

WILDLIFE CONSERVATION PRINCIPLES IN THE BIBLE

By

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Everyone, it seems, enjoys wildlife to some extent. People pause to look up when a skein of wild geese passes over honking loudly as they go. Watching a robin build a nest and raise her young is an interesting experience. Wildlife plays a vital role in the ecology of the natural environment. Game birds and animals provide sport and high quality food for the table.

Unfortunately, many wildlife populations are on the decrease. Some species like the passenger pigeon have been entirely eliminated. Others like the peregrine falcon are classified as "endangered" and may be on the verge of becoming extinct. What are the main causes today for wildlife decreases? Are there some biblical principles relating to wildlife conservation that would insure abundant wildlife in the future?

The "Moral Issue"

Much of the recent interest in wildlife has centered around the "moral issue" of hunting. The individuals own personal morals are usually the issue although occasionally the 6th Commandment "Thou shall not kill" is quoted (Butcher, 1963). Of course, the proper rendering of this commandment is "Thou shall not murder" obviously referring to the unlawful taking of another human life. In fact, there are scriptures supporting the taking of animals for mans use. Genesis 1:26 and 9:3 gives man dominion over wildlife. Solomon stated there is a time to harvest and a time to kill in Ecclesiastes 3:2 and 3.

In the past some wildlife species have been drastically reduced in number by hunting abuses. In some cases unregulated hunting has been the primary cause in bringing some species to extinction or near extinction. The buffalo in the Great Plains was nearly wiped out by 1883 through unregulated commercial hunting (Allen, 1962). Of course soon after the great herds would have been eliminated by changing habitat conditions when the prairie grasses which they depended upon were plowed under.

The First Game Law

The "father" of modern game management, Aldo Leopold, in his book Game Management, recognizes Deuteronomy 22:6 as the earliest law regulating the conservation of wildlife (Leopold, 1933). Moses states:

If a birds nest is lying on the ground, or if you spy one in a tree, and there are young ones in it with the mother sitting in the nest, don't take the mother with the young. Let her go, and take only the young....(Living Bible paraphrased).

Notice the scripture is not only restrictive by not allowing taking the adult female bird, but permissive by allowing the young to be taken. In practice today, approximately 75% of game birds taken in the fall by hunting are young birds of the year. By careful regulation an adequate number of both young and adult birds are left to fill the habitat's carrying capacity in the following years.

If annual surpluses of some larger game animals; deer for example, are not harvested they tend to overgraze their range resulting in much lower populations over a long period of time. Livestockman send their annual animal surplus to market; but deer often are allowed to increase until they cause range deterioration. Wildlife scientists at the University of California have stated (Longhurst, et al, 1976):

Until a workable hunting program is operating, efforts to control deer losses from other causes will serve little purpose except to intensify the level of intraspecific competition for food. ^{1/}

What is Conservation

To understand wildlife conservation principles we need to define some basic biological concepts applicable to wildlife. Wildlife conservation can probably best be defined as wise use of our wildlife resources to provide the greatest good for the greatest number over the longest period of time (Black, 1954). Of course, only a small number of species are classed as "game". They generally receive the greatest interest from an economic and recreation standpoint because of their value for hunting and food. However, in most cases sound game management principles are applicable to most wildlife species.

Carrying Capacity

Carrying capacity can be defined as the number of animals a given piece of habitat can support on a long-term basis. Usually poorer

1/ Deer competing among themselves for the available food.

habitat conditions in late winter combined with winter storms take the heaviest annual toll of wildlife. Normally carrying capacity is only as high as the habitat's capacity to carry wildlife through this "pinch period". Sometimes the "pinch period" may be habitat and weather conditions during the spring nesting season. Often this is the case with pheasants and other ground nesting birds (Dahlgren, 1967). The concept is the same as the weakest link determines the strength of an entire chain.

When carrying capacity is exceeded serious problems can result. The bible contains an interesting account of domestic animals exceeding the carrying capacity in Genesis 13:

They left Egypt...Abram with his wife and Lot and all they owned for Abram was rich in livestock...Lot too was wealthy with sheep and cattle...But the land could not support both Abram and Lot with all their flocks and herds. There were too many animals for the available pasture (Living Bible paraphrased).

Abram and Lot's flocks exceeded the carrying capacity. Had the situation been allowed to continue all the forage would have been consumed. Left unchecked most of the animals would die of starvation after they had killed most of the vegetation and leaving little cover to resist soil erosion. The habitat's carrying capacity for livestock, wildlife and people would have been reduced. It might take years for the land to recover its ability to support life as it once had. Livestockman then and modern day ranchers and wildlife biologists are aware of the principle of carrying capacity. Further, they recognize that when carrying capacity is exceeded habitat deterioration will follow.

