association of Naturalists (IAN) is a nonprofit organization of people interested in promoting the development of skills and education within the art of interpreting the natural and cultural environment. IAN was founded in 1978 and may be contacted by writing the Conservation Education Center, 2473 160th Rd., Guthrie Center, IA 50115, 515/747-8383.

Iowa Wildlife And People Series

Students need to understand basic ecological concepts in order to understand the interconnecting roles of people, wildlife, and the environment. These interactions have a profound effect on attitudes and behaviors of people toward wildlife. The Iowa Association of Naturalists has created this series of booklets that offer a basic understandable overview of the interactions of wildlife and people and basic concepts of ecology, exploring the ways wildlife and people interact, and clarifying some misconceptions about Iowa wildlife. The eight booklets in this series are:

- Iowa Wildlife Management* (IAN-401)
- Keeping Iowa Wildlife Wild* (IAN-402)
- Misconceptions About Iowa Wildlife* (IAN-403)
- State Symbols of Iowa* (IAN-404)
- Iowa Food Webs and other Interrelationships* (IAN-405)
- Natural Cycles in Iowa* (IAN-406)
- Iowa Biodiversity* (IAN-407)
- Adapting To Iowa* (IAN-408)



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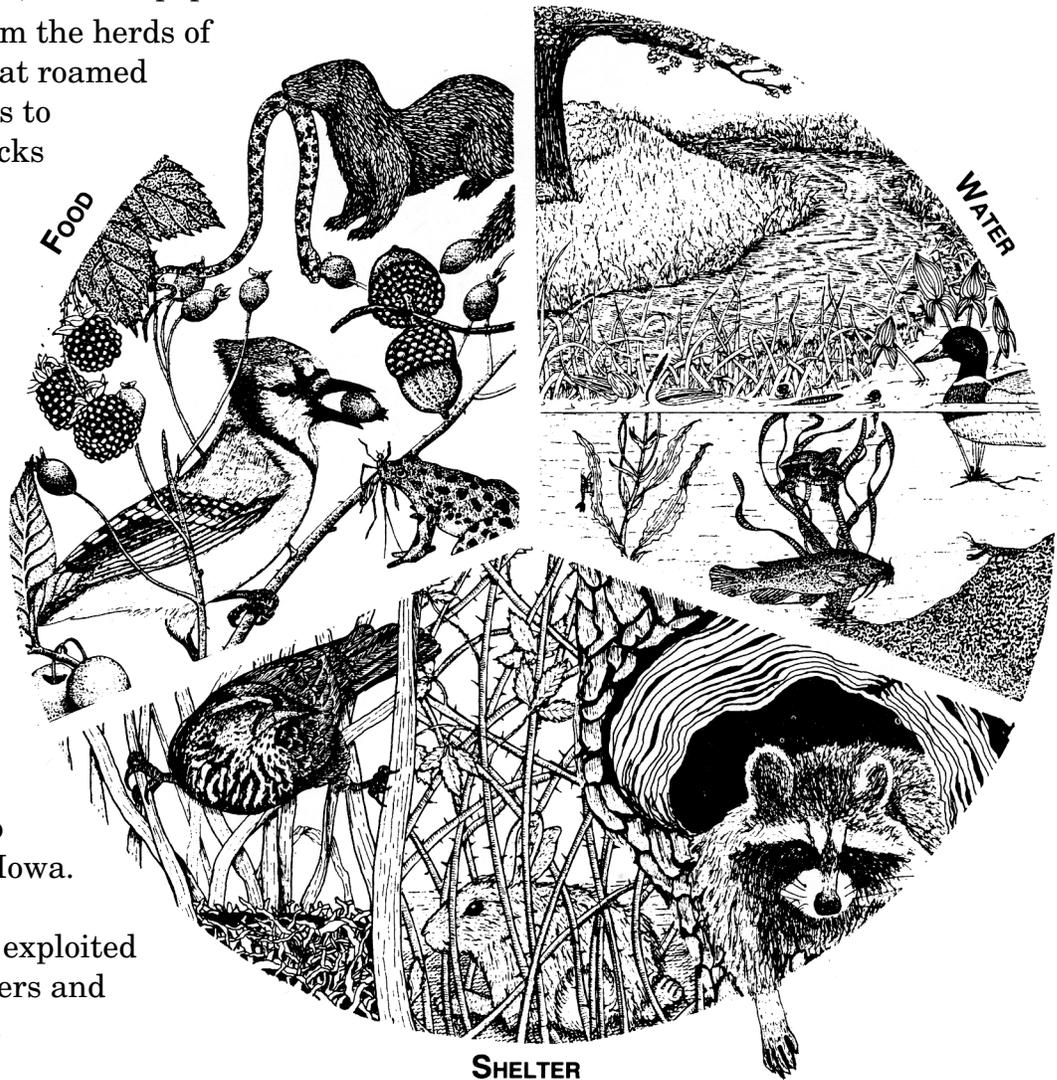


Iowa Wildlife Management

Introduction to wildlife management

"No living [person] will see again the long-grass prairie, where a sea of prairie flowers tapped at the stirrups of a pioneer..."—Aldo Leopold

When Euro-American explorers first arrived in what is now Iowa, wildlife populations were widespread. From the herds of bison and elk that roamed the Iowa prairies to the immense flocks of waterfowl dotting the marshes, there seemed to be no end to Iowa's natural resources. By 1880, however, fewer than 50 years after Euro-American settlement, the bison and many other animals were no longer found in Iowa. They had been overhunted and exploited by the new settlers and market hunters.



The tale of the bison is one of the numerous examples of a wildlife species in Iowa that drastically declined. Conservation and wildlife management practices were first developed in the 1930s in response to declining wildlife populations.

Conservation refers to the sustainable use of natural resources. **Wildlife management** is the application of scientific knowledge and technical skills to protect, preserve, conserve, limit, enhance, or extend the value of wildlife and its habitat. **Wildlife managers** are professionals who are concerned with maintaining wildlife populations that are diverse and well-balanced. Emphasis may be on



The bison is one of the numerous examples of a wildlife species in Iowa that has drastically declined.

