

Comments

VANISHING WILDLIFE AND FEDERAL PROTECTIVE EFFORTS

Wildlife is one of our most precious resources. Although men usually cherish exotic, endangered species as a source of wonder and delight, many of these species are essential to the continued balance and survival of the world's ecosystems. As a resource, wildlife is more vulnerable than most, for once a species disappears from the earth it is irretrievably lost. Man's blunders and wanton destruction have already wiped out an alarming number of species and more will follow them unless immediate corrective measures are taken. This Comment, after reviewing the dimensions of the problem, examines past, present and possible future legislative solutions to the problem of endangered species and appraises current efforts at international cooperation in this sensitive field.

We need another and a wiser and perhaps a more mystical concept of animals. Remote from universal nature and living by complicated artifice, man in civilization surveys creatures through the glass of his knowledge and sees thereby a feather magnified and the whole image in distortion. We patronize them for their incompleteness, for their tragic fate of having taken form so far below ourselves. And therein we err, we greatly err. For the animal shall not be measured by man. In a world older and more complete than ours, they move, finished and complete, gifted with extensions of the senses we have lost or never attained, living by voices we shall never hear. They are not brethren, they are not underlings, they are other nations caught with ours in the net of life and time, fellow prisoners of the splendour and travail of the earth.

—Henry Beston¹

The human ability, and historically documented propensity, to cause the extinction of other species necessitates a new morality regarding wildlife. Within the next twelve months one or two species of birds and mammals will probably vanish forever from this earth.² The following year an additional species or two will totally disappear. Man is exterminating animals at an increasing and alarming rate.

1. S. REP. NO. 91-526, 91st Cong., 1st Sess. 3 (1969).

2. *Hearings on S. 335, S. 671, & S. 1280 Before the Subcomm. on Energy, Natural Resources, and the Environment of the Senate Comm. on Commerce, 91st Cong., 1st Sess., ser. 10, at 78 (1969) [hereinafter cited as Senate Hearings].*

The conditions which lead to the extermination of species are varied, numerous, and not always apparent. This Comment will identify some of the general factors responsible for accelerating the rate of extinction. Further, it will review major federal governmental efforts to protect forms of wildlife and analyze the most recent endangered species legislation. Since man has become the principal cause of the disappearance of wildlife,³ it is necessary that he initiate a program aimed at rescuing species poised on the brink of extinction.

I.

THE EVOLUTION OF THE EXTINCTION OF SPECIES

The evolution of new species and the extinction of old ones is, of course, a natural sequence of events. Man, however, has greatly and unnaturally accelerated the normal rates of extinction. Millions of years ago when dinosaurs inhabited this planet, extinction occurred at an average rate of perhaps one form every 1,000 years.⁴ From the time of Christ to about 1800 A.D. roughly one form of mammal was exterminated every 55 years.⁵ Over the last 300 years man has been responsible, either directly or indirectly, for the destruction of more than 200 forms of birds and mammals,⁶ and in the last 200 years he has exterminated 10,000 species of insects and snails.⁷ In the United States alone, no less than forty birds and mammals have become extinct since 1820,⁸ eighteen of them in the twentieth century alone.⁹

Translating such statistics into individual case histories often paints a shocking picture of man's ability to exterminate entire species within a very short time. The demise of the passenger pigeon is a well-documented example. At one time among the most numerous of all

3. [U]ntil man, the highest predator, evolved, the process of extinction was a slow one. No species but man, so far as is known, unaided by circumstance or climatic change, has ever extinguished another, and certainly no species has ever devoured itself, an accomplishment of which man appears quite capable.

P. MATTHIESSEN, *WILDLIFE IN AMERICA* 22 (Viking paper ed. 1964).

4. V. ZISWILER, *EXTINCT AND VANISHING ANIMALS* 56 (rev. English ed., F. & P. Bunnell transl. 1967).

5. *Senate Hearings*, *supra* note 2, at 78.

6. V. ZISWILER, *supra* note 4, at 56.

7. Solem, *Wiped Out & Unsung*, *NAT'L PARKS & CONSERVATION MAGAZINE*, Aug. 1970, at 7.

8. Farney, *Experts Try to Save the Whooping Crane, Other Rare Species*, *Wall Street J.*, July 22, 1970, at 1, col. 4.

9. BUREAU OF SPORT FISHERIES & WILDLIFE, U.S. DEP'T OF THE INTERIOR, *RARE AND ENDANGERED FISH AND WILDLIFE OF THE UNITED STATES* viii-xi (rev. ed. 1968) [hereinafter cited as *INTERIOR DEP'T RED BOOK*]. Of the eighteen, ten are species of Hawaiian birds, four are bird species which inhabited areas of the continental United States—Heath hen, Carolina parakeet, Passenger pigeon, and Louisiana parakeet—and four are species of mammals—Amargosa meadow vole, Plains wolf, Merriam elk, and Badlands bighorn. *Id.*

bird species, these pigeons were considered a tasty delicacy by nineteenth century Americans. Though single flocks were estimated to contain more than two billion birds, even such great numbers could not withstand the yearly slaughter which by 1850 provided employment for several thousand persons. A single New York dealer in 1855 handled 18,000 pigeons per day. Seven and a half million birds were captured at one spot in 1869.¹⁰ The largest nesting ever described covered an area of over 750 square miles in south central Wisconsin in 1871, yet thousands of hunters slaughtered millions of birds within a month.¹¹ In 1879 a billion pigeons were taken in Michigan.¹²

Passenger pigeons were so heavily harvested that their population experienced a steady and rapid decline. The last wild pigeon in Wisconsin was captured in 1899, though stray individuals were occasionally observed for another five or six years. The last passenger pigeon on earth died in the Cincinnati Zoo in 1914.¹³

Coincidentally, the Carolina parakeet also became extinct in 1914.¹⁴ Eight years before, the last herd of Merriam's elk had met its end.¹⁵ While a century and a quarter have passed since the great auk was exterminated,¹⁶ only four decades have passed since the last heath hen was observed on Martha's Vineyard in 1932.¹⁷ The fate of these animal forms has been sealed forever. They are extinct and man and nature are incapable of resurrecting them. Hundreds of other species may share the same fate if man continues in his destructive ways.

The International Union for Conservation of Nature and Natural Resources (IUCN)¹⁸ publishes the *Red Data Book*, the most widely accepted authority on the number of species in danger of extinction.¹⁹

10. See V. ZISWILER, *supra* note 4, at 2-3.

11. See P. MATTHIESSEN, *supra* note 3, at 159-60.

12. See V. ZISWILER, *supra* note 4, at 3.

13. See P. MATTHIESSEN, *supra* note 3, at 158-61.

14. *Id.* at 181.

15. *Id.* at 144.

16. *Id.* at 19-20.

17. *Id.* at 69.

18. IUCN is an independent international organization with headquarters in Morges, Switzerland. Its membership includes governments, departments of governments, and private institutions. Great Britain is a member, for example, as are the U.S. Dep't of the Interior and the Smithsonian Institution. Founded in 1948, IUCN's main purpose is to promote or support action that will ensure the perpetuation of wild nature and natural resources on a worldwide basis. Through its Survival Service Commission, IUCN endeavors to prevent the extermination of threatened species of wildlife. It investigates the status of endangered species and gives advice and help in safeguarding them and the habitats upon which they depend. See *Senate Hearings*, *supra* note 2, at 103-19.

19. Miller, *Some Fashion Setters Say Exotic-Fur Coats Are Out of Fashion*, Wall Street J., May 13, 1970, at 1, col. 4. Five lists have been prepared covering mammals, birds, amphibians, reptiles, and freshwater fishes. Letter from M.A.G.

As of March, 1971, 892 species of vertebrates are listed as threatened with imminent worldwide extinction.²⁰ In the United States alone more than two hundred native birds, mammals, reptiles, amphibians and fishes now are listed by the Secretary of the Interior as either "rare" or "endangered."²¹ This country's endangered list stands at a record 101, including fourteen types of mammals, fifty birds, seven reptiles and amphibians, and thirty species of fish.²² In a recent six-month period, twenty-two of these species were added to the list.²³

A. Prior to Man

Of paramount importance in considering the reasons for the annual increase in the number of species threatened with extinction is an understanding of ecology, the relationship of living forms to their environment. Living things evolve through natural selective processes. Each different type develops special characteristics which enable it to survive and reproduce. These attributes equip creatures for specific niches in their environment. The range of conditions which a species can tolerate determines the size of its niche. While the sperm whale, for example, travels throughout the oceans of the world, geological change has isolated the Kaibab squirrel on a forty-by-twenty-mile plateau on the north rim of the Grand Canyon.²⁴

Before the arrival of man, species disappeared because of changes in the environment or because a species evolved which was better adapted to fill the niche of the original occupant. Gradual climatic changes, glacial advances and inundation by seas are examples of early environmental alterations which eliminated or adversely modified habitats upon which particular life forms relied for continued existence. Today, man has supplanted all other factors as the prime cause of the extinction of species and has created a situation in which species are disappearing much faster than they are evolving.²⁵

Warland, Executive Officer, IUCN Survival Service Commission, to the author, Mar. 18, 1971, on file with *Ecology Law Quarterly*.

20. Letter from M.A.G. Warland, *supra* note 19.

21. Farney, *supra* note 8. The Department of the Interior describes an "endangered" form as one whose prospects of survival and reproduction are in immediate jeopardy. A "rare" form is one whose numbers are few throughout its range, but such species may continue to survive in limited numbers as long as conditions remain stable and favorable. INTERIOR DEP'T RED BOOK, *supra* note 9, at ii.

22. Letter from Harry A. Goodwin, Chief, Office of Endangered Species, U.S. Dep't of the Interior, to the author, Apr. 9, 1971, on file with *Ecology Law Quarterly* [hereinafter cited as Goodwin Letter].

23. Oakland Tribune, Oct. 16, 1970, at 5, col. 1.

24. See P. MATTHIESSEN, *supra* note 3, at 51, 131-32; BUREAU OF SPORT FISHERIES & WILDLIFE, U.S. DEP'T OF THE INTERIOR, THE RIGHT TO EXIST 2 (1969) [hereinafter cited as RIGHT TO EXIST].

25. RIGHT TO EXIST, *supra* note 24, at 2.

B. *The Influence of Man*

Man's interference with the evolutionary process is directly responsible for the rapid and radical alteration of the ecosphere.²⁶ With regard to wildlife, a single, significant consequence distinguishes the natural extinction of individual species from the extermination by man: species which perish through evolution are almost always replaced in their niche by new forms or entire new groups of forms; when man causes the disappearance of a species, no new form appears in its place. Thus every species that is exterminated represents an absolute loss.²⁷

1. *Direct Extermination*

Man has proved himself capable of exterminating wild animals by both direct and indirect means. The earliest and still the most common cause of direct extermination is man's need to procure food; for centuries animals have provided man with sustenance. However, when a species is exploited beyond its capacity to reproduce, it is simply a matter of time until its numbers so decline that its use as a source of nourishment is no longer economical, or in some instances, even possible. Too often in the past man has disregarded this fact. One result may be the extinction of a species, such as the passenger pigeon, or a species may suffer the fate of the bison,²⁸ which has so nearly disappeared that it no longer exists in the wild state.²⁹

A second means of direct extermination is the hunting of animals for their hides, furs or feathers. Some species are presently endangered due to their pursuit more than a century ago. For example, in 1792 the population of Philippi's fur seal on an island off the Chilean coast was estimated at three million. By 1807 all but three hundred had been slaughtered and fifty seals remain today.³⁰ The plight of the American

26. For an understanding of basic ecological terms see Cain, *Biotype and Habitat*, in *FUTURE ENVIRONMENTS OF NORTH AMERICA* 38-54 (1966). Dr. Cain writes: The biosphere is the thin global "shell" of all living matter. It occurs in the freewater zone essentially at the interface of the lithosphere and the atmosphere. It includes all terrestrial life and that in fresh and salt waters. Living organisms occur to the bottom of fresh waters and to great oceanic depths; they occur in soil to relatively shallow depths, and grow up from the soil to the height of the tallest trees; and they may fly or be carried temporarily up into the air. But considering the radius of the earth and its enveloping atmosphere, the biosphere is a relatively thin layer.

Id. at 41.

27. V. ZISWILER, *supra* note 4, at 56. It is interesting to note in this regard that a bird species which could expect an existence of 40,000 years in 1680, it has been calculated, could expect only 16,000 in 1964. *Id.*

28. See P. MATTHIESSEN, *supra* note 3, at 147-52.

29. See generally V. ZISWILER, *supra* note 4, at 1-8.

30. *Id.* at 10.

alligator presents a similar picture. During the Civil War alligator hides were used for shoe leather, and by the late 1800's hides were being used for luggage, handbags and wallets. Around 1900, the state of Florida sent 175,000 skins to market each year. One firm in New Orleans at that time handled 500,000 skins annually. Today the slaughter continues despite prohibition of alligator hunting in the majority of the nine states where alligators still exist. These states estimate that between 200,000 and 460,000 remain, only 42,500 of which are protected in national wildlife refuges.³¹

Other species have more recently been confronted with the threat of extinction. Virtually none of the large or showy varieties of wild cats is presently safe.³² The population of vicunas, found in the Central Andes, has plummeted from 400,000 in 1957 to less than 10,000 in 1968.³³ And like the American alligator, the future of the Nile crocodile is perilous. Though once prodigious in Uganda's Murchison Falls Park, poachers have reduced the population so far that it includes only about 250 nesting females.³⁴

A third cause of direct extermination is the hunting of animals for trophies or for the simple satisfaction of killing. Though some may argue that game hunting encourages the conservation of species,³⁵ too often it constitutes a real threat to the survival of a species, not to mention the individual members themselves.³⁶ This is particularly true

31. *Senate Hearings, supra* note 2, at 51.

