
BENEFITS OF WILDLIFE

INTRODUCTION

Wildlife includes all undomesticated living plant and animal species. All living organisms, including humans, depend on other living things for survival. The benefits that wild species provide to people are the result of proper care and management of the wild species by people. By managing wildlife, humans are preserving the environment. While preserving the environment, humans are maintaining a healthy world in which to live. Who is responsible for managing wildlife?

Sound, responsible wildlife management should be a goal of every landowner, every outdoor enthusiast, and ultimately, every person. The majority of land in the United States is private ownership. In Nebraska, for example, private ownership accounts for 95% of all real estate ownership. From this, it appears evident that wildlife refuges alone cannot be responsible for all of the wildlife management activities. Where, then, is the motivation for individuals to assume the role of wildlife managers?

It is easy to identify the value of domestic plants and animals but how is the worth of wild species measured? Management of wildlife provides humans more than a healthy environment. There are four categories where wild species of plants and animals benefit human existence. Identifying each of these areas will develop an understanding of the importance of wildlife and its management.

- Economic
- Medical and Scientific
- Aesthetic and Recreational
- Ecological

When people understand the importance of wildlife, it will no longer be necessary to convince them of the need for wildlife management.

ECONOMIC BENEFITS

Early in the development of the United States, the economic benefit of wildlife focused on plant and animal use as a source of food and clothing. Individuals or corporations hunted or fished and sold meat to feed people. They trapped animals and processed the pelts* into clothing and harvested trees for shelter. The taking of wild animal species for food or clothing has dramatically decreased since that time. The timber industry is largely dependent on cultivated trees. There is still a large industry that harvests the seas but the natural supplies are dwindling. The economical benefit of wildlife is beginning to change.

As the economical benefits of wildlife moves away from natural harvest, one shift is to outdoor recreational activities. Hunting and fishing are two major sources of economic revenues generating a cash flow in the wildlife industry. It does not include the \$18 billion Americans spend each year to simply watch

* Underlined words are defined in the Glossary of Terms.

wildlife. United States Fish & Wildlife Service studies found birdwatching activities alone are responsible for \$5.2 billion of that amount. Photography, wildlife viewing, botanical and zoological collection, and enjoying the natural environment are additional activities shared by Americans daily.

Recreational activities create the opportunity for free enterprise to flourish. Wildlife-related activities often require the manufacturing, distribution, and selling of new products. This results in income generated from jobs created to meet that need.

Wildlife management requires trained individuals to carry out wildlife-related activities. Not all individuals serve with state or federal agencies. Many operate as independent consultants and provide services that include pond management, habitat management, and species management. Consultants assist private landowners with the owners' particular management goals.

The taking of wildlife still generates the largest portion of wildlife related revenues. Every year, individuals spend money on hunting and fishing activities that include the sales of licenses, leases, supplies, and guide services. Any activity involving the taking of animal wildlife is in a state's published regulations, such as the Texas Parks and Wildlife *Outdoor Annual Official Hunting and Fishing Regulations*.

The fur trade provides another economical use of wildlife. Trappers sell the pelts of the trapped animals. The sale of pelts, licenses, traps, and curing supplies are some of the sources of revenues. It should be noted that trapping is a controversial matter and is neither recommended nor discouraged in this topic. A decision to take fur-bearers is an individual choice and controlled in Texas by the Texas Parks and Wildlife Department. Individual states have regulatory agencies that manage the taking of fur-bearers.

Wild plants have long since been of economic importance to people. About 90% of the domestic food crops now cultivated are descendants of wild tropical plants. Today, wild plants and domesticated plants from wild species supply a variety of products. On a larger scale, trees provide lumber, paper, and rubber. Some plants supply oils, dyes, and fibers. Many legumes develop nitrogen-fixing nodules that supply the soil with nitrogen that enriches the soil for the production of food crops.

Insects and birds add to the economic base through pollination of plants. This activity is essential to many food crops. In the United States, pollination activities make it possible for crops to be valued at approximately \$30 billion annually.

A more futuristic look indicates that there is the potential for computer chip development using protein compounds produced by certain saltwater bacteria. The compounds absorb light and change color as they store and retrieve information. It appears to be possible to imbed these compounds into tiny cubes in computers. A single 1-inch cube would allow memory storage to increase by 1,000 to 5,000 times.

MEDICAL AND SCIENTIFIC BENEFITS

The benefit of wildlife species is not limited to the dollar value generated. Plants or plant extracts are a source of medicine for an estimated 80% of the world's population. The genetic resources of wild plants, most of which grow in less developed, tropical countries, accounts for an estimated \$100 billion annually. These comprise about 40% of all medicines, drugs, and pharmaceuticals.

Anti-cancer drugs, such as that obtained from the rosy periwinkle, save an estimated 30,000 lives annually in the United States. The rosy periwinkle grows in the threatened tropical forest of Madagascar. Extracts from its leaves are used to treat lymphocytic leukemia and Hodgkin's disease, which are two of the most deadly forms of cancer. Sales from these two drugs produce annual revenue of approximately \$160 million.