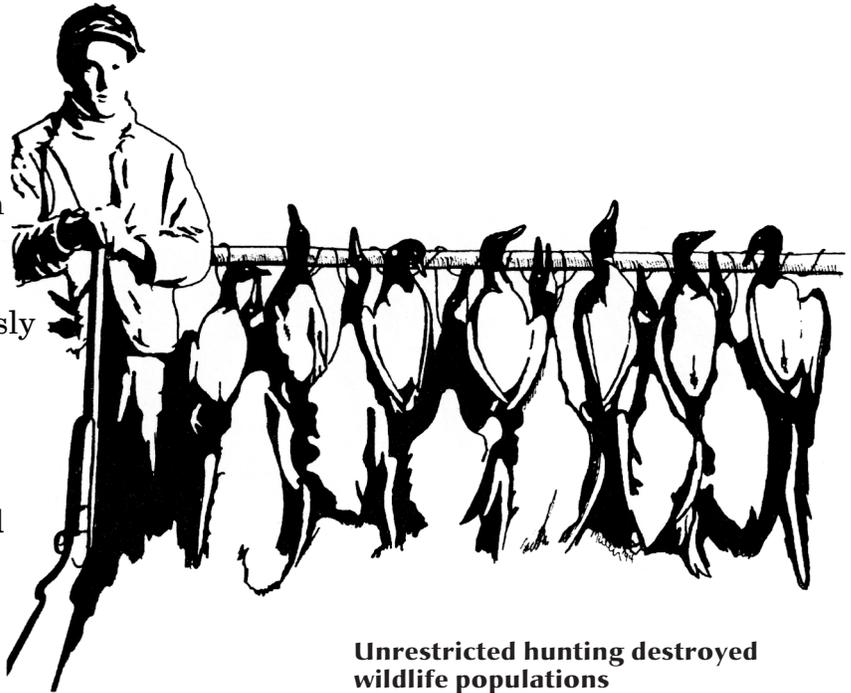
restoring or increasing populations or on maintaining populations at a level that does not conflict with human activities.

The science of wildlife management was established by Iowan Aldo Leopold. He was one of several individuals whose contributions to wildlife management and conservation are still important today.

History of wildlife management

Exploitation before 1800

Prior to 1800, there were no laws or regulations imposed on hunting wild game. Even species that we now consider nongame were hunted vigorously and in all times of the year. In many cases, market hunters harvested hundreds of thousands of animals — meat for food, hides for clothing, and feathers for hats. This unrestricted hunting, together with habitat loss, caused drastic declines for many species.



Unrestricted hunting destroyed wildlife populations during the 1800s. Today, hunting is regulated so as not to threaten wildlife populations.

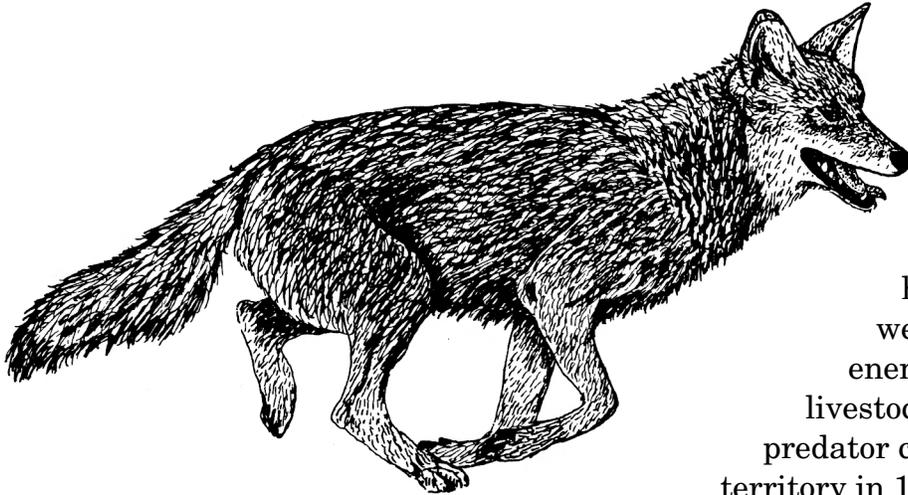
For example, historical accounts of the passenger pigeon indicate that millions of birds were killed by shooting, trapping, gassing nesting colonies, and knocking down the low-flying birds with long poles. The passenger pigeon, once numbering into the millions, is now extinct.

In Iowa alone, at least 29 species of animals ranging from fish to mammals were wiped out from the state since the 1800s. A few examples include bison, pronghorn antelope, wolves, elk, and mountain lions.



Regulation and predator control (1800-1920)

By the late 1800s, Iowa's big game populations had severely declined. White-tailed deer were given protection in 1898, after deer were wiped out in Iowa (but not from other parts of their native range). Predators, however, were perceived as competitors with humans for game, as well as one of the main enemies of domestic livestock. A program of predator control began in the Iowa territory in 1814, establishing the



The first Iowa bounty on coyotes was established soon after Iowa became a state.

first bounty on wolves. After Iowa's statehood, the first bounty law was passed on both wolves and coyotes. Bounties rewarded people for killing many types of predators, including coyotes, cougars, bobcats, hawks, and owls. Many of Iowa's natural predators disappeared because of this practice, and more were eliminated through the loss of habitat.

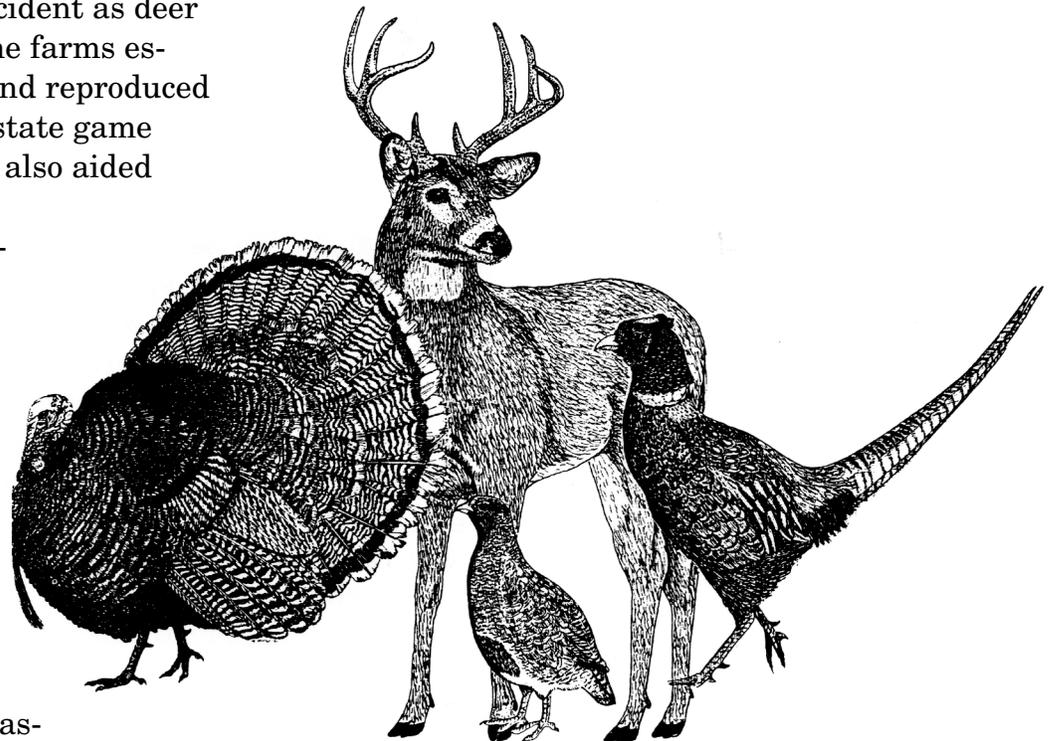
The rapid decline of wildlife species did not go completely unnoticed. By 1900, concerned people had formed protective organizations, such as the Boone and Crockett Club, aimed at limiting market hunting and the sale of game species. Congress assisted this process by passing the Lacey Act in 1900 to prevent interstate transportation of illegally shot game. However, because enforcement of the act was weak and opposition to the law was strong, wildlife (especially ducks) continued to be shipped to eastern markets. In 1918, the national Migratory Bird Treaty Act was enacted to overcome market hunting. The law is still in effect today and provides stiff penalties to people who unlawfully kill, sell, or illegally possess migratory birds.