32. See D. EHRENFELD, *BIOLOGICAL CONSERVATION* 112 (1970). As an example, the IUCN estimates that 10,000 leopards are taken out of Africa each year on license, which is the maximum attrition the species can bear and still maintain itself. But 60,000 are taken by poachers each year, and 30,000 of those are females which are taken while their unweaned cubs are left to die of starvation. *Senate Hearings, supra* note 2, at 22-23.

33. D. EHRENFELD, *supra* note 32, at 112.

34. *Id.* at 114. One who has studied the ecology of these crocodiles, Dr. Hugh B. Cott of Cambridge University's Museum of Zoology, offers the following historical perspective:

Crocodiles essentially like the modern species existed in Jurassic times and were contemporaries of the dinosaurs. As the only remaining members of the archosaurian stock which have survived the age of reptiles, they are of quite exceptional scientific importance, not least from the indirect light which studies of anatomy, physiology, ecology and behaviour can throw upon the biology of ancestors long extinct. It would be a grave loss to science and research, and to posterity, if these saurians—which have survived for over a hundred million years—were now to be sacrificed to the demands of uninformed public opinion, and subordinated to a passing fashion in leather goods.

Id.

35. Hunters point out that they help to regulate population sizes which otherwise might multiply excessively in the absence of predators. Through the purchase of duck stamps, hunting licenses, and sales taxes on sports equipment, hunters provide revenue for many governmental conservation activities. Also, those who are familiar with the ecosystems in which they hunt may care enough to work to prevent environmental degradation. *Id.* at 116-17.

36. Moreover, ecosystem imbalance may result when a predator population is so

with regard to the hunting of "big game." Dr. David W. Ehrenfeld, Professor of Biological Sciences at Barnard College and Columbia University, describes as an example polar bear hunting in Alaska:

The bears are spotted by plane, and the "sportsman" is then landed at a convenient (and safe) spot to await the arrival of the bear, which may be driven into his gunsights by another plane. One result is a bearskin rug—to which a real hunter would be ashamed to lay claim; another is that the state of Alaska becomes richer by the few thousand dollars left behind by the free-spending tourist. The polar bear population in Alaska is rapidly dwindling to extinction (female polar bears breed only once every 3 years; hence the recuperative abilities of the population are low). Fortunately, both Canada and the Soviet Union have taken steps to protect the polar bear in their territories, but it is a national scandal that the people of the United States should permit the loss of one of their most exciting and magnificent native animals for lack of federal legislation to control the irresponsible actions of a single state.³⁷

Akin to trophy collecting, though posing a threat to fewer species, is the hunting of animals for superstitious reasons, in the belief that their parts possess benevolent powers. The powdered rhinoceros horn, for example, is presently marketed as an aphrodisiac. Poachers have already decimated the populations of the three Asiatic rhino species. In 1964 there were 24 Java rhinos, 150 Sumatra rhinos, and 600 Indian rhinos. The African rhinos are being poached at the rate of 1,000 per year. While black rhinos number about 13,000, only 3,900 white rhinos survive.³⁸

Yet another area in which animal parts are recklessly exploited is the souvenir trade. In Africa wastepaper baskets are made from hollowed-out elephant feet, toothpicks from elephant tusks, and fly swatters from gnu tails. The Pacific walrus population has been reduced to about 40,000 by Eskimos equipped with modern weapons, meeting the popular demand for carved walrus tusks. The walrus population produces about 5,000 young annually, yet 10,000 are being killed each year. If this pace does not slacken soon, the yearly deficit of at least 5,000 animals can only mean extinction in the next several years.³⁹

In addition to the five causes of direct extermination already discussed, man eliminates species when he believes they threaten him or

decimated that it can no longer control the population size of its prey. See notes 41-44 *infra* and accompanying text.

37. D. EHRENFELD, *supra* note 32, at 117. A recent report placed the worldwide population of polar bears at 18,000 to 20,000 of which 2500 are Alaskan. Alaska's annual harvest is about 300. Pender, *The Polar Bear Controversy*, San Francisco Sunday Examiner & Chronicle, Feb. 7, 1971, Chronicle Sunday Punch, at 7, col. 1.

38. See V. ZISWILER, *supra* note 4, at 14-17.

39. *Id.* at 14, 57.

his domesticated animals. The belief that a particular species poses a threat as a competitor has resulted in the disappearance of several types of ungulate from Africa. Campaigns against wild herds that farmers thought might compete with their domestic livestock succeeded in completely eliminating the blue back antelope around 1800, a zebra species called the quagga in 1878, and the Burchell's zebra by 1920.⁴⁰

The institution of predator control programs⁴¹ is also responsible for the precipitous decline in populations of numerous useful members of natural environments. While predators have historically been destroyed because they were thought to endanger either man or domestic livestock and wild game,

[n]early all studies to date of predator-prey relationships support the idea that wild predators do not cause great reductions in the population density of prey species; in fact they seem to have little effect at all other than to check gross overpopulation (the converse is not always true; predator population size is closely controlled by the availability of prey, especially in simple ecosystems).⁴²

In addition to preventing overpopulation of prey species, predators help to control animals that humans consider pests. Moreover, by culling the weak and handicapped individuals from a prey population, predators aid in improving the genetic fitness of their prey and increase food and shelter resources available to the healthier animals.⁴³

One of the most thorough predator control programs is Alaska's campaign against wolves, instituted to foster growth of reindeer and caribou populations. The bounty on wolves has been increased from \$15 in 1921 to the present fee of \$50. Most wolves are shot from airplanes, often in areas where there are many wolves, but where no real wolf problems exist. Ironically neither reindeer nor caribou have benefited significantly, because lack of forage, and not the wolf, is the principal cause of their decline in numbers. In the past, predator-control agents of the Interior Department's Fish and Wildlife Service dropped poisoned bait by plane, killing bears and other fur-bearing animals as well as the intended victims. More recent methods have been less destructive. Nonetheless, the Kenai Peninsula wolf, largest of all North American races, has become completely extinct due to Service

40. *Id.* at 22-24.

41. Predator control is, in effect, a systematic reduction of species competing with mankind in the exploitation of other forms of life, wild or domestic, and, as such, is a scientific extension of the bounty system. . . . [T]he control of predators has often been a necessary evil—necessary, that is, because man's prior interference with the balance of nature has made it so.

P. MATTHIESSEN, *supra* note 3, at 193.

42. D. EHRENFELD, *supra* note 32, at 119.

43. *See id.* at 118-22.

control programs, and, predictably, the Kenai moose have begun to overbrowse their range.⁴⁴

A final cause of direct extermination, unlike the previously noted causes which all involve killing, is the collecting of live specimens for the pet trade, zoos, and medical research. The devastation which may ensue from the unregulated capture of wild animals is not difficult to comprehend. The Fish and Wildlife Service reported that wildlife importations into the United States in 1969 totalled 116,341 mammals, 571,663 birds (not including parrot-family birds and canaries), 339,489 amphibians, 1,393,970 reptiles, 1,938,533 mollusks and crustaceans, and 73,694,996 live fish.⁴⁵ Adding to these numbers the totals for other pet-loving countries, such as Great Britain and Germany, and considering the huge number of wild animals which die during capture or in shipment from one country to another, it is easy to understand why the live-animal trade constitutes a serious threat to the survival of many species. As but one example, the orangutan population stands at about 5,000, all of which are confined to the islands of Sumatra and Borneo. Unhappily, it is often the case that the rarer a species becomes, the more it is sought after. Thus the demand for baby orangutans steadily increased during the past decade. Since baby orangutans commonly are captured by shooting the mother and only one in six infants survives this experience, it is doubtful that orangutans will be able to survive in the wild.⁴⁶

2. *Indirect Extermination*

In addition to his attempts to capture or kill wildlife, man also threatens species when his actions directly or indirectly alter the natural environments in which animals live. Such habitat alteration is usually

44. P. MATTHIESSEN, *supra* note 3, at 245. An Alaskan conservation organization has recently written:

Several years ago the Alaska Department of Fish and Game estimated that about 7,500 wolves remained in Alaska. In the past two years the state has paid bounties for 3,529 wolves. At \$50 per wolf the taxpayers have apparently paid \$176,450 to encourage the unnecessary killing of a large number of this endangered species. While over \$80,000 a year has been paid to bounty hunters, the state's total three year budget for construction of new family camping units was less than \$80,000, or about \$27,000 per year.

ALASKA ENVIRONMENTAL FUND, ALASKA, 1970: AN ENVIRONMENTAL CRISIS 13 (1970).

45. BUREAU OF SPORT FISHERIES & WILDLIFE, U.S. DEP'T OF THE INTERIOR, WILDLIFE IMPORTED INTO THE UNITED STATES IN 1969, at 1 (1970). To realize that the situation may well be worsening, one need only compare the stated totals with the following import records for 1967: 74,304 mammals, 203,189 birds (also exclusive of parrot-family birds and canaries), 137,697 amphibians, 405,134 reptiles, 180,402 mollusks and crustaceans (1968 total), and 27,759,332 live fish. BUREAU OF SPORT FISHERIES & WILDLIFE, U.S. DEP'T OF THE INTERIOR, WILDLIFE IMPORTED INTO THE UNITED STATES IN 1967, at 1 (1968).

46. See D. EHRENFELD, *supra* note 32, at 103-10.

even more destructive than the types of extermination already discussed, because in addition to being almost impossible to restore affected areas, all animal forms within the ecosystem are affected.⁴⁷ Ecosystem alteration is, in fact, the principal cause of the loss of species.⁴⁸

Unquestionably, a rapidly expanding human population with its accompanying technological advances has placed stresses on the environment. These stresses have played a major role in the extinction of numerous species. As man's population grows, so does his need for living space and agricultural land. Satisfaction of this need may require clearing natural vegetation from land, levelling hills, or draining wetlands.⁴⁹ No matter which method is employed to render areas useful to man, some forms of wildlife are inevitably threatened. The once abundant forests of the eastern United States have been largely felled and as a result the Florida Key deer and the Kirtland's warbler, among many others, have all but vanished.⁵⁰ Similarly, draining of swamps in Japan to reclaim land deprived the Manchurian crane of its breeding grounds, and today only 30 survive.⁵¹

Though in form the practices of defoliation and dam construction are quite different from the methods of habitat alteration just mentioned, their effects are much the same or even worse. "Since 1962, the defoliation operations [in South Vietnam] have covered almost five million acres, an area equivalent to about twelve percent of the entire territory of South Vietnam, and about the size of the state of Massachusetts."⁵² While the initial loss of crops and natural vegetation causes the dislocation of many animals, long-range effects on plant and animal communities, including humans, may prove far more disastrous.⁵³ Soil changes and invasion by dense stands of bamboo are but two possible results of defoliation.

47. See V. ZISWILER, *supra* note 4, at 25.

48. D. EHRENFELD, *supra* note 32, at 95.

49. See BARTOWS, *Threats to Wetlands Where Sea Life Breeds Upset Conservationists*, Wall Street J., Oct. 30, 1970, at 1, col. 1.

50. See V. ZISWILER, *supra* note 4, at 25-33.

51. *Id.* at 33-37, 118.

52. T. WHITESIDE, DEFOLIATION 3 (Ballantine paper ed. 1970). The most powerful herbicides used were 2, 4-dichlorophen-oxyacetic acid, generally known as 2, 4-D, and 2, 4, 5-trichlorophenoxyacetic acid, generally known as 2, 4, 5-T. *Id.* at 5. See also TIME, May 25, 1970, at 70-73.

53. One example of irreversible damage is the result of the spraying of 100,000 acres of mangroves.

Some [mangroves] had been sprayed as early as 1961 and have shown no substantial signs of recovery. Ecologists have estimated a minimum of 20-25 years for effective recovery to occur.

. . . Ecologists have known for a long time that the mangroves lining estuaries furnish one of the most important ecological niches for the completion of the life cycle of certain shellfish and migratory fish. If these plant communities are not in a healthy state, secondary effects on the whole interlocked web of organisms are bound to occur.

