XVI. THE PRESERVATION OF WILD LIFE

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I have been very much interested in the articles that have been appearing from time to time in Forest and Stream and other magazines on the subject of the preservation of wild life, especially game birds, fish and other animals, and also in the concrete efforts made by federal and state governments and various societies with this aim in view. Having been born in the west at a time when human habitations were few and scattered so that my chief associates and neighbors were the wild creatures of forest, field and stream, and being a lover of the outdoors and having always taken a keen delight in the sport with rod and gun, and since on reaching maturity most of my studies have

been along the lines of Biology, I am naturally very much interested in these same problems, and have made a study of them from all angles. I must say that most of the efforts that have been put forth toward the preservation of wild life might be characterized by the homely old expression of "Saving at the spigot while it was running out at the bung." What I mean by this is not that the methods that are now employed are not valuable, and that they do not serve a very necessary purpose; but most of the present efforts that have been made to prevent the wasting of wild life are either poorly carried out and achieve a minimum rather than a maximum efficiency, or are stopping the smallest rather than the greatest leaks.

When the subject of the disappearance of any given species of game animals, birds, or fish is mentioned the first and almost the only reason given is the hunter or fisherman. The buffalo disappeared "because of the hunter," also the elk is fast disappearing "because of the hunter." In the case of the migratory game birds and those remaining in any given locality such as quail, pheasants, deer, mountain sheep, etcetera, "the hunter" is the main, if not the only cause given for their dimunition and disappearance. But can we say that "the hunter" was the chief factor in the extinction of the dodo and the awk, not to go back to the dinosaurs and others of earlier times? It may be also interesting to note that the rattle-snake is becoming extinct. Would it not be wise to consider this problem from a biological standpoint? Make a study of those factors which are operating naturally in the propagation and extinction of species of animals and make use of and facilitate thôse factors that make for the multiplication, and restrain those making for the extinction of desirable species; because the efforts of man with regard to either the propagation, specialization, or development of the special characteristics of any natural creature can only be hastened by a control of those natural forces which are working toward this same end.

With regard to any living organism there are certain factors or vital conditions that are necessary for the given species to carry on its vital functions and increase. With reference to game creatures, as all others, these conditions are food, water, certain range of temperature, breeding grounds, freedom from enemies and disease, protection from extremes of weather, range, and the necessary factors for carrying out naturally developed characteristics of migration, hibernation, etc. The factors working for extinction of any species are the lack, or excess, or reverse of

these vital conditions together with certain internal specializations which may reduce the ability of the creature to adapt itself to those geological changes and cateclysms of nature which go to make up the history of the earth itself. Therefore our efforts to control the extinction of organisms whose preservation is desired becomes the providing of the vital conditions in optimal degree and restraining or abolition of the fatal conditions. Concrete examples of employing these methods are the activities of the medical profession in controlling epidemics and diseases, and the activities of the Department of Agriculture with regard to plant life.

The importance of the Panama Canal was recognized over a century ago. We are all familiar with the failure of the French to construct this canal. This failure was not due to lack of engineering knowledge and skill, nor was it due to lack of finances, but was due to the fact that the region in which the canal was to be built was so infested with organisms immicable to the life and health of human beings that the construction of the Canal was not possible. When the United States Government took charge of the problem of constructing the Panama Canal, realizing the reason of the failure of the French, she set about first to eliminate or so far reduce the numbers of these dangerous organisms that it was possible for human beings to construct this Canal, then its construction could be and was accomplished. When the experts of the Department of Agriculture attack the problem of destroying the parasites of any form of plant life they poison (produce disease in the parasites), foster their natural diseases and enemies, and destroy the breeding grounds of the parasites; in other words, reduce the vital conditions to a minimum and increase the fatal conditions. By applying the reverse of these same principles with regard to any creature whose preservation is desired, such preservation can be accomplished, and by such means only can such preservation be accomplished. Our problem then becomes, what are the concrete factors in the extinction of a given species? Eliminate these factors and the increase of the species will take care of itself.

To recapitulate, the factors in the extinction of any species are first, lack of food, second, lack of breeding grounds, third, lack of range and freedom to carry on naturally developed habits, fourth, enemies, and fifth, the internal specializations which prevent the animal from accommodating itself to changes in its environment. Our problem then in the largest measure becomes

the elimination, as far as possible, of these deleterious influences.