Biology and stocking (1920-1960)

After its establishment at the turn of the century, the Iowa Conservation Commission (now the Iowa Department of Natural Resources) was responsible for wildlife management on public lands. Throughout its early years, the commission worked to establish and enforce game laws, enhance wildlife habitat, and stock the state with wildlife. Species such as ring-necked pheasants and gray partridge were released and habitat managed to enhance those species. By 1925, pheasant populations had increased to a level that allowed for a harvest of this species. A gray partridge hunting season was first opened in the late 1930s. Eastern wild turkeys were restocked in the late 1960s and by 1974, the first turkey hunting season was opened.

Restocking of deer in Iowa probably began by accident as deer from private game farms escaped captivity and reproduced in the wild. The state game farm near Boone also aided in these efforts.

Iowa's deer population improved remarkably after the 1930s and adapted well to Iowa's agricultural landscape. By 1953, the deer population was large enough to be harvested. In response to increasing damage to agricultural crops, the first 4,000 deer were harvested. Annual legal harvest in Iowa now numbers 70,000 to 80,000 deer per year.



Turkey, deer, partridge, and pheasant are examples of introduced and reintroduced game species.

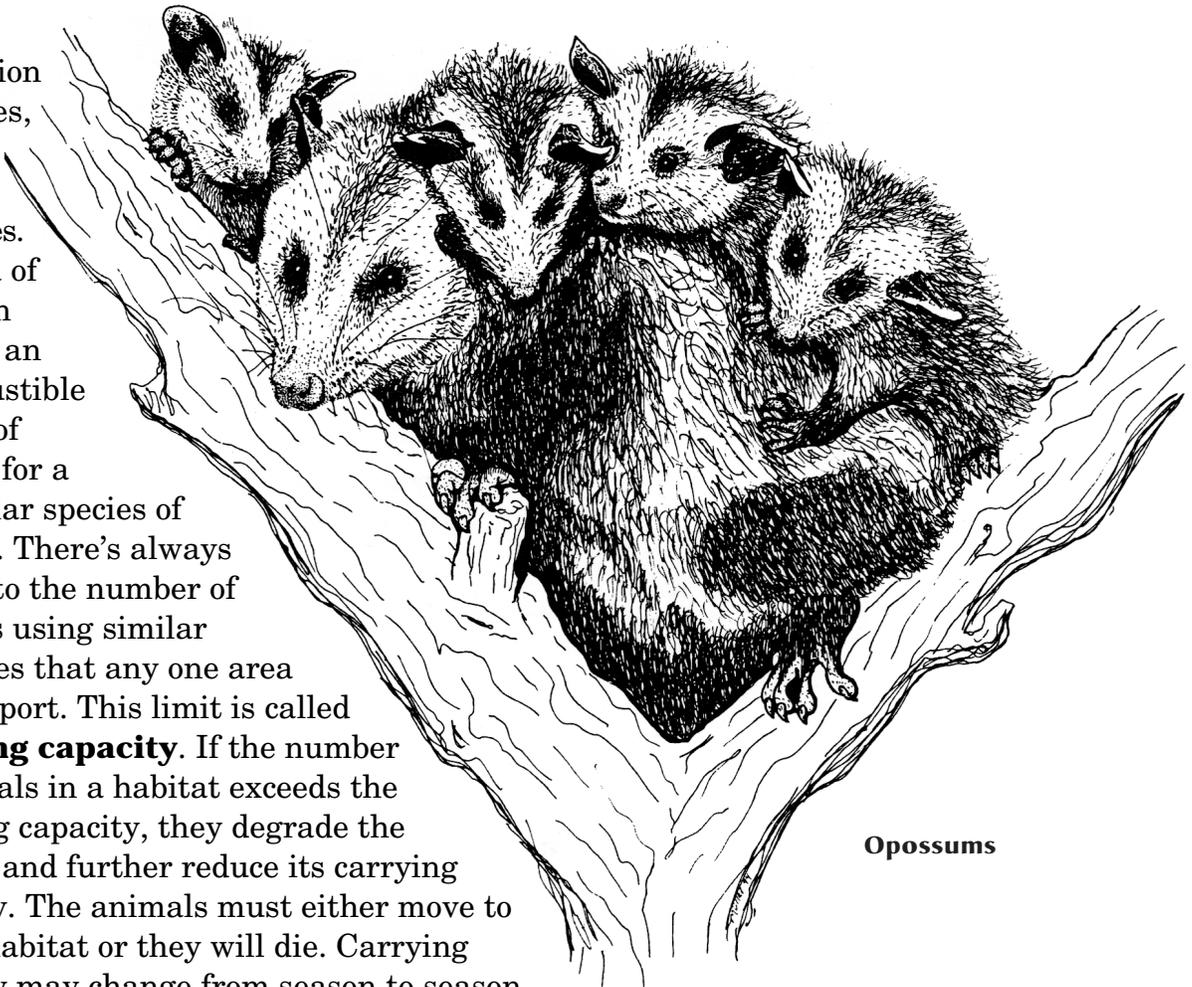
The basics of habitat

Many lessons in wildlife management have been learned during the past century, but the issue of habitat loss continues to concern wildlife managers. **Habitat** is the arrangement of food, water, shelter or cover, and space available to meet species' needs. Each wildlife species requires specific plants or animals for food and depends on a certain quality and quantity of it. Wildlife species find water in rivers, lakes, streams, and in plants and food. Cover (also called shelter) is needed for protection from the elements or from predators while animals are sleeping, nesting, feeding, roosting, or raising young. Cover may be vegetation, rocks, burrows, or other features. Animals also need a certain amount of space, or area, for living. Finally, the food, water, cover, and space must be arranged so it is easily accessible to the animal.