Detrimental effects comparable to those resulting from defoliation operations may also result from public works construction such as dams, flood control and water conservation projects, and highways. Most directly affected, of course, are the inhabitants of the river, lake, or ground altered by construction of a particular project. For example, logging practices, drainage, and particularly the installation of hydroelectric facilities have drastically reduced the number of salmon returning to spawn in the Columbia River, once one of the world's great salmon grounds. "More than 200 million dollars have been spent on the Columbia to maintain its salmon runs, but the yield of the river has declined to only 15 percent of its original level."⁵⁴

In addition to direct alteration of ecosystems, man is capable of less directly effecting the extermination of species. Pollution, in all its various forms, is perhaps the most pernicious of such causes. Water, for instance, has become polluted through the years with a large variety of substances, some of which have not yet been discovered, while others only recently have come under study. These sources of pollution include oxygen-consuming wastes, suspended solids, poisons such as pesticides, agents of eutrophication, thermal pollutants, salts, oil, detergents, and other unidentified chemicals and minerals.⁵⁵ Although some of these pollutants affect localized animal populations in relatively small areas of lakes and streams,⁵⁶ other pollutants, once disbursed, may constitute a hazard of massive proportions. Within the past year, for example, a great furor arose over the discovery of mercury in tuna and swordfish marketed to the American public.⁵⁷ Perhaps even more dan-

Hearings on Chemical Warfare Before the Subcomm. on Nat'l Security Policy and Scientific Developments of the House Comm. on Foreign Affairs, 91st Cong., 1st Sess. 109 (1969) (testimony of Dr. Arthur W. Galston, Professor of Biology, Yale University), reprinted in T. WHITESIDE, supra note 52, at 107-16.

54. V. ZISWILER, *supra* note 4, at 37.

55. See D. EHRENFELD, *supra* note 32, at 41-60.

56. The Environmental Protection Agency (EPA) has reported that water pollution killed an estimated 41 million fish in 45 states during 1969, an increase of 170 percent from 1968 when about 15 million fish died in 42 states. The statistics compiled by EPA's Water Quality Office—formerly the Federal Water Quality Administration—are based on reported kills only and do not include the untold billions of fish dying unnoticed, or unreported, because of disrupted reproduction cycles and waste-filled habitats. The largest single pollution-caused fish kill reported in 1969 involved 26.5 million fish in Lake Thonotosassa at Plant City, Florida. In January, 1969, nutrients from industrial and municipal sewage treatment wastes reduced the oxygen to a lethal level. NATIONAL WILDLIFE FEDERATION, CONSERVATION NEWS, Feb. 1, 1971, at 14.

57. While tuna remains on grocers' shelves as only five to ten percent was found to be contaminated, 90 percent of the swordfish tested contained unacceptably high mercury levels. See, e.g., Montague, *Mercury: How Much Are We Eating?*, SATURDAY REVIEW, Feb. 6, 1971, at 50-55; TIME, Sept. 28, 1970, at 64; Leger, *Mercury Contamination of Fish and Livestock Alarms Health Experts*, Wall Street J., Apr. 28, 1970, at 1, col. 1.

gerous than mercury contamination is the threat to man and other animals posed by chlorinated hydrocarbons such as DDT.⁵⁸ Though use of DDT is rapidly declining in the United States,⁵⁹ its effect on wildlife may already have doomed many species to extinction, including the brown pelican,⁶⁰ the American bald eagle, and the peregrine falcon.⁶¹

Research regarding air pollution has dealt principally with its effects on man and on some varieties of plants. Since large concentrations of air pollutants, including radioactive radiation, have caused human injury and death, it is likely that other animals have also been adversely affected. Although probably no species of wildlife has become extinct solely as a result of air pollution,⁶² the long-term effects of present air pollution and the potential effects of future contamination, if control efforts remain largely unsuccessful, are unknown and could conceivably disrupt life support systems as effectively as DDT has been shown to do.

Finally, some species may disappear due to man's efforts to introduce an exotic species into or remove a key species from an ecosystem. For example, when introduced into areas traditionally inhabited by wild animals, domestic animals can bring diseases which might prove fatal to indigenous wildlife.⁶³ The introduction of foreign forms of wild animals, whether accidental or intentional, can likewise mean disaster for an ecosystem's original inhabitants. Free from predators and parasites and confronted with an abundance of food, such an exotic species almost always survives. However, its survival is usually at the expense of a few native competing species, and in some instances at the expense of an entire community. Trout introduced into Andean lakes, for example, have destroyed a number of endemic species of fish and have upset aquatic communities; largemouth bass placed in Guatemala's

58. See D. EHRENFELD, *supra* note 32, at 45-49; V. ZISWILER, *supra* note 4, at 42-44.

59. The quantity of DDT used in the United States ten years ago was about 75 million pounds per year. Today only 18 million pounds are used. 1 BNA ENVIRONMENT REP.—CURRENT 497 (1970).

60. Of more than 550 breeding pairs of brown pelicans in California last season, only one pelican hatched. All other eggs failed to hatch because their shells were so thin and brittle that they broke before the fetal pelicans inside had developed. San Francisco Chronicle, Aug. 26, 1970, at 3, col. 6.

61. See, e.g., R. CARLSON, *SILENT SPRING* (1962); F. GRAHAM, *SINCE SILENT SPRING* (1970); *Hearings on Effects of Pesticides on Sports and Commercial Fisheries Before the Subcomm. on Energy, Natural Resources, and the Environment of the Senate Comm. on Commerce*, 91st Cong., 1st Sess., ser. 15, pts. 1 & 2 (1969).

62. D. EHRENFELD, *supra* note 32, at 54-56, 60-61.

63. For example, "[t]he outbreak of hoof-and-mouth disease in the locality of the few remaining Arabian oryx or in a European bison enclosure could mean the end of these species." V. ZISWILER, *supra* note 4, at 41.

Lake Atitlan have led to the near extinction of the lake's flightless bird, the giant pied-billed grebe, only two hundred of which remain today.⁶⁴

Another factor contributing to the loss of wildlife can be the removal of a species which holds a central position in an ecosystem. The alligator, which even today is being exterminated by poachers, is such a species. Alligators dig deep water-filled holes which become a source of survival for many species during times of drought. Not only do fishes, amphibians, reptiles and aquatic invertebrates find shelter in the water which collects there, but birds and mammals rely in turn on them for nourishment.⁶⁵

In short, all organisms in a given environment are directly or indirectly dependent upon one another. Moreover, each community of animal species is dependent upon its inorganic natural surroundings: air, soil, and water.⁶⁶ Small alterations in the environment may have effects far out of proportion to their own seeming insignificance.⁶⁷ It is time for man to learn that his actions can not only disrupt a species' natural ecosystem, but also destroy the entire ecosphere. "Never has the question of the dredger, 'Which is more important, fish or people?' sounded so foolish; we are all involved together in the same system."⁶⁸

II

EARLY GOVERNMENTAL ACTIVITY

A. State Efforts

In the United States statutory attempts to preserve wildlife began at the state level. Early efforts focused exclusively on game animals and usually consisted of restrictions on hunting. Deer in Massachusetts benefited from the first closed season on an animal, instituted in 1694.⁶⁹ Certain New York counties sanctioned the first closed season on birds in 1708, which protected grouse, quail, turkey, and the heath hen.⁷⁰ In 1818 Massachusetts, by establishing a closed season on larks and robins, became the first state to protect non-game birds.⁷¹ As this

64. See D. EHRENFELD, *supra* note 32, at 67-73; V. ZISWILER, *supra* note 4, at 116.

65. D. EHRENFELD, *supra* note 32, at 74-76.

66. V. ZISWILER, *supra* note 4, at 71.

67. Biologists fear that the simple act of dredging shallow portions of the Suez Canal will cause catastrophic changes in the fauna of the Mediterranean Sea by allowing foreign predators from the Red Sea to enter. Similarly, no one knows what will happen if a new sea-level canal across Central America permits large volumes of Pacific Ocean water to flow into the Caribbean Sea.

D. EHRENFELD, *supra* note 32, at 77.

68. *Id.*

69. P. MATTHIESSEN, *supra* note 3, at 281.

70. *Id.*

71. *Id.*

country's population increased, more states moved to protect resident species of big game.

In the second half of the nineteenth century, several of the western states established closed seasons on game animals. California defended the antelope and tule elk, Nevada the mountain goat and bighorn sheep, and Idaho, after 1864, attempted to protect all its hoofed mammals from February 1 to July 1, including the then abundant bison. Within fifty years the tule elk and the bison had become so rare that killing either, in California or Montana, respectively, was considered a felony punishable by two years in prison, and the antelope was no longer a legal game animal anywhere within its United States range.⁷²

The first state game commissions were set up by California and New Hampshire prior to 1878,⁷³ and in the early years of this century several states created the first wildlife refuges. By 1911 wildlife legislation relating to game animals was reasonably comprehensive in every state but Maryland, which still permitted the shooting of does and non-game birds, the sale and export of game, and unlicensed hunting by state residents.⁷⁴

Despite noble beginnings, few states have expanded their wildlife laws beyond granting protection solely to game animals.⁷⁵ Two notable exceptions are New York and California, which have recently passed laws specifically protecting endangered forms of wildlife. New York enacted two laws on the subject, the Mason Act⁷⁶ and the Harris Act.⁷⁷ The latter authorizes the New York Department of Environmental Conservation to compile a list of endangered species and outlaw their possession or sale, and the Mason Act specifically prohibits the sale or offering for sale within the state of any part of the skin or body of fifteen

72. *Id.* at 183.

73. Ch. 63 [1877] N.H. Sess. Laws 44; Ch. 457 [1870] Cal. Stat. 663.

74. P. MATTHIESSEN, *supra* note 3, at 191.

75. Several States have passed legislation specifically to protect endangered species, and it is pending in others. Cooperative action programs have been developed in some States. Nevada's Endangered Species Committee, Oregon's designation of its rare and endangered species, California's new section of its Fish and Game Department which deals primarily with nongame birds and mammals, and Wisconsin's efforts to restore species formerly native to that State are examples. Unfortunately, the majority of funds for fish and wildlife management in most States comes from license fees and taxes imposed on sportsmen rather than from the general treasury. Sportsmen cannot logically be expected to finance the effort to protect endangered nongame fish and wildlife, although such forms ordinarily benefit from measures undertaken to help other species.

OFFICE OF ENDANGERED SPECIES, BUREAU OF SPORT FISHERIES & WILDLIFE, U.S. DEP'T OF THE INTERIOR, A REPORT ON THE NATIONAL EFFORT TO SAVE ENDANGERED SPECIES 15 (1970) [hereinafter cited as ENDANGERED SPECIES REPORT].

76. N.Y. AGRIC. & MKTS. LAW § 358(a) (McKinney Supp. 1971).

77. N.Y. CONSERV. LAW § 187 (McKinney Supp. 1971).

designated species.⁷⁸ Since passage, the New York Court of Appeals has upheld the constitutionality of both statutes.⁷⁹ California also enacted two statutes. The first⁸⁰ directs the Department of Fish and Game to inventory threatened birds, mammals, fish, amphibians and reptiles, and report all findings to the Governor and the legislature. The second⁸¹ prohibits the importation of certain species which the Fish and Game Commission has found to be endangered.

B. Federal Efforts

1. Early Measures

The national government took little interest in protecting wildlife until the end of the nineteenth century.⁸² The first game law successfully enacted by Congress established closed seasons on several different species, but only in the District of Columbia.⁸³ However, despite its own inaction and apathy, "in 1886 [Congress] jealously forbade the legislatures of the Territories to pass laws protecting fish and game."⁸⁴ Congressional attitudes, however, began to change somewhat during this period. The Commission of Fish and Fisheries was established in 1871⁸⁵ and the Division of Economic Ornithology and Mammalogy of the Department of Agriculture was constituted in 1887⁸⁶ becoming the Division of Biological Survey a decade later.⁸⁷ Under the terms of the Reorganization Act of 1939,⁸⁸ these two departments, which by then had achieved Bureau status, were merged in a joint organization under the Department of the Interior. This organization is the present Fish and Wildlife Service.

2. National Parks

As with state action, early federal efforts to protect wildlife were

78. The list of fifteen species includes at least one form, the caiman, not designated as endangered by the Secretary of the Interior. *A.E. Nettleton Co. v. Diamond*, 63 Misc. 2d 885, 313 N.Y.S.2d 893 (1970).

79. *A.E. Nettleton Co. v. Diamond*, 27 N.Y.2d 182, 264 N.E.2d 118, 315 N.Y.S.2d 625 (1970).

80. CAL. FISH & GAME CODE §§ 900-03 (West Supp. 1970).

81. *Id.* §§ 2050-55.

82. P. MATTHIESSEN, *supra* note 3, at 184.

83. Act of June 15, 1878, ch. 213, 20 Stat. 134 (codified at D.C. COMP. STAT. ch. 24, §§ 1-18 (1894), *repealed* 72 Stat. 815, §§ 8(a)-(e) (1958). See T. Palmer, *Chronology and Index of the More Important Events in American Game Protection 1776-1911*, U.S. Dep't of Agriculture, Biological Survey—Bulletin No. 41 (1912).