Currently, of the 250,000 known plant species, scientists have studied only 5,000 species for their possible medical benefit. If destruction of threatened habitat, such as that of the rosy periwinkle, continues, many species may become extinct before scientists discover their full medicinal value. Scientifically, each species is important because it is a link in the total ecological picture.

Understanding the role a species plays in the environment helps the scientists understand the evolution and function of life. A look into the past could easily provide the direction evolution could continue. Premature extinction deprives the researcher of valuable genetic information that is the result of centuries of evolution. Once lost, current technologies can never be retrieved or recreated. Plant life is of extreme importance to the entire biotic community. Plants are a food source to most animals. Plants recycle nutrients necessary for agricultural production and help maintain soil fertility. Plants produce oxygen, aid in regulating the water supply, and store solar energy.

The diversity of plant and animal life is responsible for detoxifying poisonous substances and breaking down organic wastes. They have the potential to control crop pests and disease carriers. More importantly, they make up the vast gene pool for future evolutionary processes. It must be understood that diversity of plant and animal life includes all bacteria, fungi, and insects that dominate and aid in the functioning of natural ecosystems.

AESTHETIC AND RECREATIONAL BENEFITS

Something with aesthetic value is pleasing to the eye, such as watching a deer graze or enjoying the sun set. Wild plants and animals have this aesthetic value. They are a source of awe, joy, wonder, and pleasure for many people. Wildlife recreation is more than activities designed to take wildlife species. People enjoy seeing plants and animals in their natural habitats. This is why travelers stop along the roadside whenever a wild animal moves into an opening or they see a brightly colored plant.

Aesthetic and recreation value of wildlife overlap. Often the aesthetic value is the motivation for the recreational activities. A person sees an aesthetically pleasing landscape or experiences the joy of seeing wild animals in their natural habitat. There is a desire to capture the moment on film. Photography becomes a recreational activity that results from the aesthetic value of the landscape. As the word spreads of the beauty of an area, people have the desire to travel there and experience it for themselves. When traveling, many people enjoy discovering plant species not indigenous to their home.

Wildlife tourism, also called ecotourism, continues to grow as an industry. In the United States, this industry is responsible for as much as \$30 billion in revenue. Birdwatching, as mentioned earlier, is a growing part of wildlife tourism. An estimated 50% of Americans and 80% of Canadians participate in birdwatching, photography, or similar outdoor activity. This is a larger number of people than those that hunt or fish. Subsequently, an animal begins to have more value as a sight-seeing attraction than as a mount or pelt. Exotic game ranches provide the opportunity for people to view non-native species in a "near-native" habitat. Some people prefer to see wild animal species in their natural habitat.

Ecotourism is capable of generating larger revenues for Third World countries, such as Africa, than hunting. One research study suggests that a male lion in Kenya will generate \$515,000 to the country's economy by the time it reaches 7 years of age. If hunted, the animal would yield a tanned skin with a \$1,000 value. The same study indicated that a 60-year old elephant would generate nearly \$1 million dollars in economic revenue.

Ecotourism has its disadvantages. Fifty percent of the United States population and eighty percent of the Canadian population involved in ecotourism activities will have an impact on local ecosystems. Heavy traffic of people in a resource area will diminish the aesthetic value. There has to be a balance between human activity damage to the ecosystem. Denali National Park in Alaska is working to manage human traffic and still allow for maximum enjoyment of the park. Tourist can only travel by private vehicle 15 miles into Denali National Park. Beyond that, scheduled bus tours are available. Buses allow tourist to view caribou, Dall sheep, moose, and grizzly bears roaming freely in undisturbed habitat. Of course, hiking and biking are options available to visitors. Regardless, this management practice limits human impact thereby maintaining the ecosystem.

ECOLOGICAL BENEFITS

Ecology is the relationship of all living things with their environment. All organisms that live in the same area make up a biotic community. A biotic community is a collection of plants and animals that live in the same environment. Each organism in a community is dependent on the other organisms. The management of one type of wildlife is therefore important for the maintenance of the others.

A farm pond is one example of a biotic community. Phytoplankton in a pond provides food for the zooplankton. The zooplankton provides food for tadpoles, fish fry, and aquatic insects. Small fish, frogs, and birds eat the insects. Large fish then eat the frogs and small fish. Plants such as cattails and water lilies provide food, shelter, and nesting sites for various animals and insects. Each type of wildlife is ecologically important. Many of the insects and animals will disappear if there were no cattails or water lilies. If the insects disappear, there is a severe drop in the food supply for the frogs and fish.

The use of one resource in an ecosystem affects all the other resources in that area. The removal of trees from a forest will affect the lives of the forest animals. With fewer trees, the animals would have less shelter and food and could easily cause the animal population to decrease. It is also necessary to examine the importance of an insect population. The destruction of insect populations with insecticides can decrease or prevent the pollination of plants. Without pollination, plants are unable to reproduce. The result would be a shortage of food for the animals in the community. Failure to properly manage a deer population could result in overgrazing. This problem would affect the regeneration of shrubs and trees and reduce the growth rate of the forest. This example illustrates the dependency each form of wildlife, plant, and animal has on the others.