Naturalist Aldo Leopold wrote that each species of wildlife has its own specific needs for food, water, and different kinds of cover. If these specific habitat requirements are in short supply, the species cannot survive even if it receives careful protection. Leopold's research and techniques of management provided the groundwork for today's wildlife science.

As a wildlife population increases, it uses more resources. No area of land can provide an inexhaustible supply of habitat for a particular species of wildlife. There's always a limit to the number of animals using similar resources that any one area can support. This limit is called **carrying capacity**. If the number of animals in a habitat exceeds the carrying capacity, they degrade the habitat and further reduce its carrying capacity. The animals must either move to a new habitat or they will die. Carrying capacity may change from season to season and place to place. Typically, it is highest in the growing season when resources are plentiful and lowest in winter when resources are most restricted.

Many factors may affect the carrying capacity of a natural area. A shortage of any one of the basic needs — food, water, cover, or space — is a **limiting factor**. Predation, climate, weather, disease, starvation, accidents, and hunting also can affect a population. Biologists usually can trace a change in wildlife populations to one limiting factor.



Opossums

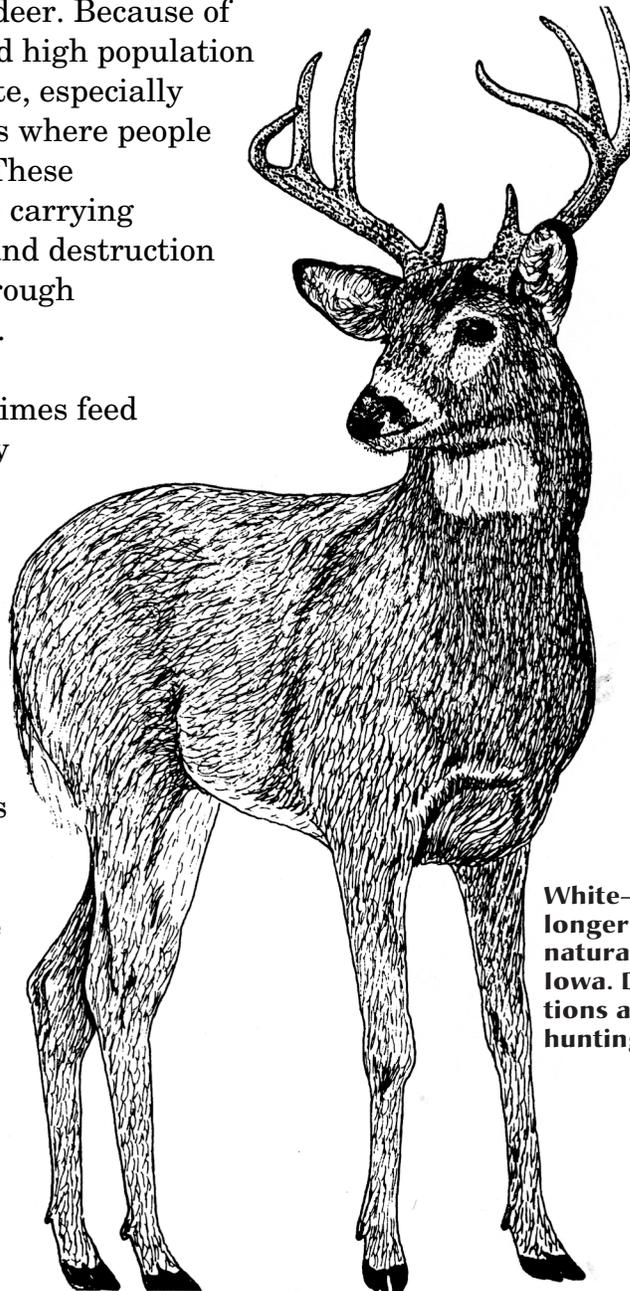
Checks and balances

In any given year, many factors may affect an animal's survival. Sometimes an important part of an animal's diet may be scarce due to lack of food, causing animal starvation and weakness. Disease and predation are other natural checks on animal populations that keep numbers of animals at or below carrying capacity.

Animal species have birth rates that help ensure survival of the species. However, birth rates vary from species to species and depend on the age when breeding begins, the number of litters each year, and the litter size. Generally, birth rates are low for predator species and high for prey species. Muskrats, for example, have a very high birth rate. They can begin breeding at five months of age and may have several litters per year. Young muskrats also receive little parental care and have a high mortality rate. The increase in litter size may make up for the greater number of deaths. In contrast, the predatory red fox will only have one litter per year, and the young pups stay at the den site for several months.

Large animals also tend to have a low birth rate. For example, white-tailed deer may not breed until two years of age if the quality of habitat is poor. If habitat conditions are favorable, yearlings may have a fawn in their first year and routinely have twins after that. Iowa's agricultural landscape provides excellent habitat for deer. Because of this, deer in Iowa have reached high population levels in some areas of the state, especially in some urban areas and parks where people are not allowed to hunt deer. These populations have exceeded the carrying capacity of the natural areas and destruction of the habitat has occurred through overgrazing and overbrowsing.

Well-intentioned people sometimes feed urban deer, but this ultimately contributes to a greater problem. Without natural predators, the deer population grows unchecked. The surplus of animals is usually affected by other limiting factors such as climate and disease. Before human intervention, predators such as wolves and cougars kept the deer population in balance. Today, in the absence of these predators, deer herds must be managed by human hunting to keep populations in balance.