84. P. MATTHIESSEN, *supra* note 3, at 184.

85. Res. No. 22, Feb. 9, 1871, 16 Stat. 594, incorporated into R.S. §§ 4395-98.

86. Act of Mar. 3, 1887, ch. 351, 24 Stat. 495.

87. See P. MATTHIESSEN, *supra* note 3, at 185.

88. 1939 Reorg. Plan No. II, §§ 4(e)-(f), effective July 1, 1939, 53 Stat. 1433 (1939).

directed at game animals. However, in 1872 the first in a series of legislative steps was taken which ultimately, though indirectly, has greatly benefited both game and non-game species of wildlife. In that year Congress established Yellowstone Park;⁸⁹ "indeed, the first effective wildlife sanctuary in the nation was this mountainous tract of the Wyoming Rockies overlapping the Idaho and Montana borders."⁹⁰ In 1890 National Parks were established at Kings Canyon, Sequoia, and Yosemite, in California, and by the end of 1970, 36 parks had been created in the United States, comprising over 14.6 million acres.⁹¹ The National Park Service was organized under the Department of the Interior in 1916,⁹² and Congress directed that the Parks were to be maintained unimpaired for the enjoyment of future generations.⁹³ Unfortunately, this directive was initially applied only to land resources, and consequently many animals, especially predators, fell victim to misdirected wildlife management programs.⁹⁴

[I]t was not until the thirties that the National Park Service . . . made it official policy that "every species shall be left to carry on its struggle for existence unaided, as being to its greatest ultimate good, unless there is real cause to believe that it will perish if unassisted"⁹⁵

3. *Wildlife Refuges*

More directly beneficial to wildlife has been the establishment of the National Wildlife Refuge System, "a unique collection of lands and waters devoted to the preservation and restoration of nationally and internationally significant wildlife populations, in natural settings of marsh and swamp, lake and shore, grassland, desert, and forest."⁹⁶ The first federal wildlife refuge was established at Pelican Island, Florida, in 1903;⁹⁷ there are now 328 units in the System, aggregating 30

89. The Yellowstone Park Act, ch. 24, § 1, 17 Stat. 32 (1872) (codified at 16 U.S.C. § 21 (1964)).

90. P. MATTHIESSEN, *supra* note 3, at 156.

91. THE 1971 WORLD ALMANAC 696 (published by Newspaper Enterprise Ass'n, Inc. 1970). See National Wildlife Federation, Conservation Report, No. 36, Oct. 9, 1970, at 390-91, for a description of the most recent addition to the System, Voyageurs National Park in Minnesota.

92. The National Parks Act of Aug. 25, 1916, ch. 408, §§ 1-4, 39 Stat. 535 (codified at 16 U.S.C. §§ 1-4 (1964), as amended, 16 U.S.C. §§ 1-4 (Supp. V, 1970)).

93. 16 U.S.C. § 1 (1964).

94. See generally P. MATTHIESSEN, *supra* note 3, at 192-98.

95. *Id.* at 198.

96. BUREAU OF SPORT FISHERIES AND WILDLIFE, U.S. DEP'T OF THE INTERIOR, NATIONAL WILDLIFE REFUGES 1967, at 3 [hereinafter cited as 1967 WILDLIFE REFUGES].

97. BUREAU OF SPORT FISHERIES AND WILDLIFE, U.S. DEP'T OF THE INTERIOR, NATIONAL WILDLIFE REFUGES 1965, at 5 [hereinafter cited as 1965 WILDLIFE REFUGES].

The National Wildlife Refuge System is based upon laws reflecting the public desire and Congressional intent to maintain such a system. This is evi-

million acres.⁹⁸ About 250 refuges with 3-1/2 million acres are primarily migratory waterfowl habitat, while another 40 containing 420,000 acres are used mainly by other migratory birds. At least 20 refuges comprising about 8-3/4 million acres were established as threatened-species territory. A few large areas totalling about 15 million acres, principally in Alaska, were set aside because of their outstanding multi-wildlife environments.⁹⁹

Although only six percent of the units were specifically created to protect wildlife threatened with extinction, the National Wildlife Refuge System nonetheless contributes significantly to saving vanishing species: at least 25 endangered forms of native wildlife are found on its refuges.¹⁰⁰ When the National Key Deer Refuge was created in Florida in 1954, fewer than 50 Key deer survived; today their numbers have increased to about 400.¹⁰¹ Perhaps the most well-known endangered American species is the whooping crane. Each year the whoopers fly down from their Canadian nesting habitat to winter at Aransas National Wildlife Refuge in Texas. When the refuge was created in 1937, 28 whooping cranes were counted. Their numbers fell to 15 in 1941,¹⁰² but in 1970, 55 cranes reached Aransas before Thanksgiving Day, including six young.¹⁰³

denced by the many Acts establishing individual refuges; by the Migratory Bird Conservation Act of 1929 [16 U.S.C. §§ 715-15(r) (1964)] authorizing the purchase of sanctuaries for migratory birds; by the Migratory Bird Hunting Stamp Act of 1934 [16 U.S.C. §§ 718-18(h) (1964)] requiring waterfowl hunters to purchase stamps to produce revenue for migratory bird refuges; and by the Endangered Species Preservation Act of 1966 [16 U.S.C. §§ 668(aa)-(ee) (Supp. V, 1970)] providing for refuges to protect vanishing wildlife. The latter Act reaffirmed the National Wildlife Refuge System as including all lands administered by the Secretary of the Interior as wildlife refuges, wildlife ranges, game ranges, wildlife management areas, and waterfowl production areas, as well as for sanctuaries for fish and wildlife threatened with extinction.

BUREAU OF SPORT FISHERIES AND WILDLIFE, U.S. DEP'T OF THE INTERIOR, NATIONAL WILDLIFE REFUGES 1968, at 2.

98. THE FIRST ANNUAL REPORT OF THE COUNCIL ON ENVIRONMENTAL QUALITY, ENVIRONMENTAL QUALITY—1970, at 181 (1970) [hereinafter cited as ENVIRONMENTAL QUALITY]. There are refuges in 46 states and the Commonwealth of Puerto Rico. 1967 WILDLIFE REFUGES, *supra* note 96, at 3. Connecticut, Rhode Island, New Hampshire, and West Virginia do not have refuges. 1965 WILDLIFE REFUGES, *supra* note 97, at 5; 1967 WILDLIFE REFUGES, *supra* note 96, at 5. Refuges range in size from six-tenths of an acre at Mille Lacs Refuge in Minnesota to the 8,900,000-acre Arctic National Wildlife Range in Alaska. 1965 WILDLIFE REFUGES, *supra* note 97, at 5.

99. 1967 WILDLIFE REFUGES, *supra* note 96, at 3.

100. ENDANGERED SPECIES REPORT, *supra* note 75, at 12.

101. 1967 WILDLIFE REFUGES, *supra* note 96, at 7.

102. R. ALLEN, THE WHOOPING CRANE: RESEARCH REPORT NO. 3 OF THE NATIONAL AUDUBON SOCIETY 73 (1952).

103. AUDUBON, Jan. 1971, at 99. There were 56 in the flock that went north in the Spring of 1970, but in past years the last migrants have arrived in Texas as late as December. *Id.*

Habitat preservation is thus one of the most important elements of a program designed to protect endangered species and it now occupies a central position as one element of this country's dual approach to conserving vanishing animals.¹⁰⁴ Alone however, "it is neither a panacea nor a realistic solution to the total problem."¹⁰⁵

4. *The Lacey Act*

Yet another type of legislative action affecting wildlife was taken during the period that Congress was restructuring governmental agencies and establishing parks and refuges. From 1900 through the mid-1950's, Congress enacted a number of laws aimed at protecting and preserving this country's animal resources. The first of these, the Lacey Act,¹⁰⁶ reportedly was inspired by the importation into the United States in 1851 of the English sparrow, a small bird which in less than half a century had "overrun the whole country, and proved a nuisance without a redeeming quality."¹⁰⁷ The first part¹⁰⁸ of the Act prohibits the importation into the United States of the mongoose, fruit bats, and any other species of wild mammals, wild birds, fish (including mollusks and crustacea), amphibians, reptiles, or their offspring or eggs, which the Secretary of the Interior prescribes to be "injurious to human beings, to the interests of agriculture, horticulture, forestry, or to wildlife or the wildlife resources of the United States"¹⁰⁹ This measure authorizes the federal government to determine which animals not native to America will be allowed entry, thus establishing control over accidental or purposeful release into the countryside of potentially harmful

104. The United States' dual approach consists of wildlife refuges to protect native species and import and sale restrictions to protect foreign species. See text accompanying notes 139-75 *infra*.

105. ENDANGERED SPECIES REPORT, *supra* note 75, at 13. On this point the report makes good ecological sense and is worth quoting at length:

The preservation of most endangered species involves more than the purchase of a few selected parcels of land. Acquisition of habitat will save only a few species from extinction. It is neither a panacea nor a realistic solution to the total problem. Loss of habitat has caused the extinction of many species, but preservation of habitat has been inadequate to reverse the downward trend or increase the numbers of others. The quality of total environments must be protected from abuse and misuse. Many wildlife species are affected by insidious degradation of their environments caused by massive changes in land use. This is the root of the problem. It is directly and emphatically related to the condition of the total environment.

Id.

106. The Lacey Act of May 25, 1900, ch. 553, §§ 1-5, 31 Stat. 187 (codified at 16 U.S.C. §§ 667(e), 701; 18 U.S.C. §§ 41-44 (1964), *as amended*, 18 U.S.C. §§ 41-44 (Supp. V, 1970)).

107. E. COUES, KEY TO NORTH AMERICAN BIRDS (4th ed. 1892) *quoted in* P. MATTHIESSEN, *supra* note 3, at 168. See *id.* at 172.

108. 18 U.S.C. § 42 (Supp. V, 1970), *amending* 18 U.S.C. § 42 (1964).

109. *Id.* § 42(a)(1).

exotic species. Though it is likely that the possibility of detrimental effects on agriculture was a consideration as important as any other in passage of section 42, the benefits it accords endangered species cannot be denied.

The second part¹¹⁰ of the Lacey Act proscribes the delivery, shipment or sale of any forms of wildlife, or products made therefrom, which were taken, transported or sold in violation of any Act of Congress.¹¹¹ A like prohibition applies to the delivery, shipment or sale in interstate or foreign commerce of any forms of wildlife, or products made therefrom, which were taken, transported or sold in violation of any law of any state or foreign country.¹¹² When viewed in conjunction with *Geer v. Connecticut*,¹¹³ a United States Supreme Court decision rendered in 1896, this part of the Lacey Act indicates the federal government's willingness to aid states in their efforts to protect their wildlife resources. In *Geer* the Court decided that all game belonged to the states rather than to the people, and therefore that states could legally prohibit the export of game.¹¹⁴ Thus, those states which forbade export of game could look to the federal government for enforcement action against persons caught transporting or selling such game in interstate commerce. Moreover, as states passed laws prohibiting the capture or killing of certain species of wildlife, the Lacey Act provided a means of prosecuting at the federal level persons who transported or sold such species in interstate commerce. Although passage of the Act was an initial step in the right direction, it was, unfortunately, only a small one. For without state, federal or foreign laws to which its enforcement provisions could be applied, the second part of the Act was useless. Thus, if a species' population were nearing extinction, unless each state in which it was found, or, alternatively, the federal government, enacted protective legislation, the Act could not be utilized to prevent its extermination. Sixty-nine years passed, in fact, before legislation was enacted to take full advantage of the potential powers of the Lacey Act.¹¹⁵

5. *International Agreements*

Shortly after passage of the Lacey Act, the United States signed a convention with Great Britain, Russia, and Japan to control the take of fur seals and sea otters.¹¹⁶ The Treaty outlawed pelagic sealing¹¹⁷ ex-

110. 18 U.S.C. § 43 (Supp. V, 1970), *amending* 18 U.S.C. § 43 (1964).

111. *Id.* § 43(a)(1).

112. *Id.* § 43(a)(2).

113. 161 U.S. 519 (1896).

114. *Id.* at 532.

115. See text accompanying notes 183-87 *infra*.

116. Convention with Great Britain, Russia, and Japan for the Preservation and Protection of Fur Seals, July 7, 1911, 37 Stat. 1542 (1911-13), T.S. No. 564 (effective Dec. 14, 1911).

117. Pelagic sealing is the killing of seals on the open seas.

cept by aborigines, awarded jurisdiction over seals on land to the nation controlling the breeding area, and embodied an agreement that proceeds from the sealing on all breeding grounds would be pro-rated among the four signatories. The Treaty was promoted by the near extermination of all fur seals, most of which frequent the Pribilof Islands in the Bering Sea. In the late 1700's perhaps five million seals inhabited the Pribilof rookeries, but 50 years later indiscriminate slaughtering had reduced their numbers to less than three million. The fur-gathering continued at such a drastic pace that by 1911 only 130,000 seals survived. Fortunately, careful management of seal herds since the signing of the Treaty has increased the seal population to nearly two million.

Not only have these efforts saved a species from almost certain extinction, they also have allowed the fur industry to reap handsome profits. In a twenty-year period after 1925, for example, 1,258,021 fur seals were taken in the Pribilofs, with a value of \$48 million. Moreover, federal revenues from this species alone have paid several times for the purchase of all Alaska.¹¹⁸ The saving of the fur seal is an excellent example of how intelligent wildlife management can yield great rewards; man has benefited economically, but even more important, a species has been rescued from total oblivion.

The first half of the present century witnessed the conclusion of two international agreements directed toward preservation of migratory birds. In 1916 Congress ratified a convention with Great Britain for protection of the migratory game birds in the United States and Canada.¹¹⁹ Two years later the Migratory Bird Treaty Act¹²⁰ was passed, awarding the federal government the right to prescribe bag limits of migratory birds, and prohibiting spring shooting. In 1936 a treaty was concluded with Mexico for protection of migratory birds and mammals,¹²¹ and the terms of its coverage soon were incorporated in the Migratory Bird Treaty Act.