Biological Surplus

"Nature" has a built-in principle to insure that carrying capacity is not exceeded indefinitely. Animals tend to produce more young than suitable habitat can support. The number of animals which exceed the carrying capacity are the "biological surplus". These are the animals that die each year whether taken by hunting or not. If they are not taken by hunting, other natural elements reduce the population; usually by starvation, exposure to severe storms, disease or predation. The yearly loss for small animals is very high; up to 80% of the population. This is why a certain portion of game animals can be taken through hunting with little or no detrimental effect on the next years population. The main purpose of game laws is to limit harvest to take only the biological surplus. Often if surpluses of big game, deer and elk for example, are not removed, the same type of situation Abram and Lot faced can develop.

Habitat and Pollution

The real key factor determining wildlife population levels is the quantity and quality of habitat. According to the U.S. Fish and Wildlife Service in their publication Today's Threat to Our Nations Wildlife:

...Legal hunting is not a threat to any species in this country...The real threats to wildlife (are)...pollution and habitat destruction...

The threat to many bird species of egg shell thinning, caused by DDT is one well documented example. Over 40 bird species are threatened because their thin shelled eggs break before maturity. People began to realize that when animals could not reproduce man may be affected next. As a result the use of DDT has been greatly reduced but there are new pollution threats, one of which is the recently recognized threat of PCB's (Polychlorinated Biphenyles).

PCB's are chlorinated hydrocarbon compounds found in plastic products and wastes from plastic producing industries. In a recent speech Nathaniel Reed, Assistant Secretary of the Interior, pointed out one example where fingernail clams, one of the main foods of canvasback ducks, absorb large quantities of PCB's (Reed, 1975). What definite adverse affects this may have on the canvasback duck population is not known. However, like DDT by the time they are known the environment may suffer irreparable damage.

Loss of habitat due to modern farming methods is a major cause for many wildlife population declines. Most farm land is managed to produce the greatest agricultural crop for the least amount of money and energy expended. This has resulted in large expanses of farm land put into one type of cover crop. This type of monoculture may be more efficient. However, crops are more susceptible to disease, attract abnormally high numbers of insects and tend to reduce soil fertility (Schurter and Walter, 1971). There is little beneficial "edge effect" where different types of cover come together in a mixed crop culture. Wildlife carrying capacity diminishes where there is little edge effect.

Under modern day farming all too often wildlife cover along fence rows is torn out. Wetlands, critically important wildlife habitat, are destroyed by draining or filling. Every square foot it seems is put into agricultural production. Even the most marginal lands are plowed under, overgrazed, or otherwise abused. Wildlife is destroyed because their habitat is destroyed!

What Can Be Done

If agriculture returned to smaller fields planted to various crops, edge would increase and both agriculture and wildlife would greatly benefit. Many similar changes in agricultural practices could vastly benefit wild-

life with little decline in crop production. However, some critical wildlife habitats should be managed primarily for wildlife with agriculture a secondary consideration. For example, parts of pothole country in north central United States, with its scattered wetlands that produce most of the nations waterfowl, should be managed primarily for wildlife with limited cattle grazing and grain production. Areas identified as critical endangered species habitat need to be protected from mans intrusion. Most tillable land can be managed primarily for agriculture but not at the complete expense of wildlife habitat loss. The value of wildlife in improving the quality of our lives needs to be recognized.

If many of the biblical principals of land management were implemented huge increases in wildlife population diversity and numbers could be expected.

Probably the greatest wildlife increases would occur if land Sabbaths were implemented (Exodus 23:11 and Leviticus 25: 4-7). When the soil bank program was in effect in the Dakotas thousands of acres were planted to cover crops and not farmed. Prime undisturbed nesting, food, and escape cover provided ideal wildlife habitat. The pheasant population especially, along with many other wildlife species, increased dramatically. The increase was directly related to the number of acres put into the soil bank. If farmers rested their land every 7th year, creating soil bank conditions, abundant pheasant populations would result along with a wide variety of other game and non-game species.

An interesting variation might be to rest 1/7 of the land every year. This might fulfill the needed land rest on a rotational basis. It would provide increased edge effect because every 7th field would be in some kind of uncultivated cover crop.

Types of cover crops could be varied as well but primary emphasis could be on cover types that provide the best wildlife habitat. No agricultural crop would be taken from the land during the Sabbath rest. The scriptures appear to restrict taking of agricultural seed crops from resting lands. It is perhaps possible that the abundance of game produced might therefore be harvested. The biological surplus of game produced, as previously mentioned, cannot be carried over from year to year.

If the edges and corners of fields were left unharvested (Leviticus 19:9 and 23:22) valuable wildlife habitat would result. Wildlife scientists have discovered that most wildlife use the outside edge of fields for nesting, food, and cover, Leaving the outside edges unharvested would provide critical wildlife habitat where it would be of most value to wildlife. Edge would be increased. Undisturbed food and cover would be provided. Wildlife populations would respond with dramatic increases.

In the future if these biblical principles are implemented in a balanced land management program there will be abundant wildlife for all to enjoy.

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