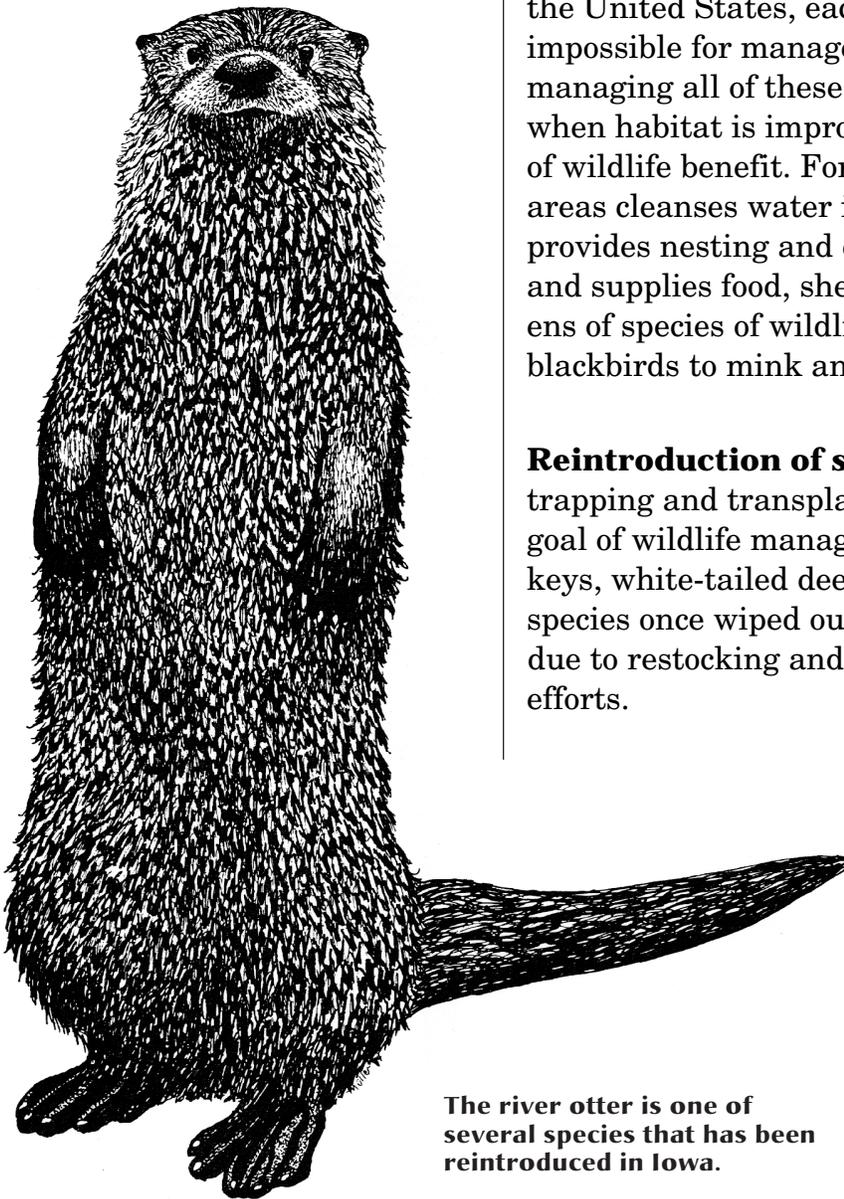


White-tailed deer no longer have many natural predators in Iowa. Deer populations are managed by hunting.

Goals of wildlife management

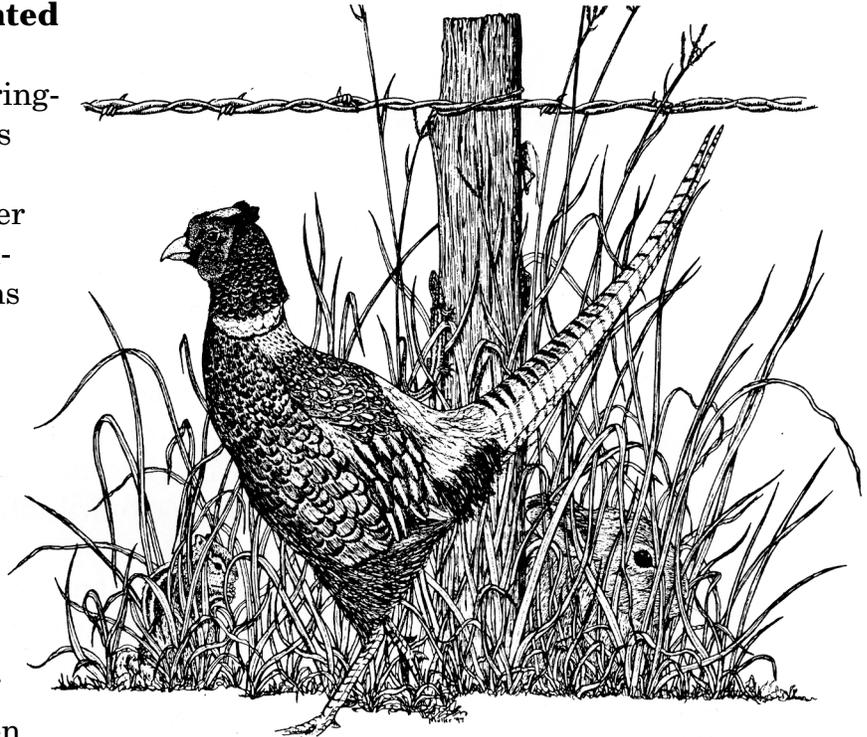
Using basic principles of ecology, wildlife managers try to maintain and manage wildlife populations. One goal of wildlife management may be to **increase wildlife diversity**. Since there are hundreds of species of birds and mammals in the United States, each with different needs, it is impossible for managers to develop strategies for managing all of these species at once. However, when habitat is improved or created, many species of wildlife benefit. For example, restoring wetland areas cleanses water in nearby streams and rivers, provides nesting and escape cover for waterfowl, and supplies food, shelter, and nest sites for dozens of species of wildlife, ranging from rails and blackbirds to mink and muskrats.

Reintroduction of species into areas through trapping and transplant programs may be another goal of wildlife management. In Iowa, wild turkeys, white-tailed deer, river otters, and other species once wiped out are again living in the state due to restocking and appropriate management efforts.



The river otter is one of several species that has been reintroduced in Iowa.

A third goal of wildlife management may be to **increase or maintain hunted wildlife populations.** For upland game birds such as ring-necked pheasants, managers grow food plots and plant grasslands to allow for winter food and nesting cover. Managers set hunting regulations for game species to alter, control, or increase their populations. For example, pheasant hunting regulations specify that only rooster (male) pheasants may be taken. Daily limits are set on the number of birds each hunter may take. The number of days of hunting and the season when hunting is allowed also will affect game populations. Managers may change these regulations to alter populations.



The ring-necked pheasant is a wildlife species that is managed using hunting regulations.

All wildlife in Iowa is considered to belong to the public. Wildlife is managed on the public's behalf by state and federal wildlife agencies. Hunting seasons and bag limits for all game animals are based on current and historic knowledge of populations and their distribution. Biologists also consider social factors such as human safety, ethics, and economic impact of some species. This information is used to carefully regulate the annual harvest of each hunted species. When the carrying capacity is surpassed, there are a certain number of **surplus animals.** Surplus animals would likely die from other mortality factors if hunting was not allowed. Hunters are allowed to harvest the surplus animals to keep a population at a desired level. If the breeding population of a species is lower than desired, the seasons and limits may be adjusted.

Managing for wildlife diversity

Managing for a variety of wildlife species also means providing a variety of plant species that can support many different kinds of wildlife. Greater plant diversity makes a habitat more stable and less vulnerable to insect pests and disease. Monocultures, or areas composed of a single species, are extremely vulnerable and much less valuable to wildlife.