The 1940 Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere¹²² attaches special urgency to the prob-

118. See P. MATTHIESSEN, *supra* note 3, at 106-08, 248.

119. Convention for the Protection of Migratory Birds, Aug. 16, 1916, 39 Stat. 1702 (1915-17), T.S. No. 628 (effective Dec. 8, 1916). Full protection was afforded swans, cranes, and the band-tailed pigeon, as well as all shore birds except the snipe, woodcock, the greater and lesser yellowlegs, and the blackbellied and golden plovers. P. MATTHIESSEN, *supra* note 3, at 215-16.

120. Act of July 3, 1918, ch. 128, §§ 1-12, 40 Stat. 755 (codified at 16 U.S.C. §§ 703-11 (1964), *as amended*, 16 U.S.C. §§ 703-11 (Supp. V, 1970)).

121. Convention Providing for the Protection of Migratory Birds and Game Animals, Feb. 7, 1936, 50 Stat. 1311 (1937), T.S. No. 912 (effective Mar. 15, 1937).

122. Convention With Other American Republics for Nature Protection and Wildlife Preservation in the Western Hemisphere, Oct. 12, 1940, 56 Stat. 1354 (1942), T.S. No. 981 (effective April 30, 1942).

lem of endangered species. The Convention, ratified by the United States in 1941, is designed to encourage development of national parks, national reserves, national monuments, and strict wilderness reserves. But more importantly, it requests that all signatories expend substantial effort to protect endangered species. Moreover, it asks all subscribing parties to enact regulations to control the importation, exportation and transit of protected fauna or flora or any parts thereof. It is indeed commendable that the signatories were aware in 1940 that a problem existed; it is less commendable that the United States waited nearly three decades before implementing the Convention's directives.¹²³

6. Other Legislation

In the meantime Congress enacted several pieces of legislation which attempt to deal with certain identifiable causes of diminution of wildlife populations. The Black Bass Act of 1926,¹²⁴ directed toward black bass and other fish, contains provisions comparable to those previously enacted in the second section of the Lacey Act, except that until recently the Black Bass Act did not apply to imported fish. As its purposes are similar to those in the Lacey Act, criticism of the earlier act is equally applicable to the Black Bass Act.¹²⁵

Increasing awareness of the importance of preserving habitat led to enactment of the Migratory Bird Conservation Act of 1929,¹²⁶ authorizing the federal government to acquire lands and waters for use as migratory bird sanctuaries. In 1934 a law was passed requiring all waterfowl hunters to purchase a federal hunting stamp,¹²⁷ proceeds from which have been utilized to accomplish the purpose of the 1929 Act. Habitat preservation was also a consideration in passage of the Fish and Wildlife Coordination Act of 1934.¹²⁸ That Act provides that lands and waters under the administration of such agencies as the Department of Agriculture may be developed as wildlife refuges, so long as such a program does not interfere with the primary purpose of the area. Perhaps of greater import is the Act's direction that wildlife conservation receive equal consideration with other, presumably eco-

123. In 1969 legislation was enacted prohibiting importation of endangered wildlife species. 16 U.S.C. §§ 668 (cc-1)-(cc-6) (Supp. V, 1970). See notes 176-230 and accompanying text *infra*.

124. Act of May 20, 1926, ch. 346, §§ 1-10, 44 Stat. 576 (codified at 16 U.S.C. §§ 851-56 (1964), *as amended*, 16 U.S.C. §§ 851-56 (Supp. V, 1970)).

125. See text accompanying notes 110-15 *supra*.

126. Act of Feb. 18, 1929, ch. 257, §§ 1-19, 45 Stat. 1222 (codified at 16 U.S.C. §§ 715-15(r) (1964)).

127. Migratory Bird Hunting Stamp Act of Mar. 16, 1934, ch. 71, §§ 1-10, 48 Stat. 452 (codified at 16 U.S.C. §§ 718-18(h) (1964)).

128. Act of Mar. 10, 1934, ch. 55, §§ 1-9, 48 Stat. 401 (codified at 16 U.S.C. §§ 661-66(c) (1964)).

nomie, factors in evaluating the feasibility of water resource and similar public works projects.¹²⁹

The Congress next took cognizance of the fact that many ecosystems which previously had supported flourishing wildlife populations no longer could be utilized as areas to preserve wild animals. The focus therefore shifted with enactment in 1937 of the Pittman-Robertson Act¹³⁰ from preservation to restoration. That Act authorizes the Secretary of the Interior to cooperate with state fish and game departments in selecting and restoring areas of land or water adaptable as feeding, resting or breeding places for wildlife. Funds for this purpose are derived from a federal tax on firearms and ammunition. In 1950 Congress passed a comparable law, the Dingell-Johnson Act,¹³¹ which provides funds for use by the states in rehabilitating sites available as fish habitats. Funds for this purpose also are derived from a federal tax, in this case on fishing rods, reels, lures and bait. Over \$456 million has been apportioned through fiscal year 1969 to state fish and game agencies under terms of the two Restoration Acts.¹³²

Legislation enacted between 1950 and the mid-1960's had little direct effect on preservation of wildlife. Illustrative of this point is the Fish and Wildlife Act of 1956;¹³³ while this legislation established two separate Bureaus under the Interior Department's Fish and Wildlife Service, one to deal with Commercial Fisheries and the other to supervise Sport Fisheries and Wildlife, the Act is generally not so much concerned with aiding animal species as with providing loans and research to commercial fishermen.¹³⁴ A second statute enacted during this period is the Wilderness Act of 1964,¹³⁵ which proposes to preserve in their natural condition large, roadless areas of federal lands which are to remain free from all commercial development. While the primary purpose of this Act does not involve direct support of endangered species, the Act indirectly aids wildlife inasmuch as the ten million acres presently comprising the National Wilderness Preservation System¹³⁶

129. 16 U.S.C. § 661 (1964).

130. Federal Aid in Wildlife Restoration Act of Sept. 2, 1936, ch. 899, §§ 1-11, 50 Stat. 917 (codified at 16 U.S.C. §§ 669-69(i) (1964), *as amended*, 16 U.S.C.A. §§ 669(a), (f), (g) to (g-1) (Supp. 1971)).

131. Federal Aid in Fish Restoration Act of Aug. 9, 1950, ch. 658, §§ 1-12, 64 Stat. 430 (codified at 16 U.S.C. §§ 777-77(k) (1964), *as amended*, 16 U.S.C.A. §§ 777(a), (c), (e)-(k) (Supp. 1971)).

132. S. REP. No. 91-1289, 91st Cong., 2d Sess. 3 (1970).

133. Act of Aug. 8, 1956, ch. 1036, §§ 1-11, 70 Stat. 1119 (codified at 16 U.S.C. §§ 742(a)-(j) (1964)).

134. *See, e.g.*, 16 U.S.C. § 742(c) (1964).

135. Act of Sept. 3, 1964, Pub. L. No. 88-577, §§ 1-7, 78 Stat. 896 (codified at 16 U.S.C. §§ 1131-36 (1964), *as amended*, 16 U.S.C. § 1132 (Supp. V, 1970).

136. ENVIRONMENTAL QUALITY, *supra* note 98, at 180.

provide a relatively safer habitat than was previously afforded under management by various other federal agencies.¹³⁷

Of all state and federal fish and wildlife legislation enacted during the 270-year period following passage in 1694 of the Massachusetts law restricting deer hunting, only that creating refuges has helped to reverse the journey toward extinction for any threatened species. This failure is attributable to the fact that until quite recently few Americans expressed concern over the plight of any animal species other than those which could be hunted and eaten, worn or displayed on a wall.

However, trends indicate that persons wanting only to observe wildlife are likely in the future to outnumber hunters. Unfortunately, this change in public attitude has not yet been reflected in increased funds for nongame species. In 1969, total funding from all sources—Federal, State, and private—aimed at wildlife research, management, and habitat protection was about \$142 million. Only \$6 million of that was clearly related to nongame species.¹³⁸

Nonetheless, the shift in public sentiment has not gone unnoticed in Congress, for within the past five years two key pieces of legislation specifically directed at aiding endangered species have been enacted.

III

ENDANGERED SPECIES LEGISLATION

The Congress finds and declares that one of the unfortunate consequences of growth and development in the United States has been the extermination of some native species of fish and wildlife; that serious losses in other species of native wild animals with educational, historical, recreational, and scientific value have occurred and are occurring; and that the United States has pledged itself . . . to conserve and protect, where practicable, the various species of native fish and wildlife, including game and nongame migratory birds, that are threatened with extinction.¹³⁹

The reasons underlying enactment of the Endangered Species Preservation Act of 1966¹⁴⁰ are thus expressed in the Act's introduction. Its passage marks the first concerted attempt to protect and preserve all of this country's fauna.¹⁴¹ Unlike the measures noted in

137. In other words, roads and commercial developments which in the future might have been developed, henceforth do not pose a threat to wildlife inhabiting areas in the System. See Manning, *Wilderness*, in *THE VOTER'S GUIDE TO ENVIRONMENTAL POLITICS* 85-97 (G. De Bell ed. 1970).

138. *ENVIRONMENTAL QUALITY*, *supra* note 98, at 183.

139. Act of Oct. 15, 1966, Pub. L. No. 89-669, § 1(a), 80 Stat. 926 (codified at 16 U.S.C. § 668(aa) (Supp. V, 1970)).

140. 16 U.S.C. §§ 668(aa)-(ee) (Supp. V, 1970).

141. *ENDANGERED SPECIES REPORT*, *supra* note 75, at 1.

Part II, none of which entail governmental action on behalf of threatened species, the 1966 Act embodies a multi-faceted program¹⁴² designed to aid just such species. Although elements of the program had previously been utilized to protect a few particular species,¹⁴³ the 1966 Act for the first time provides appropriations to benefit all native endangered species and focuses attention on their plight.

Recognizing that the problem is worldwide, Congress enacted a second Act in 1969,¹⁴⁴ the main purpose of which is "to assist on an international level in the preservation of species threatened with extinction"¹⁴⁵ This Act declares that sections one through three of the Act of October 15, 1966,¹⁴⁶ as amended, and sections one through five of the Act of December 5, 1969,¹⁴⁷ shall be known as the Endangered Species Conservation Act of 1969.¹⁴⁸ The latter Act thus demonstrates this nation's commitment to aid threatened species both at home and abroad. It defines a program intended

to preserve native species threatened with extinction, prevent the importation of worldwide endangered species, and provide technical assistance to other countries to develop programs to save endangered species and manage all their wildlife populations in ways that will permit sustained cropping at levels which will not later require crash programs and emergency action to save a final few.¹⁴⁹

As early as 1963, resolutions were introduced in Congress which indicated some familiarity with and concern over the plight of endangered species.¹⁵⁰ Although the Preservation Act was passed in 1966, a number of Congressmen remained dissatisfied since that Act lacked a global outlook. Therefore early in 1967, Congressman John D. Dingell introduced the forerunner of the current Conservation Act.¹⁵¹ Var-

142. See text accompanying note 155 *infra*.

143. For example, the refuge system concept had long been in use to protect significant concentrations of animals in specific areas. See notes 96-105 and accompanying text *supra*.

144. Act of Dec. 5, 1969, Pub. L. No. 91-135, §§ 1-12, 83 Stat. 275 (codified at 16 U.S.C. §§ 668(cc-1)-(cc-6) (Supp. V, 1970)).

145. S. REP. NO. 91-526, 91st Cong., 1st Sess. 1 (1969). On December 5, 1969, President Nixon stated, "In approving H.R. 11363 today, I am signing into law the most significant action this Nation has ever taken in an international effort to preserve the world's wildlife." Goodwin, *Endangered Species Conservation Act of 1969*, 2 IUCN BULLETIN 116 (1970).

146. 16 U.S.C. §§ 668(aa)-(cc) (Supp. V, 1970).

147. *Id.* §§ 668(cc-1)-(cc-5).

148. Act of Dec. 5, 1969, Pub. L. No. 91-135, § 12(d), 83 Stat. 283.

149. Address by Harry A. Goodwin, Chief, Office of Endangered Species, Bureau of Sport Fisheries and Wildlife, U.S. Dep't. of the Interior, at the 45th Meeting of the American Committee for International Wildlife Protection, Inc., Jan. 22, 1970.

150. See, e.g., H.R. Con. Res. 60, 88th Cong., 1st Sess. (1963), which favored convocation of a world conference for action on threatened wildlife resources.

151. H.R. 6138, 90th Cong., 1st Sess. (1967).

ious additional bills subsequently were submitted and in early 1968 one of them¹⁵² passed the House of Representatives overwhelmingly.¹⁵³ Though the bill was reported out by the Senate Commerce Committee, the full Senate failed to act on it prior to adjournment.¹⁵⁴ At least ten endangered species bills were introduced early in the 91st Congress and by the close of the first session H.R. 11363, The Endangered Species Conservation Act, was passed and signed by the President.