Each form of wildlife is important to the others in its community. Each is also important to the organisms in other communities. Each biotic community is relatively self-sustaining, yet linked to other communities. What takes place on a farm will affect the farm pond, the forest, and even the ocean. Whenever a farmer uses harmful pesticides on crops, rainfall can wash the chemicals into streams and damage the aquatic life. In a similar manner, the processes of one community affect the processes of another. In order to maintain a balanced wildlife system, it is important to manage and maintain each part of the system. This will result in the proper ecological balance within an area, as well as surrounding areas.

Wildlife preservations use restocking, predator controls, habitat improvement, game refuges, and restrictive law practices. Restocking can include replenishing a fishing pond with catfish or releasing red drum

fish fingerlings into a bay. An example of predator control is trapping and moving foxes from an area in order to protect a pheasant population. One procedure of habitat improvement is the planting of shrubs for the shelter and safety of rabbits. Wildlife refuges provide food and shelter for various species. The no hunting restriction in many refuges provides safety as well.

A wildlife manager can address needed changes using several possible approaches, depending upon the desired outcome. In order to increase a population, planting food patches is a possible use of management. Often, activities require decreasing a species because overpopulation resulted in food shortage. Harvesting deer that are damaging orchards is an example of decreasing a population through management. The proper management of wildlife, whether maintaining or changing, results in a balance of the birth and death cycles. Proper wildlife management enables people to enjoy the benefits of wildlife.

SUMMARY

The benefits of wildlife intertwine and overlap. A plant that has medicinal purposes also has economic value. Animals photographed for recreational purposes also have aesthetic value. Regardless of the classification of their benefit, it is obvious that managing plants and animals is beneficial for the environment and for human interests. When making and implementing decisions regarding wildlife, a wildlife manager must consider the big picture and look beyond the short-term affects. This long term approach to wildlife management will ensure that wildlife will continue to benefit people for generations.

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GLOSSARY OF TERMS

Botanical – Of or relating to plants.

Consultants – A person who gives professional advice or services regarding matters in their field of special knowledge or training.

Detoxify – To remove poison or the effects of poison.

Fingerlings – Small, immature fishes usually 4 to 6 inches long.

Fish fry – Young or recently hatched fish.

Pelts – Undressed skin of an animal with the wool, hair, or fur attached.

Pharmaceuticals – Of or relating to medicines or drugs or the discovery of new drugs through research and of synthesizing organic compounds of therapeutic value.

Phytoplankton – Microscopic plant life found in water.

Plant extracts – Materials separated from vegetative matter through one or more physical or chemical procedures.

Taking – When referring to plants and animals includes the harassing, harming, pursuing, hunting, shooting, wounding, trapping, killing, capturing, or collecting activities.

Third World – Term used to identify impoverished nations.

Zoological – Of or relating to animals.

Zooplankton – Microscopic animal life found in water.

SELECTED STUDENT ACTIVITIES

SHORT ANSWER/LISTING: Answer the following questions or statements in the space provided or on additional paper.

- Identify the four areas where wild species of plants and animals benefit human existence.
 - _____
 - _____
 - _____
 - _____
- What two forms of cancer can medical science treat using a plant extract from the rosy periwinkle?
 - _____
 - _____

FILL IN THE BLANK: Complete each statement with the correct word or phrase.

- Ecotourism involves _____ percent of the Canadian population and _____ percent of the American population.

4. The diversity of plant and animal life is responsible for _____ poisonous substances and breaking down organic wastes.
5. One possible future use of wildlife could be the development of a computer chip using protein compounds produced by certain _____.

TRUE/FALSE: Circle the “T” if the statement is true or “F” if it is false.

- T F 6. Wildlife is only valuable to Third World countries as a food source.
- T F 7. Trapping fur-bearers is highly controversial and an illegal activity.
- T F 8. An estimated 40% of all medicines, drugs, and pharmaceuticals are derived from native plants.
- T F 9. In Texas, the Texas Fish and Game Department regulates taking of wildlife.
- T F 10. Taking of wildlife for food is not as necessary today as it was when this country was developing.

ADVANCED ACTIVITIES

1. Wildlife Habitat Areas

Objective:

The student will be able to appreciate the aesthetic beauty of wildlife through the development of a habitat area.

Introduction:

A wildlife habitat area is not necessarily an area developed to attract game animals such as deer. Wild species of plants can attract a variety of non-game species that include butterflies, hummingbirds, and small mammals. Development of such an area should isolate the area enough to attract timid animals yet close enough to enjoy their viewing.

The area can include planting a variety of native plants, construction of a small pond, and addition of feeders. The design should allow for safe, unobstructed movement through the area. Search the Internet for “backyard wildlife habitat” to find suggestions for design and plant species. One site to visit is <http://www.nwf.org/habitats/index.html>. This site will include strategies for backyards, schoolyard, community, and workplace designs.

Activities:

- Select a strategy for a backyard, schoolyard, community, or workplace wildlife habitat.
- Identify animal species you would like to attract to the area.
- Develop a list of plants preferred by the animals selected.
- Include feeders for species such as squirrels, songbirds, and hummingbirds.
- Post a sign identifying the area as a “Wildlife Habitat Area.”

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