One way managers try to create diverse habitats is to incorporate **edge**. Edge is an area where two or more different vegetative types, such as grasslands and timber, come together. Some wildlife species such as white-tailed deer, bobwhite quail, and cottontail rabbits tend to respond favorably to an increase in edge habitat. But others require extensive tracts of unbroken habitat and are affected negatively by edge. For example, the bobcat requires isolated timbered areas, but many of Iowa's woodlands have become so fragmented that the bobcat is unable to maintain a stable population in the state.

A variety of plants attracts a diversity of wildlife.



Some migratory birds require large tracts of unbroken forests for successful nesting. The nests of wood thrushes, ovenbirds, and rose-breasted grosbeaks are generally placed close to the ground and can be protected in an isolated forest. However, in a fragmented forest, the nest will be closer to an edge where many nest predators, such as skunks, raccoons, crows, and grackles, spend much of their hunting time.

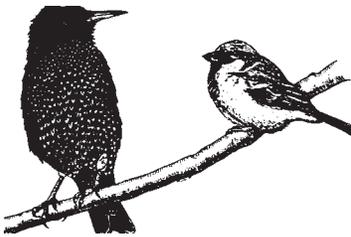
Isolated areas of habitat have limited value for wildlife because they create “islands” in which species are more susceptible to predation and disease. A patchwork quilt of isolated habitats does not allow for widespread species survivability. So wildlife managers work to connect patches of habitat with corridors. Entire wetland complexes that included wetlands of various types and upland cover for nesting are established to provide more positive benefits for wildlife populations. This is an example of what wildlife managers call **landscape perspectives** —the enhancing of habitat to provide cover for a variety of wildlife needs.

Wildlife management from a **community perspective** gives special attention to all the plants and animals in an area, in contrast to management for a single species. Through the creation of wetland complexes and habitat corridors, many species of wildlife can benefit. Community perspectives call for management of all species, game and non-game, and recognize interdependence among species and the importance of biodiversity.

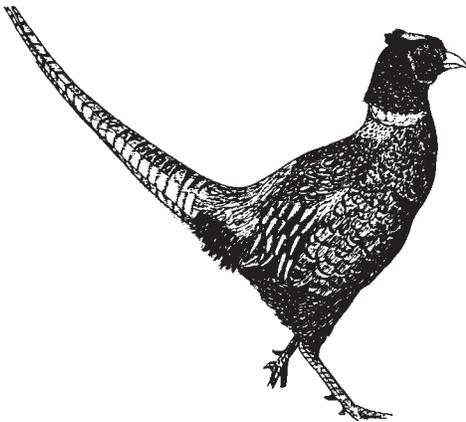


A community perspective of wildlife management recognizes the importance of biodiversity.

Introduced species



Starlings and house sparrows, both introduced species, are considered agricultural and urban pests.



Ring-necked pheasants were introduced to the U.S. in 1881. Pheasants are now the most hunted game bird in Iowa.

Throughout history many animal species have been introduced into Iowa for a variety of reasons. Some introductions have been beneficial, while others have been detrimental. There are pros and cons to every situation, and careful thought and planning must be given before a non-native species is introduced. Non-native species sometimes are aggressive and can out-compete native animals. They may take over breeding areas and reduce native populations. Non-native species also may carry diseases that can be transferred to native populations.

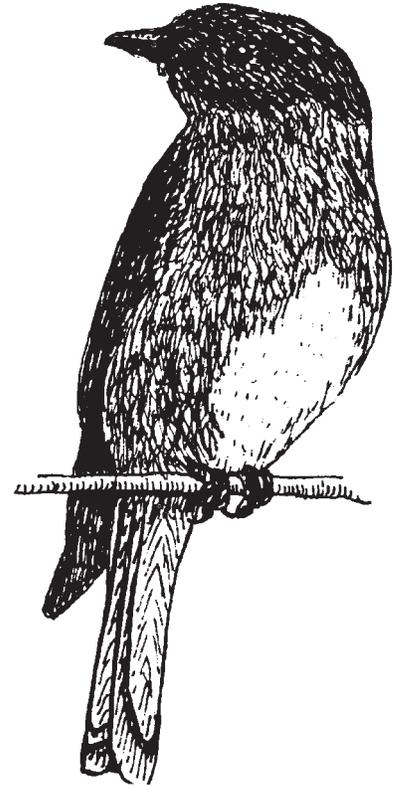
The house sparrow was intentionally introduced in New York City in the 1850s and has spread throughout North America. It is an example of a bird that has been detrimental to many native bird populations. House sparrows inhabit the nest sites of eastern bluebirds and contribute to their population decline. The European starling, intentionally introduced to North America in 1890, and the house sparrow are both considered agricultural and urban pests.

Both ring-necked pheasants and gray partridges were introduced to Iowa as game species. The ring-necked pheasant originated in China and was successfully introduced to the United States in 1881. Gray partridges were native to Europe and Asia and were brought to Iowa in the early 1900s. The first pheasants escaped from a game farm at the turn of the century. Pheasants are now the most hunted game birds in Iowa.

Management areas and practices

Most wildlife species need areas of natural habitat. Some areas are owned by public agencies such as the Iowa Department of Natural Resources (IDNR), county conservation boards, or the U.S. Fish and Wildlife Service. Other areas are owned by private landowners or private organizations such as The Nature Conservancy and the Iowa Natural Heritage Foundation. However, very little land in Iowa is in public ownership. Approximately two percent of the total land area in Iowa is in public ownership, ranking Iowa 49th of the 50 states in percent of land in public ownership.

Natural areas may be parks, preserves, refuges, hunting areas, or reserves. **Preserves** are tracts of native vegetation where little or no human intervention is allowed. “Low impact” activities such as hiking, photography, or birdwatching are generally allowed, but species of plants and animals are protected. Preserves may be native prairie areas such as Mount Talbot State Preserve in Woodbury County or woodland areas such as White Pine Hollow State Forest Preserve in Dubuque County. They are natural treasures that add to the diversity of the state’s wildlife. In some cases, limited hunting is allowed at a preserve. Many times, preserves contain rare or endangered species of plants and animals.



The bluebird is a species of wildlife that has benefited from wildlife management practices.