A. *Native Endangered Species*

The first section¹⁵⁵ of the Endangered Species Conservation Act declares that the Act's purpose is to provide a program for the conservation, protection, restoration, and propagation of selected species of native fish and wildlife which are found to be threatened with extinction. In furtherance of this purpose, the Departments of Agriculture, the Interior, and Defense are required to take protective measures with regard to endangered species, including, where practicable, the preservation of such species' habitats on lands under their respective jurisdictions.¹⁵⁶ Additionally, after consultation with interested states, persons, and organizations, the Interior Secretary must determine which native species are endangered and publish his findings in the Federal Register.¹⁵⁷ Section one does not attempt to quantitatively define "endangered," but rather regards as threatened with extinction any species, for whatever reason, whose survival requires assistance. Section one, as amended, further states in certain terms that the Act applies to any wild mammal, fish, wild bird, amphibian, reptile, mollusk or crustacean.¹⁵⁸

Section two¹⁵⁹ states that in accomplishing the Act's purpose, the Interior Secretary shall utilize the broad powers conferred under the Migratory Bird Conservation Act,¹⁶⁰ the Fish and Wildlife Act of 1956,¹⁶¹ and the Fish and Wildlife Coordination Act.¹⁶² These laws empower the Secretary to acquire land to protect migratory birds, to conduct investigations and research, and to prepare and disseminate in-

152. H.R. 11618, 90th Cong., 1st Sess. (1967).

153. *Hearings on Endangered Species Legislation Before the Subcomm. on Fisheries and Wildlife Conservation of the House Comm. on Merchant Marine and Fisheries*, 91st Cong., 1st Sess., ser. 2, at 1 (1969) [hereinafter cited as *House Hearings*].

154. *Id.*

155. 16 U.S.C. § 668(aa)(a) (Supp. V, 1970).

156. *Id.* § 668(aa)(b).

157. *Id.* § 668(aa)(c).

158. *Id.* § 668(aa)(d).

159. *Id.* § 668(bb)(a).

160. *Id.* §§ 715-15(r) (1964).

161. *Id.* §§ 742(a)-(j).

162. *Id.* §§ 661-66(c).

formation concerning fish and wildlife resources. To implement the Secretary's authority to acquire land for the benefit of *any* threatened species of fish or wildlife, including migratory birds, section two¹⁶³ empowers him to use funds made available pursuant to the Land and Water Conservation Fund Act of 1965.¹⁶⁴ However, not more than \$5 million of such funds may be used in any fiscal year, and the total sum appropriated may not exceed \$15 million.¹⁶⁵ Furthermore, the original Act limited to \$750,000 the use of any funds, regardless of their source, for any one area. Though this limitation was more than tripled to \$2.5 million by an amendment in the 1969 Act,¹⁶⁶ it nonetheless precludes the purchase of the sizeable habitats usually required to support many of the larger mammals.

Certainly one of the most important provisions in section two is the research authorization.

There is a paucity of information, including life history data, on many of the species of endangered wildlife and most of the species of endangered fish. Valid population data and knowledge of ecological requirements are essential. For some species, estimates of numbers are extremely difficult to secure. Information is needed on distribution, behavior, ecology, physiology, genetics, pathology, and the over-all environmental requirements of threatened species to identify and evaluate limiting factors in the wild and to find means to correct them.¹⁶⁷

Established in 1965 and the focal point of research and propagation is the Bureau of Sport Fisheries and Wildlife's Patuxent Research Station at Laurel, Maryland. The facility is currently working with 18 species and subspecies, of which nine are rare or endangered; the balance are closely related but more common forms which serve as stand-ins for the extensive research that precedes work with any threatened species.¹⁶⁸ The Station's director predicts that by 1978 "more than 50 species, threatened and otherwise, will be under study at Patuxent, and releases to the wild will be a normal, annual event."¹⁶⁹ At least six biologists from the Station are presently in the field investigating the status, distribution, ecology, behavior, and physical characteristics of

163. *Id.* § 668(bb)(c) (Supp. V, 1970).

164. Act of Sept. 3, 1964, Pub. L. No. 88-578, §§ 1-11, 78 Stat. 897 (codified at 16 U.S.C. §§ 460(1-4)-(1-11) (Supp. V, 1970)). Annual revenues for the Fund totalling \$200 million are derived primarily from a tax on motorboat fuel, sale of surplus federal property, Treasury appropriations, user fees from federal recreation areas, and Outer Continental Shelf mineral receipts.

165. 16 U.S.C. § 668(bb)(c) (Supp. V, 1970).

166. Act of Dec. 5, 1969, Pub. L. No. 91-135, § 12(b), 83 Stat. 282 (codified at 16 U.S.C. § 668(bb)(c) (Supp. V, 1970)).

167. ENDANGERED SPECIES REPORT, *supra* note 75, at 6a.

168. Farney, *supra* note 8.

169. *Id.*

rare or endangered species and, on the basis of research findings, devising management techniques to improve these species' chances of survival. The Department of the Interior hopes that an additional eleven biologists will soon join those already in the field.¹⁷⁰ Though captive propagation cannot substitute for habitat preservation, the Station already may be credited with one apparent success in the former area. In the spring of 1970, 234 masked bobwhite quail, an endangered subspecies whose total population numbers only 1500, were released in the restored habitat of three Arizona sites within its former range. The captive flock began in 1966 with eight birds and was supplemented two years later by 36 birds captured in Mexico. Additional releases in Arizona are planned for this year and next, and follow-up studies will continue for at least another five years.¹⁷¹

The final provision in section two¹⁷² authorizes the Interior Secretary to acquire by purchase, donation, exchange, or otherwise any privately owned land or water, or interests therein, within the boundaries of any area administered by him, which he finds would further the objectives of the Endangered Species Conservation Act. Added by amendment in 1969, this authorization is limited to a maximum \$1 million annual appropriation for fiscal years 1970, 1971, and 1972. The purpose of this subsection is to allow acquisition of privately owned lands which are surrounded by property under federal jurisdiction. Purchase of such inholdings was deemed necessary not only because such areas constitute a base of operations for poachers, as in the Everglades, but also because they are subject to development pressures. In addition, poor land and water use practices on these tracts affect adjacent areas by diminishing or contaminating water supplies, causing erosion, disrupting migration and nesting patterns, and removing needed cover.¹⁷³ Unfortunately, although the authority to acquire inholdings is a commendable augmentation to the Act, the \$1 million annual ceiling is too low and the three year lifespan is too short. In successfully advocating a raise in the annual limitation from a proposed \$750,000 to the present \$1 million, an Interior Department Assistant Secretary testifying before a Senate Subcommittee stated, "[e]stimates indicate that most of the tracts of inholdings in the Everglades National Park exceed the annual figure of \$750,000 set forth in the bill."¹⁷⁴ Three million dollars therefore is hardly adequate to acquire significant in-

170. See ENDANGERED SPECIES REPORT, *supra* note 75, at 10.

171. See Farney, *supra* note 8.

172. 16 U.S.C. § 668(bb)(d) (Supp. V, 1970).

173. *Senate Hearings*, *supra* note 2, at 48, 60-61, 146-47.

174. *Id.* at 48 (testimony of Dr. Leslie L. Glasgow, Ass't Sec'y, Fish and Wildlife, Parks and Marine Resources, U.S. Dep't of the Interior).

holdings in the Everglades, not to mention additional areas within other parks and refuges.

Section three¹⁷⁶ of the Act directs the Interior Secretary to cooperate with state agencies through consultation before the acquisition of land to benefit threatened species, as well as through agreements covering the administration and management of such lands and the disposition of revenues derived therefrom.

B. *Foreign Endangered Species*

The next five sections of the Endangered Species Conservation Act are derived from the Act of December 5, 1969,¹⁷⁶ and deal with the importation of endangered species into the United States. As in an earlier section,¹⁷⁷ the term "fish or wildlife" is defined expansively in section one as "any wild mammal, fish, wild bird, amphibian, reptile, mollusk, or crustacean," adding, "or any part, products, egg, or offspring thereof, or the dead body or parts thereof."¹⁷⁸ This definition is included to emphasize that coverage extends to all classes of vertebrates as well as to two classes of invertebrates. Previously, fish and wildlife legislation generally employed the phrase "wild animals or birds,"¹⁷⁹ which was interpreted to apply only to wild birds and mammals.¹⁸⁰ To afford protection to such endangered species as the alligator, a reptile, the new legislation employs more definitive language. In addition, the 1969 Act expands the Lacey Act¹⁸¹ to cover all vertebrates, mollusks and crustaceans.¹⁸²

Furthermore, revision of section 43 of the Lacey Act¹⁸³ contributes in two ways toward realization of its objectives. First, its prohibition in all states of the sale of wildlife taken illegally in any state will

175. 16 U.S.C. §§ 668(cc)(a)-(b) (Supp. V, 1970). Similarly, section six [*id.* § 668(cc-6)] of the 1969 Act requires the Interior Secretary to coordinate the administration of the Act with the Secretary of Agriculture and the Secretary of the Treasury.

176. *Id.* §§ 668(cc-1)-(cc-5).

177. *Id.* § 668(aa)(d).

178. *Id.* § 668(cc-1)(2).

179. 18 U.S.C. § 44 (1964), as amended, 18 U.S.C. § 44 (Supp. V, 1970).

180. See *House Hearings*, *supra* note 153, at 36-37.

181. 18 U.S.C. §§ 41-44 (1964), as amended, 18 U.S.C. §§ 41-44 (Supp. V, 1970).

182. Act of Dec. 5, 1969, Pub. L. No. 91-135, §§ 7(a), 8(a), 83 Stat. 279 (codified at 18 U.S.C. §§ 43, 44 (Supp. V, 1970)). The Act also authorizes the Secretary to provide an alternative to marking each package containing animals or parts thereof which is shipped in interstate or foreign commerce. 18 U.S.C. § 44 (Supp. V, 1970). This provision was added in an effort to reduce the incidence of pilferage which had been aggravated by the requirement to label a package's contents or destination. See S. REP. NO. 91-526, *supra* note 1, at 16.

183. 18 U.S.C. § 43 (Supp. V, 1970), amending 18 U.S.C. § 43 (1964). See text accompanying notes 110-15 *supra*.

reduce the demand for the affected species, thus discouraging poaching and facilitating state efforts to protect domestic wildlife. Second, by prohibiting the sale in the United States of wildlife protected by a foreign government, the demand for wildlife poached from that country should be sharply reduced. Further, the amended section promotes reciprocity: assisting a foreign country's enforcement of its conservation laws by closing the American market to wildlife taken illegally in that country may encourage foreign efforts to help protect wildlife illegally taken in this country.¹⁸⁴ Also, the amended provisions of the Lacey Act have increased the penalty for "knowing" violations to not more than \$5,000 and for "knowing and willful" violations to not more than \$10,000, a year's imprisonment, or both.¹⁸⁵ The previous maximum penalty had been a fine of up to \$500, six months imprisonment, or both.¹⁸⁶ The Senate Commerce Committee reported that "knowing and willful" violations could be established by showing, for example, that the individual had been involved in a similar earlier civil violation, that he had been previously warned about possible similar violations, or that he had been present at an earlier discussion in which government officials had explained the acts which the law prohibits.¹⁸⁷

1. *Prohibition on Importation*

The central purpose of the 1969 Act is set out in section two.¹⁸⁸ That section prohibits the importation into the United States from any foreign country of any species or subspecies of fish or wildlife which the Interior Secretary has determined to be threatened with worldwide extinction. Section three¹⁸⁹ instructs the Secretary, on the basis of the best scientific and commercial data available and after consultation with various parties, to develop a list of species and subspecies of fish and wildlife which are threatened with worldwide extinction. Among those to be consulted are the foreign country or countries in which such fish and wildlife are normally found, scientific organizations and specialists in such fields as zoology, ornithology, herpetology, and ichthyology, representatives of state governments and federal agencies, and affected industries. As with the provisions covering native threatened species, the term "endangered" is not quantitatively defined. However, due perhaps to the fear expressed by commercial interests that

184. S. REP. No. 91-526, *supra* note 1, at 12.

185. Act of Dec. 5, 1969, Pub. L. No. 91-135, § 7(a), 83 Stat. 279 (codified at 18 U.S.C. § 43 (Supp. V, 1970)).

186. 18 U.S.C. § 43 (1964).

187. S. REP. No. 91-526, *supra* note 1, at 14.

188. 16 U.S.C. § 668(cc-2) (Supp. V, 1970).

189. *Id.* § 668(cc-3)(a).

species might be arbitrarily designated as endangered,¹⁹⁰ four general criteria are included in the Act which the Secretary is to consider in deciding whether a particular species is endangered.¹⁹¹ After compilation of the list, it is printed in the Federal Register, and though it may be revised at any time, the Secretary must thoroughly review it at least once every five years. In addition, upon request by any interested person presenting substantial evidence, the Secretary is directed to review his finding with respect to any particular listed species or subspecies within the five-year period and remove that species or subspecies from the list if he finds that the case for removal has been adequately established.

The wording ultimately chosen for section three was considerably influenced by expressions of concern voiced by industry groups such as pet dealers and fur and leather importers, tanners, and retailers. For instance, H.R. 11618,¹⁹² a bill which in the 90th Congress was passed by the House and favorably reported out by the Senate Commerce Committee, directed the Secretary to consult only with the affected foreign country, and, when appropriate, with the International Union for the Conservation of Nature and Natural Resources, prior to making his determination. As passed by the 91st Congress, the section not only requires the Secretary to base his decision "on the best scientific and commercial data available to him . . . ,"¹⁹³ but also directs him to consult, "to the extent practicable, with interested persons and organizations"¹⁹⁴ While it is proper to instruct the Secretary to obtain the views of interested persons and organizations—presumably including conservation groups, such as the National Audubon Society, which are actively concerned with saving threatened species, as well as affected industries—it is less clear why a determination must be based, even in part, on commercial data. In fact, if the Endangered Species Conservation Act's purpose is to prevent the extermination of species, it is difficult to understand what difference it makes that an industry may lose business as a result of the Secretary's action. As one witness testified, "[i]t appears inexorable that some commercial short-term injury will take place whenever wildlife is protected."¹⁹⁵ Of course, if the

190. See, e.g., *House Hearings, supra* note 153, at 87-88.

191. Factors to be considered by the Secretary include:

(1) the destruction, drastic modification, or severe curtailment, of its habitat, or (2) its overutilization for commercial or sporting purposes, or (3) the effect on it of disease or predation, or (4) other natural or man-made factors affecting its continued existence.