The efforts so far made with regard to the preservation of spceies are first; game laws making closed seasons, in other words laws which are aimed at one of the enemies of these species, in other words aimed against the activites of man in destroying wild life. The only real good that has been done by these laws is the stopping of the activities of the market hunter who slaughtered thousands of birds at all seasons of the year, but so far as the sportsman is concerned his activities amount to about one tenth of one per cent of the total factors operating in the destruction of wild life, and yet the greater part of the efforts now being made are directed against this one tenth of one per cent. For efficiency, this remainds one of the recipe for destroying the cotton boll weevil, which was to take a rock and a hammer, place the insect on the rock and hit it with the hammer.

Let us take any given species in a given place, for example, the quail in Oklahoma. Twenty years ago the quail in Oklahoma were everywhere thicker than the sparrows in the city street. Men could and did kill as high as seventy or eighty in a single afternoon almost anywhere outside the city limits. Today many sections of the state are almost as bare of quail as they are of the buffalo. Many sections of land on which many hunters in a single afternoon could without difficulty get some sixty or seventy-five quail, today not a single quail can be found. When asked why this is true, and why short open seasons and small bag limit fails to check the disappearance of this bird, the immediate answer is, "the hunter is responsible." But let us look at the conditions under which the quail lived twenty years ago, and compare them with the conditions existing today.

Twenty years ago but a small part of the uplands of Oklahoma were cultivated. They were covered with tall grass. The draws and canyons and many upland spots were covered by brush which afforded good cover where the quail could dust and rest in comparative security from hawks and other natural enemies. In other words the quail had abundant breeding grounds, and wide, healthful range. Today the larger part of the uplands of Oklahoma are cultivated or are so closely pastured that no long prairie grass exists. The quail is forced to find nesting places and live in the uncultivatable draws and canyons, most of them timbered, hence dark, damp and mouldy. These regions are periodically flooded by streams and the nesting places to a great extent inundated by water. In these same draws and

canyons are to be found snakes, coons, skunks, pole cats, minks, and other creatures which either destroy the nesting quail or the nest, in short the quail must live in unhealthy surroundings shut up with all their natural enemies except the hawk. A crop which in recent years has been cultivated largely in this state especially in the bottom lands is alfalfa. Every years on every farm where alfalfa is arised a great many quail nests are destroyed. Sometimes the mower cuts off the head of the setting quail, or the horses step in the nest, or a wheel of the mower crosses a nest or the rake drags it to pieces, so that in one way or another the quail has little chance of hacthing a setting of eggs laid in an alfalfa field. One of the cuttings comes about the time the hen quail is setting on her first laying, another cutting comes about the time of the second setting, so that the quail which nests in the alfalfa field is almost sure to lose one or both settings; perhaps her own life. It is no exaggeration to say that in a field of thirty acres of alfalfa more quail will be destroyed in a single season due to the destruction of the quail nests and of nesting quail than will be destroyed by any ten hunters in the county. That is, of course if there are any quail in the neighborhood of such a field. So that whereas twenty years ago the quail had thousands and thousands of acres of range and nesting places safe from being drowned, and the danger of being destroyed by some animal, or instrument of cultivation being extremely remote, today it is compelled to inhabit the few square acres of territory which are not only not suitable nesting places, but which are also the habitations and ranges of every enemy of the quail except man and some species of the hawk. The quail of Oklahoma of today is in very much the same position of a pair of mice trying to raise their young in a cage full of cats. If it were not for the fact that there are parts of the state which are so hilly and rocky that cultivation is impossible the quail would have followed the buffalo to extinction as a wild range animal and not at all because of any hunters of the human species, but because of the simple fact of inadequate breeding places and the existence of and being thrown with their enemies. The story of the quail is also the story of the deer, antelope, buffalo, wild turkey, and prairie chicken, all of which are now represented by a few siolated herds and flocks. If the state of Oklahoma desires to preserve the quail, instead of making extended closed seasons, if it would set apart sections of upland prairie here and there which would serve for range and breeding grounds, and eliminate the enemies of the quail, such as pedetory animals, reptiles

and birds, the abundance of quail could be assured, but until such measures are taken the quail will year by year become fewer and fewer until they will become a wild curiosity.

Another type of effort that is being made for the preservation of wild life is the game refuge. This excellent. It enables wild creatures to indulge in their naturally specialized habits. This activity needs to be enlarged and extended to include a great many more animals than the migratory game birds. The elk and the mountain sheep are disappearing because settlement has prevented the migration of these animals from the high mountains to lower altitudes, so that we should begin to provide regions to which these animals could migrate and be free from molestation. The purchase, or setting aside of such areas would in the long run be much cheaper than the winter feedings now carried on. But the movement to set forth refuge for our migratory game birds, excellent and necessary as it is, is not half the story. If we would assure a plentiful supply of these birds in the future it is more necessary that we also set apart sufficient breeding grounds. These are far more essential than migration refuges.