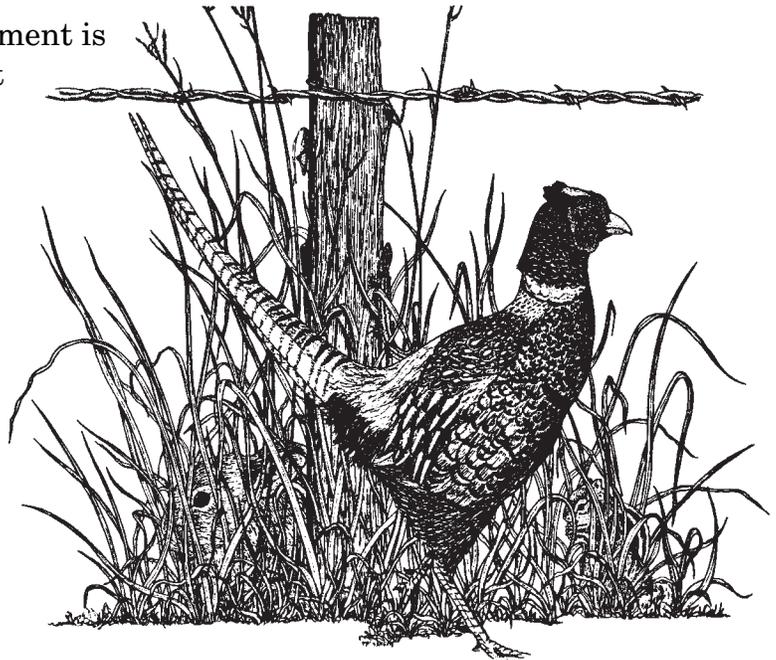
Refuges and sanctuaries provide safe zones for wildlife. Refuges may be adjacent to hunting areas so that game animals can escape hunting pressure. Refuges also provide habitat for nongame animals. People may use the refuge for birdwatching, hiking, and fishing. Vehicular traffic is usually controlled because it disrupts wildlife and may cause animals to expend precious energy resources. Some of Iowa's refuges are managed by the U.S. Fish and Wildlife Service, such as the DeSoto National Wildlife Refuge along the Mississippi River and Union Slough National Wildlife Refuge in north-central Iowa. Others are managed by the IDNR.

Hunting areas are usually called "wildlife areas." These areas are posted for hunting and trapping and are managed by state and county agencies. Wildlife areas are also excellent places to observe wildlife of all kinds. The IDNR has 331 public areas for hunting, comprising 260,000 acres. Managers estimate that more than 3.5 million visits to these areas take place each year.

Licensed hunting preserves are areas that have been purchased to be managed for game production. Special hunting seasons and regulations are allowed on these areas because the game is "farmed." These game populations are usually "exotic," are not wild, and are raised for the sole purpose of hunting. Licensed hunting preserves in Iowa are privately-owned and hunters pay a fee to hunt for game in them.

Private land management

A large part of wildlife management is “people” management. Ninety-eight percent of Iowa’s land is in private ownership. Cooperation between landowners and wildlife managers is essential to increase wildlife habitat. For example, farmers increase wildlife habitat on their land by creating and actively managing shelterbelts, buffer strips, food plots, and converting less desirable farmland to other uses. Reduced mowing and burning during the nesting season will increase nesting success of pheasants and nongame birds.



Land-use practices that reduce soil erosion such as minimum or no-till farming and filter strips may also improve wildlife habitat for some species. Crop stubble and residue reduces soil erosion and provides nesting cover for some species, while filter strips provide cover and wildlife corridors. Improved water quality for aquatic wildlife and for people is also a positive result of these practices.

The Conservation Reserve Program (CRP) has taken more than two million acres of highly-erodible Iowa land out of production and placed them in cover crops during the past ten years. CRP has given wildlife a great boost. It also has provided more than \$1.9 billion in payments to Iowa landowners who chose to enroll in the program.

Pheasant populations respond positively to reduced burning and mowing during the nesting season.

Woodland owners may choose to manage their woodlands for wildlife, to harvest lumber, or both. **Timber stand improvement** (TSI) techniques may select desirable tree species such as oaks, walnuts, and hickories for their timber and wildlife values. Selective harvesting thins weedy, dead, or damaged trees and ultimately improves the quality and value of the woodland.

Landowners also may receive tax breaks on their land by placing it in the Forest Reserve Program, a program of the federal government that protects Iowa's forest resources.

Prairie management can enhance populations of grassland wildlife species. Native grass cover adjacent to food plots provides winter cover and nesting cover for a wide variety of birds. However, burning and mowing at the wrong time of year are detrimental to wildlife populations. These are common and valuable management tools but must be used carefully.

Wetlands have tremendous potential to provide wildlife habitat. Because less than two percent of Iowa's original wetlands remain, many efforts have been made to restore wetlands. The Swampbuster Provision of the 1985 Federal Food Security Act made it difficult for farmers to drain their wetlands and receive farm program benefits. CRP pays farmers not to plant valuable wetland areas with row crops, and the Wetland Reserve Program allows Iowans to set aside wetland acres through conservation easements. Habitat improvements by private landowners have been enhanced by efforts of the U.S. Fish and Wildlife Service, IDNR, county conservation boards, and private conservation groups to manage upland nesting areas for waterfowl adjacent to wetlands. These wetland complexes provide as many different kinds of wetlands as possible to provide for the migration and nesting needs of several waterfowl species.

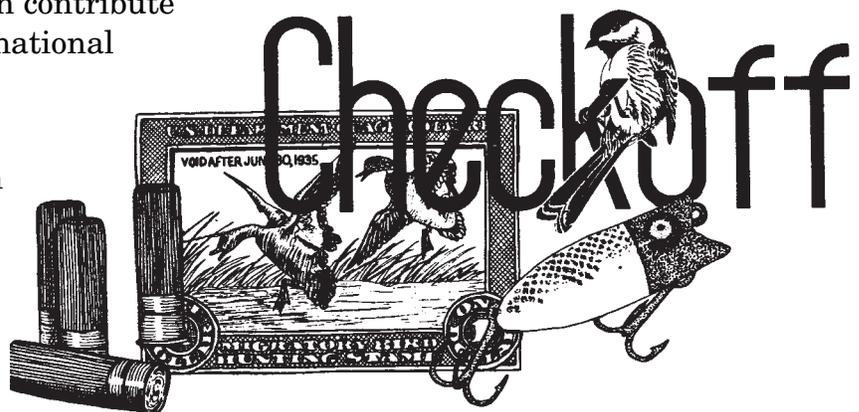
Revenues

To help fund management of wildlife areas, education, and research activities, the Pittman-Robertson Act was passed by Congress in 1937. This legislation places an excise tax on firearms, ammunition, and archery equipment. Income from the sale of hunting equipment funds fish and wildlife agencies. An estimated 328,000 hunters hunt in Iowa each year. They spend more than four million days afield and boost Iowa's economy by more than \$443 million. Revenues received through the purchase of state and federal duck stamps help acquire wetlands and other areas for wildlife habitat. The Federal Duck Stamp program has generated more than \$406 million nationally since 1934.