16 U.S.C. § 668(cc-3)(a) (Supp. V, 1970).

192. H.R. 11618, 90th Cong., 1st Sess. (1967).

193. 16 U.S.C. § 668(cc-3)(a) (Supp. V, 1970).

194. *Id.*

195. *Senate Hearings, supra* note 2, at 192.

term "commercial data" simply meant consideration of whether a species' rarity is indicated by a decrease in the number handled coupled with an increase in price, inclusion of the term might be warranted. Unfortunately, however, this is not what is meant, as the Senate Commerce Committee emphasizes: "[T]he committee expects the Secretary to exercise particular care in placing a species on the endangered list when that species is of substantial importance in U. S. manufacturing operations" ¹⁹⁶

Again, comparing the current statute with H.R. 11618, it is significant that while the latter proscribes importation of species "threatened with extinction," ¹⁹⁷ the 1969 Act requires that a species be "threatened with worldwide extinction." ¹⁹⁸ The added qualifier is employed to stress the fact that a given species or subspecies may be placed on the list only when it is threatened with extinction in all of its habitats at one time. In other words, "a serious reduction in numbers in a single country is not an adequate basis for placing a species or subspecies on the endangered list when that same species or subspecies is plentiful elsewhere." ¹⁹⁹ Or, as bluntly phrased by counsel for the fur industry, "if on a worldwide basis the species or subspecies is not involved in worldwide extinction, certainly the preservation in a small country in Africa of the few remaining species in that country is really of no concern to us." ²⁰⁰

Conservationists ²⁰¹ point out that this distinction is the Act's primary deficiency since extermination should be fought wherever it occurs, and because it is impossible to predict the one safe place for a species to survive. ²⁰² Animal lovers likewise note that it is no less deplorable to eliminate a species from one country than from another. Furthermore, an endangered species is very often indicative of an endangered environment; so long as importation is permissible, it will be difficult to judge whether environmental deterioration or exploitation caused the decline of a given species. The Act could have been written so as to exclude the importation of a species from a nation in which it is endangered, but to permit its entry from a nation where it is not endangered. However, affected industries strongly opposed such an idea. The Department of the Interior, apparently accepting the industries' position, justified its stance in terms of "the practicalities of administration when

196. S. REP. NO. 91-526, *supra* note 1, at 5.

197. H.R. 11618, 90th Cong., 1st Sess. § 1(a) (1967).

198. 16 U.S.C. § 668(cc-3)(a) (Supp. V, 1970).

199. S. REP. NO. 91-526, *supra* note 1, at 5.

200. *House Hearings*, *supra* note 153, at 117.

201. *See, e.g., Senate Hearings*, *supra* note 2, at 148-49.

202. In addition, the elimination of a species from an ecosystem may drastically upset the balance of nature in that area. *See* text accompanying note 235 *infra*.

dealing on a country-to-country basis."²⁰³ Curiously, the result is that foreign endangered species receive much less protection than native endangered species. For in the United States the alligator, for example, is still commercially taken in a few areas where its population is not threatened. Nonetheless, the alligator is on the native endangered species list. A foreign species, however, would not be added to the list until its numbers had been drastically reduced in *all* areas. Unfortunately, the Act's philosophy in this regard is apparently in accord with the view expressed by at least one pet dealer at hearings before the House Subcommittee on Fisheries and Wildlife Conservation:

[T]here is a question in my own mind as to whether the eventual destruction of some animals might not be desirable. Civilization seems to be doing fairly well without the ancient Mastodons, the Great Auk or the Carolina Parrot [*sic*]. If the present short supply of endangered species can be brought into civilization and exhibited, experimented upon, and/or exert some benefit to humanity, it should be of more value than hidden away in an inaccessible region where no human beings can see it.²⁰⁴

Whether the Interior Department officials charged with administering the Act share such a philosophy is not important. For the Congressional framers of the legislation have emphasized through their choice of the phrase "threatened with worldwide extinction" that import restrictions may not be imposed until a species' or a subspecies' population is drastically reduced in each and every area it inhabits. Theoretically, then, where a species inhabits areas in three countries, but is considered endangered in only two of them, it could be exterminated from those two so long as its population in the third country does not become endangered. Such a provision allows industries to over-exploit commercially valuable species. As a result, by the time a species is threatened with *worldwide* extinction, it may well be too late to save it, even through application of drastic measures. Moreover, in the event such measures proved successful, the chances are great that, like the American bison, the species would cease to exist in the wild state. Thus, however well-intentioned the Act may appear, not until wildlife is protected wherever threatened will the objectives of the legislation be realized.

Again in relation to section three, it should be noted that the Act permits the Interior Secretary to prohibit the importation into this country of endangered species or subspecies even when they can be taken legally in a foreign country. Thus, for example, regardless of Brazil's desire to export vicuna wool, if the Secretary determines that

203. *House Hearings, supra* note 153, at 38.

204. *Id.* at 200.

vicunas are endangered, he may put an embargo on their importation. This interpretation is sound and hopefully will be adhered to. The Interior Department acknowledged its authority in this regard,²⁰⁵ yet there is reason to doubt the Department's willingness to exercise such authority. Not only would it prove diplomatically difficult to thwart the wishes of a foreign government, but there is evidence that assurances have been made to the tanning industry that Interior's action will not be based solely upon their determination that a species is endangered: "We have been reassured by informal comments from the Department of the Interior and the International Union for the Conservation of Nature and Natural Resources that no species would be found to be endangered over the objection of the source country."²⁰⁶

Recognizing that commercial interests could be unfairly affected by an immediate ban on importation and use of certain species, the Endangered Species Conservation Act includes two provisions which allow industries time to dispose of current supplies. First, section 11²⁰⁷ of the 1969 Act provides that the preceding ten sections become effective 180 days after enactment. Second, the Interior Secretary may permit any person who has contracted to import certain species which have subsequently been determined to be endangered to continue importing such species for an appropriate period of time, not to exceed one year, after publication of the determination that the species is endangered.²⁰⁸ Congress cautioned the Secretary to be skeptical of importers' requests for extended terms where contracts are for an exceptionally large number of skins or hides, when compared to previous purchases, and when contracts were signed immediately prior to publication of the endangered species list.²⁰⁹

205. *Senate Hearings, supra* note 2, at 66-67.

206. *Id.* at 134.

207. Act of Dec. 5, 1969, Pub. L. No. 91-135, § 11, 83 Stat. 282.

208. 16 U.S.C. § 668(cc-3)(b) (Supp. V, 1970).

209. S. REP. NO. 91-526, *supra* note 1, at 5-6.

One conservationist testified that the 180-day period prior to enforcement provided importers adequate time to dispose of their current inventories. He continued, "It seems there is too much sympathy for those who are making a profit from a sorry business. There possibly should be some consideration given to contracts enacted prior to 1968. But, after 1968, when restrictions on imports have seemed likely, the contractors might be expected to take that fact into account in entering upon new contracts. Certainly no claim of hardship in a contract made after the signing of the act should be considered."

Senate Hearings, supra note 2, at 74.

On the same point another conservationist argued:

"[I]f true provable hardships exist, the hardship could not compare to the hardship faced by a species going extinct. If any allowance is given for such inexcusable mistakes, it should be in monetary reimbursement and not in the form of extended privileges to continue to harvest and sell endangered species."

Id. at 149.

Yet another safeguard against discriminatory effects of the Secretary's decision that a particular species be added to the list is the arrangement in subsection 3(d)²¹⁰ which attempts to balance the need for immediate action with the requirements of due process. That subsection stipulates that the Secretary must give notice of any proposed listing or removal of a particular species or subspecies and afford interested parties an opportunity to comment before a final determination is made that a species is or is not endangered. However the Secretary is not required to hold hearings after publication of the proposed list, and judicial review of his final determination is not provided for.²¹¹ The latter steps were omitted from the Act in the belief that they would cause a delay which might prove crucial to a species on the brink of extinction. Under the circumstances this abbreviated version of administrative procedure is indeed laudatory. Noteworthy also is the opportunity for conservationists to make known their views on the proposed removal of a species from the endangered list.

Finally, the Act²¹² authorizes the Interior Secretary to permit, under such terms and conditions as he may prescribe, the importation of any endangered species for zoological, educational, scientific, or propagation purposes. The Senate Commerce Committee cautioned that it would discourage the granting of a blanket exception with respect to any species, and that in cases such as the mountain gorilla, where estimates indicate that seven to ten females are killed for each infant successfully captured, exceptions should be granted only in extraordinary circumstances.²¹³

2. Enforcement Provisions

The enforcement provisions of the Act are set out in section four.²¹⁴ That section directs the Interior Secretary to assess civil penalties for the importation of any endangered species in violation of the provisions of the Act and to seek criminal prosecution for willful violations. In addition, it provides for seizure and forfeiture of illegally imported fish or wildlife.

210. 16 U.S.C. § 668(cc-3)(d) (Supp. V, 1970).

211. The Senate Commerce Committee Report on the Act states:

[T]he bill would not require the Secretary to afford an interested party an opportunity for a hearing after publication of the proposed list, and it would not provide for full judicial review of the Secretary's final determination of what species or subspecies should be included on the endangered species list. The committee realizes that this is an abbreviation of accepted procedure, but it believes that it is warranted by the nature of the problem with which the bill is designed to deal.

S. REP. NO. 91-526, *supra* note 1, at 6.

212. 16 U.S.C. § 668(cc-3)(c) (Supp. V, 1970).

213. S. REP. NO. 91-526, *supra* note 1, at 6.

214. 16 U.S.C. § 668(cc-4) (Supp. V, 1970).

The first paragraph of subsection 4(a)²¹⁵ requires the Secretary to assess a civil penalty of not more than \$5,000 for each violation of the provisions in sections two and three of the Act²¹⁶ or any regulation issued thereunder or under subsection 4(d).²¹⁷ The latter requires the Secretary to designate certain ports in the United States through which fish and wildlife must be imported. No penalty may be assessed for alleged violation of these sections until notice and an opportunity for a hearing with respect to the alleged violation is given. Though each violation is treated as a separate offense—that is, an importer caught with an illegal shipment of 100 skins would be liable for up to \$500,000 in civil penalties—the Secretary is authorized to compromise the civil penalty. Should an individual fail to pay an assessed penalty, the Attorney General may be requested to institute a civil action in a United States District Court to collect the penalty, and the court may review *de novo* both the alleged violation and the assessment.

The second paragraph of subsection 4(a)²¹⁸ permits any employee authorized to enforce the Act to execute a warrant to search for and seize any fish, wildlife, property or items which have been taken, used or possessed in connection with any violation for which a civil penalty may be assessed.²¹⁹ Enforcement officials must give timely notice of the seizure to the owner or consignee, but the Secretary, in lieu of holding the seized material, may permit the owner to post bond. Upon assessment of a civil penalty, the Secretary may proceed in court against any seized material and may compel its forfeiture for disposition as he deems appropriate. However, to minimize the possibility of serious deterioration during detention, the Secretary must commence an action to obtain forfeiture within thirty days following assessment of a penalty.

Subsection 4(b)²²⁰ declares that willful violators are subject to a fine of not more than \$10,000 or imprisonment for not more than one year, or both. Under subsection (c) of section four,²²¹ any authorized employee in the Departments of the Interior or Treasury may, without a warrant, arrest any person who such employee has probable cause to believe is willfully violating, in his presence or view, the provisions of sections two or three or any regulation issued thereunder or under subsection 4(d). The arresting employee is further authorized to search such person at the time of the arrest and to seize any fish, wildlife,

215. *Id.* § 668(cc-4)(a)(1).

216. See notes 188-92 and accompanying text *supra*.

217. 16 U.S.C. § 668(cc-4)(d) (Supp. V, 1970).

218. *Id.* § 668(cc-4)(a)(2).

219. The section stipulates that this authority in no way limits the broad powers relating to search and seizure vested in Customs officials. *Id.*

220. *Id.* § 668(cc-4)(b).

221. *Id.* § 668(cc-4)(c).

property, or items taken, used, or possessed in connection with a willful violation, or to execute a warrant for that purpose. Again, the owner or consignee must be notified as soon as is practicable, and a bond may be permitted in lieu of the Secretary's holding the seized material. Unlike the provisions under the preceding subsection allowing discretionary seizure and forfeiture upon imposition of civil penalties, subsection 4(b) compels an individual convicted of a willful violation to forfeit the seized fish or wildlife automatically. Other property or items seized, such as cages, packing crates, and other material accompanying the shipment, would be forfeited at the discretion of the court following the criminal conviction. In the event the accused is acquitted, the seized fish, wildlife, property or items are to be immediately returned to the owner or consignee unless civil penalty proceedings are commenced within thirty days.