Then we consider the subject of the preservation of fish, we against see a lot of excellent methods being employed or an attempt being made to employ them which lose sight of the most fundamental and necessary conditions so that their activities are almost nullified. A great many states as well as the federal government are spending large sums of money for fish hatcheries and are distributing the product very generously to people who apply for small fish for stocking purposes. These are very commendable and unquestionably should be carried out, but if we will follow a hatching of fish we will find that about one fish in 10,000 ever develops to the size where it is an object for fishing or commercial value. These hatcheries are usually located in the foothills, when in a mountainous country, or on some plain in the plains country. The eggs are hatched under conditions and in an environment totally different in many respects from those obtaining in the regions where the fish are expected to live. The young fry are carefully guarded and taken care of until they are shipped out for stocking purposes. These delicate creatures are taken and dumped into a stream or pond already stocked with fish, thus they are suddenly thrust into an environment almost totally different from the one in which they have lived up to that time. Such methods are comparable to taking a group of three or four year old children from the

country and turning them loose on one of the streets of a large city to rustle for themselves. These little fish have been carefully watched, they have been carefully fed, they have been protected from every sort of enemy, and then suddenly are set free to rustle for themselves in a totally new environment surrounded by all the enemies of their species, most important of which are the fish already living in the stream or pond.

It seems to be not generally understood that all game fish are carniverous, and that in selecting their prey make no distinction as to species, devouring the young of their own species as quickly as that of any other. It is remarkable how much a game fish will eat when an opportunity presents itself. On one occasion while fishing for bass with live bait the minnow was repeatedly jerked off my hook until m ycompanion suggested that it must be a turtle. I had baited the hook and cast it into the same neighborhood eight successive time only to receive a strike and lose the bait. The ninth time I threaded the minnow on the hook and threw it into the same spot. I quickly got a strike, but this time I hooked the fish and after playing it for a few minutes was leading it to the boat, and when within about fifteen feet of the boat the fish disengorged the eight previous baits in an attempt to get the hook from its mouth. This fish would not weigh over a pound and a quarter, and yet in less than fifteen minutes it had swallowed eight minnows two inches and over in length, and was grabbing as greedily for the ninth as it had for the first one. I have frequently found in the crop of a fish other fish one third the size of the fish caught, so that the young fish set free in a pond or stream where there are already fish are not past the danger of being devoured by their own species, as well as individuals of other species, until almost the legal size for catching. It does not take much imagination to picture what small chance a young fish from a hatchery will have in a stream already stocked with fish, when we realize that they are suddenly dumped into the pond to depend entirel yon their own resources for food and to dodge the voracious monsters inhabiting these waters whose existence they have no means of suspecting, in an environment totally strange to them.

As illustrative of these facts a club of which the author is a member constructed a lake in which was placed about 3000 young bass. Apparently every one of them lived and grew because they were the first and only fish in the pond. When these bass were about two years old, 25,000 small fry yellow perch were put into the pond. The man who delivered the perch said

we would probably succeed in raising 1000 of them. It is now three years since the young perch were put in the lake, but since a few weeks after they were first put in no one has caught or seen a yellow perch in this lake. The reason is the bass were already there.

Even more desperate are the chances of young trout, because they are taken from comparatively warm water of even current and dumped suddenly into a swfit icy stream of the high mountains. Although the trout requires cold water, nevertheless the sudden change from warm to cold water is a crisis which sometimes is dangerous for a much larger fish than those usually used for re-stocking. Moreover large trout will feed as greedily on young trout as large bass will on young bass.

The remedy for this or efficient propagation is very simple. It is that propagation ponds or streams should be provided in the neighborhood of every stream to be re-stocked, and the small fry put in these places until such time as they have reached a size which enables them to accommodate themselves to the waters in which they are to live, until they have learned to rustle for themselves without having to dodge at least their worst enemies, then such propagation waters to be turned into the stream or pond which it is desired to re-stock. In this way the majority of young fish that are intended for stocking would reach their destination with some chances of avoiding their new enemies, and developing to the size expected of them. The extra expense of providing these propagation waters would easily be met by the reduced expenses of raising the enormous numbers now required to get a few fish to reach adult size.

By all odds the attention and activities of individuals, societies, legislators and others interested in the preservation of wild life must be directed, first, to the securing for these creatures adequate breeding grounds, food, refuge, and certain range; second, the extinction or reduction of enemies, lower forms even more than man; third, assist natural forces making for increases of numbers by efficient propagation. An illustration of the efficiency of breeding grounds is the game conditions in New England. This region is fast becoming the hunter's paradise for upland game because the rural districts have largely gone back to the primeval wildness, thus affording breeding grounds, cover, and food for pheasant, partridge and deer.