The white-tailed deer is among the most popular game species in Iowa. More than \$4 million is generated directly each year from the sale of deer licenses and millions more are spent for travel, clothing, and equipment which contribute significantly to the state and national economies.

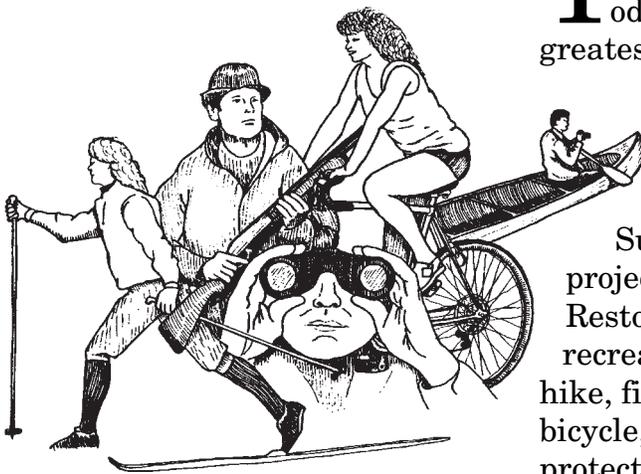
Funds also are raised through the Chickadee Checkoff, a funding source generated by donations from interested persons via the Iowa tax form. Monies from this fund go to the IDNR's Wildlife Diversity Program (formerly the Iowa Nongame Program) to help manage species through reintroduction, monitoring, and protection programs. Successful wildlife reintroductions include the river otter and peregrine falcon.

The Chickadee Checkoff provides funds for Iowa's wildlife diversity program through donations via Iowa's tax form.



Typically, hunters have borne the funding burden for most wildlife habitat, but non-hunters can contribute as well. Non-hunters certainly benefit from wildlife areas. They may use them for hiking, birdwatching, photography, and canoeing. In the past, Iowa's Wildlife Diversity Program has not received adequate funding through donations to accomplish many of its goals. New options are being explored to help fund the Iowa Wildlife Diversity Program.

We all benefit



Today, loss of habitat remains the single greatest threat to wildlife. Each year, thousands of acres are lost to urban sprawl, intensive farming, and industrial development. People play an important role in wildlife management and habitat restoration.

Support of conservation programs and projects will continue to improve wildlife habitat. Restored and protected areas of habitat provide recreational areas for all of us. We may hunt, hike, fish, canoe, ski, pick mushrooms and berries, bicycle, and otherwise enjoy the habitat we are protecting.

“Our profession began with the job of producing something to shoot. However important this may seem to us, it is not very important to the emancipated moderns who no longer feel soil between their toes. We find that we cannot produce much to shoot until the landowner changes his ways of using land, and he in turn cannot change his ways until his teachers, bankers, customers, editors, governors, and trespassers change their ideas about what land is for. To change ideas about what land is for is to change ideas about what anything is for.”

-Aldo Leopold (1940)

Appendix

Many groups in Iowa assist in protecting and managing Iowa's wildlife habitats. The following is a list of some of these groups.

Government Agencies

Iowa Department of Natural Resources
(To locate the IDNR wildlife biologist nearest you,
contact the IDNR at 515-281-5918.)
County conservation boards
U.S. Army Corps of Engineers
U.S. Fish and Wildlife Service
Prairie Pothole Joint Venture
Natural Resources Conservation Service
(Formerly Soil Conservation Service)
Universities
Iowa State University Extension offices

Professional Societies

The Wildlife Society
American Fisheries Society
Iowa Association of Naturalists
Iowa Conservation Education Council

Sporting Groups

Pheasants Forever
Ducks Unlimited
Local wildlife and hunting clubs
Quail Unlimited
Whitetails Unlimited
National Wild Turkey
Federation
Trout Unlimited

Private Conservation Organizations

The Nature Conservancy
Iowa Wildlife Federation
Iowa Natural Heritage
Foundation
Local chapters of the Audubon
Society, Sierra Club, and
Izaak Walton League
Private colleges and universities



Useful Resources

An American Crusade for Wildlife; James B Trefethen; Boone and Crockett Club, Alexandria, VA; 1975.

Attracting Backyard Wildlife; Iowa Department of Natural Resources, Des Moines, IA; 1993.

Basic Hunter's Guide; National Rifle Association; Washington, D.C.; 1982.

A Country So Full of Game; James J. Dinsmore; University of Iowa Press; Iowa City, IA; 1994.

An Evaluation of Deer Management Options; M. R. Ellingwood and S.L. Caturano; Connecticut Department of Environmental Protection; 1988.

Game Management; Aldo Leopold; Charles Scribner's Sons, New York, NY; 1933.

Iowa's Natural Heritage; Tom C. Cooper; Iowa Academy of Science and Iowa Natural Heritage Foundation, Des Moines, IA; 1982.

Landscaping for Wildlife; Carroll L. Henderson; Minnesota Department of Natural Resources, St. Paul, MN; 1987.

Management of Nongame Wildlife in the Midwest: A Developing Art; J. P. Hale, L.B. Best, and R. L. Clawson; North Central Section of The Wildlife Society; 1986.

Principles of Wildlife Management; James A. Bailey; John Wiley and Sons, Inc., New York, NY; 1984.

The Ring-necked Pheasant in Iowa; A. L. Farris, E. D. Klonglan, and R. C. Nomsen; Iowa Conservation Commission, Des Moines, IA; 1977.

A Sand County Almanac; Aldo Leopold; Oxford University Press; 1966.

Trends in Wildlife Populations and Harvest; Iowa Department of Natural Resources, Des Moines, IA; 1994.

Un-Endangered Species; International Association of Fish and Wildlife Agencies; Riverside, CT.

White-tailed Deer Population Management in the North Central States;

L. Hine and S. Nehls; North Central Section of The Wildlife Society; 1980.

Wildlife Management on Your Own Land; Charles L. Cadieux; Stackpole Books, Harrisburg, PA; 1985.

Managing Iowa Wildlife (PM 1302), and **Managing Iowa Fish** (PM 1352); Iowa State University Extension Series. (Contact your county extension office.)

Iowa Wildlife Management

Iowa Wildlife Management is one in a series of seven booklets that are part of the *Iowa Wildlife and People Series*. The booklets in the series include:

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Adapting to Iowa	(IAN-408)

The Iowa Association of Naturalists also has produced six other booklet series that provide readers with a clear, understandable overview of topics concerning the Iowa environment and conservation. The booklets included in each of the other six series are listed below.

Iowa Physical Environment Series

Iowa Weather	(IAN-701)
Iowa Geology and Fossils	(IAN-702)
Iowa Soils	(IAN-703)

Iowa Wildlife Series

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