Arguably, automatic forfeiture should follow non-willful as well as willful violations, for, without seizure of the goods, the civil fine would become little more than an import tax. However, Congress may have had in mind the case of an American who goes abroad and purchases a fur coat made from the skins of an endangered species. Though it would be illegal under the Act to bring the coat into the United States, forfeiture of the coat would hardly deter the next American who unwittingly attempted to return with a contraband fur coat.²²² The Act's authors probably considered curbing importation of raw products destined for American processors to be the critical need, and on this basis imposed automatic forfeiture as a penalty applicable only to willful violators.

The Senate Commerce Committee further augmented subsection 4(b) by directing the Interior Secretary to ensure that no forfeited fish or wildlife return to commercial channels.

If the species were taken illegally in a foreign country, it should be returned, where feasible, to the appropriate foreign government. Otherwise, the committee believes that efforts should be made to place such forfeited fish or wildlife with departments, or bureaus of the Federal or State Governments, or with societies, zoos, museums, or academic institutions, for exhibition or for scientific or educational purposes.²²³

3. *International Programs*

Of greatest potential benefit to wildlife species throughout the

222. But such forfeiture would have a salutary effect to the extent that forfeiture would publicize the law and its policies and would discourage attempted avoidance of those policies by wealthy Americans who go abroad to acquire items they cannot legally purchase at home.

223. S. REP. No. 91-526, *supra* note 1, at 9.

world are the provisions of section five.²²⁴ Subsection 5(a) requires the Secretary of the Interior, acting through the Secretary of State, to encourage foreign countries to protect species of fish or wildlife threatened with worldwide extinction; to prevent species from becoming endangered; and, through technical assistance as well as bilateral and multilateral agreements, to encourage such countries to take the necessary steps to protect, conserve, and propagate fish or wildlife. In addition, the Secretary is directed to encourage exporters of fish or wildlife to the United States to develop and implement conservation practices designed to enhance such fish or wildlife in its habitat.²²⁵

While earlier provisions of the Act principally affect those species threatened with imminent extinction, section five focuses on the need to identify and alter factors which lead to the extirpation of vanishing species. Technical assistance willingly provided to concerned foreign countries could assist them in correcting deficiencies in wildlife management practices before a particular species reaches the point of endangerment. In addition to the education and assistance which this country may offer, the Endangered Species Conservation Act serves as a model on which other nations may base similar legislation.²²⁶ The potential impact of American legislation upon foreign countries is considerable, not only because the United States is one of the largest national markets for the world's endangered species, but also because of this country's historical role as a leader in conservation. This latter point is well illustrated by the United States' development of the concept of national parks. Within the century following the creation of Yellowstone National Park in 1872, the United Nations World List of National Parks has grown to 1,205 parks in 136 countries.²²⁷

Congress, however, has decided that the United States should

224. 16 U.S.C. § 668(cc-5) (Supp. V, 1970).

225. Perhaps the most effective way to encourage this would be to allow American importers to purchase only from exporters who had implemented such conservation practices. Although American commercial interests would probably resent this governmental interference, such a regulation might obviate the necessity of recourse to diplomatic channels.

226. As reported by IUCN in 1968, the following nations were considering legislation on endangered species of fish and wildlife: Angola, Argentina, Australia, Austria, Bahamas, Belgium, Brazil, Bulgaria, Cambodia, Canada, Ceylon, Chad, Chile, Dem. Rep. of the Congo, Cuba, Czechoslovakia, Dahomey, Denmark, Ecuador, Ethiopia, Finland, France, Germany, Ghana, Greece, India, Indonesia, Ireland, Israel, Italy, Ivory Coast, Japan, Jordan, Kenya, North Korea, South Korea, Lebanon, Luxembourg, Madagascar, Malawi, Malaysia, Mexico, Monaco, Morocco, Netherlands, New Zealand, Nigeria, Norway, Peru, Philippines, Poland, Portugal, Rhodesia, Rumania, Senegal, Union of South Africa, Spain, Sudan, Sweden, Switzerland, Tanzania, Thailand, Turkey, Uganda, U.S.S.R., Venezuela, South Vietnam, Yugoslavia, Zambia. *Senate Hearings, supra* note 2, at 79.

227. *House Hearings, supra* note 153, at 160.

commit itself to something more than simply setting an example. Partly from fear that other nations might be slow to follow and partly from concern for American industries which might be disadvantaged if foreign competitors continued to utilize endangered species, subsection 5(b)²²⁸ was enacted. That subsection instructs the Interior Secretary, through the Secretary of State, to seek the convening of an international ministerial meeting on fish and wildlife prior to June 30, 1971, for the purpose of concluding a binding international convention for the conservation of endangered species. Subsection 5(c) authorizes the appropriation of up to \$200,000 for the purpose of implementing this provision. Although the Senate Commerce Committee urged that the conference be held in 1970, no such action has yet been taken.²²⁹

Paralleling these United States efforts are IUCN attempts to secure ratification of a convention on the import, export, and transit of threatened species of plants and animals which they have drafted. Arrangements have been made for the Swiss government to act as a depository for the convention. Should the IUCN draft convention be ratified, subsection 5(b) and (c) would not need to be implemented.

IV

VALUE OF PRESERVING ENDANGERED SPECIES

Ruined landscapes can eventually be restored, devastated forests can be replanted and may recover in time, soil erosion can be arrested, and even deserts may eventually be restored to verdure. But a species of plant or animal, once extinct, is gone forever. The evolutionary labors of the ages have been wrecked; mankind, by the measure of the loss, lesser or greater, but always in some degree, is in growing danger of its own extinction and in deeper aesthetic, scientific, and economic poverty than before, irrevocable poverty.²³⁰

In short, the reasons for preserving wildlife may be categorized as financial, practical and ethical.

First, economic benefits arise from the sale of goods and services to those who travel to view animals in the wild. For example, the Florida State Development Commission recently estimated that each live alligator in the state was worth \$737 a year in tourist trade.²³¹ In addition, many animals whose continued existence is in jeopardy were once important sources of food or other raw material for human

228. 16 U.S.C. § 668(cc-5)(b) (Supp. V, 1970).

229. The United States will convene an international ministerial meeting, using the IUCN Draft Convention as the basic working document, in late 1971 or early 1972. Goodwin Letter, *supra* note 22.

230. NATIONAL PARKS & CONSERVATION MAGAZINE, June, 1970, at 2.

231. *House Hearings*, *supra* note 153, at 54.

use. Properly conserved, such species might again become items of commerce. The harvesting of the once-declining fur seal, for instance, now contributes \$3.4 million annually to this nation's economy.²³² Also, animals once found only in the wild are now being raised commercially for by-products or for food. In parts of Russia and Africa, wild animals once threatened or nearly extinct have proven capable of producing meat more economically than domestic livestock and are being harvested regularly for meat and hides.²³³ Finally, the money spent by those who derive pleasure from hunting restored species such as the wild turkey, white-tailed deer and wood duck cannot be ignored.

Second, the practical and scientific benefits of all wildlife, though at present not fully understood, are potentially quite valuable. Each species is an irreplaceable genetic reservoir which might someday prove invaluable to mankind in improving domestic animals or increasing resistance to disease or environmental contaminants. Many species can supply information on basic biological processes which could have direct application to man. Although at present it may be impossible to forecast the potential value of preserving a particular species, to fail to do so is to prevent future discoveries such as the following recent ones: fifty years ago the value of fruit flies for genetic research was largely unsuspected; the use of primates and other lesser animals for biomedical and pharmaceutical work is a relatively recent phenomenon; and the suitability of night monkeys for research on malaria was discovered just five years ago.²³⁴

Furthermore, the elimination of even one species can throw natural areas into ecological imbalance. Alligator poaching eliminates the water-filled holes that permit survival of water-life during the dry season.²³⁵ Even in their natural environments wild animals aid man by providing living laboratories for study of varied and complex ecosystems. The diversity of species also plays an important part in man's enjoyment of life. "A zoo with nothing but bears or lions would attract few visitors. A world inhabited only by domestic species could not compare favorably in interest with the natural world and its variety."²³⁶

232. ENDANGERED SPECIES REPORT, *supra* note 75, at 20-21.

233. *Id.* at 21.

234. *Id.* at 21-22.

235. See text accompanying note 65 *supra*.

236. ENDANGERED SPECIES REPORT, *supra* note 75, at 22-23. Biologist Raymond F. Dasmann expresses a similar sentiment as follows:

Anyone who has not been blind to the world around him knows that life for people can be enriched by the presence of wild creatures in man's environment. The enjoyment of watching wild animals in wild places adds a savor to life, even if it is but a casual encounter. The knowledge that wild nature still exists adds a dimension of freedom to an otherwise restricted life—leaves open the possibility for escape from the narrow confinements of civilization.

More significantly, a faltering animal population may be man's first and clearest warning that something is happening to the environment which may ultimately reach disastrous proportions.

Third, and certainly the most important reason for preserving wildlife, is that man, in hastening the extinction of other species, bears an awesome ethical responsibility. Species that have survived millions of years of changing conditions on this planet are suddenly forced to adapt to the whims of man. "[A]fter some 300 million years on earth should [the alligator] be wiped out to make a profit on a few more handbags or shoes—particularly when you can buy synthetic alligator hide that only an expert can tell from the real thing?"²³⁷ It is simply too much to ask all forms of life to conform to mankind's values. For the sake of wildlife throughout the world, it is to be hoped that one day all men might feel as does John Perry of the National Zoological Park:

I hope that I am not a member of a species which has become so arrogant as to summon all others before it, and to sit in mortal judgment on them, that they must justify their existence in human terms or perish.²³⁸

CONCLUSION

The Endangered Species Conservation Act is this country's response to the problem of vanishing wildlife. As a first attempt this Act is both progressive and reasonably comprehensive, for controls on traffic in threatened species as well as habitat preservation and restoration will undoubtedly benefit endangered species. However, the Act contains three major deficiencies. First, the requirement that a species be threatened with worldwide extinction does not adequately protect foreign endangered animals. The United States should protect a nation's endangered species regardless of its abundance elsewhere and regardless of such nation's own measures in behalf of the threatened species. Second, just as the requirement that a species be threatened worldwide is insufficient, so also is the withholding of protection until a species is nearly extinct. Protective efforts are necessary whenever an animal population's size consistently decreases. Therefore this country should take an active interest in sustaining species determined to be rare as well as those classified as endangered.²³⁹ Third, although listing a native species as endangered advertises its plight, such list-

If we create . . . a world with no space left for wild animals, it will prove to be a world with little space for human freedom.

R. DASMANN, *THE DESTRUCTION OF CALIFORNIA* 58 (Collier paper ed. 1970).

237. *House Hearings*, *supra* note 153, at 55.

238. *Senate Hearings*, *supra* note 2, at 101.

239. *See e.g.*, H.R. 3616, 92d Cong., 1st Sess. (1971).

ing does not automatically afford the species protection. Unfortunately, the Act does not prohibit the killing of endangered species: only endangered species already protected by state or federal laws are entitled to the safeguards incorporated in the Lacey Act's revisions.²⁴⁰ To improve protection of all species designated as endangered, the United States should declare unlawful the killing of any native endangered species.

A great need remains unfulfilled in the area of wildlife preservation. More research is required to discover species threatened with extinction and to identify the causes therefor. In addition, destructive actions can no longer be tolerated if our government has made a true commitment to protect animal resources. If the black-footed ferret can only survive on a diet of prairie dogs, the extirpation of prairie dog towns must be curtailed; if the presence of persistent pesticides is damaging the ability of eagles, pelicans and peregrine falcons to reproduce, safer insecticides must be developed and utilized; and when the world finally realizes that polar bears cannot possibly elude a hunter firing from an aircraft, such ruinous practices must be abolished. There is hope that action along these lines is not far off.²⁴¹ Many other, more progressive steps, however, will probably have to await a new morality with regard to wildlife. Perhaps one day man will decide that wildlife has an intrinsic right to exist in the world and to pursue its own destiny. If not,

there is some comfort in the notion that, however *Homo sapiens* contrives his own destruction, a few creatures will survive in that ultimate wilderness he will leave behind, going on about their ancient business in the mindless confidence that their own much older and more tolerant species will prevail.²⁴²

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240. See text accompanying notes 115-20 *supra*.

241. See, e.g., S. 78, 92d Cong., 1st Sess. (1971) (to prohibit the shooting of animals from aircraft); H.R. 692, 92d Cong., 1st Sess. (1971) (to prevent or minimize injury to fish and wildlife from the use of pesticides); BUREAU OF SPORT FISHERIES AND WILDLIFE, U.S. DEP'T OF THE INTERIOR, MAN AND WILDLIFE: A POLICY FOR ANIMAL DAMAGE CONTROL (1967). The latter publication details an ecological approach to control of predators heretofore absent in the Department's work, best expressed as follows:

These programs will be conducted when and where necessary, in the most intelligent and responsible manner possible, using the best methods currently available and with full recognition of all ecological relationships involved. They should emphasize removal of the offending individual animal wherever and whenever possible, as a means of controlling [livestock loss to predators].

Id. at 4. See note 59 *supra*.

242. P. MATTHEIEN, *supra* note 3, at 22.