Florida Journal of International Law

Volume 3 | Issue 3 Article 2

June 1988

The Preservation of Wildlife Habitat in Ecosystems: Towards a Direction Under International Law to Prevent Species' Extinction

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THE PRESERVATION OF WILDLIFE HABITAT IN ECOSYSTEMS: TOWARDS A NEW DIRECTION UNDER INTERNATIONAL LAW TO PREVENT SPECIES' EXTINCTION

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I. INTRODUCTION

The present threat to the survival of wildlife[1] and other lifeforms in the latter twentieth century is a frightening reality of global concern.

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1. For the purpose of this paper, the author adopts the definition of wildlife used by a leading legal environmental scholar who defines wildlife as "shorthand for all undomesticated living creatures save man, plants, and microscopic species." Coggins, *Conserving Wildlife Resources: An Overview of the Endangered Species Act of 1973*, 51 N.D.L. REV. 315, 315 n.4 (1974).

The world is presently witnessing the extinction of animal and plant species unparalleled since the age of the dinosaurs.[2] Tragically, the majority of these modern extinctions are directly correlated to man-related activities, stemming in many instances from his ignorance and, more often than not, his greed. The desire to protect wildlife is, however, not a novel concept in human history. While early wildlife laws were enacted based on the utilitarian value of wildlife to man,[3] there is an impressive modern body of international laws and organizations that have evolved in this century based on preservationist as well as utilitarian motivations. This shift in thinking is predicated on "a fundamental change in human perceptions of life on earth,"[4] rooted in the environmental consciousness movement of the 1970's.[5]

The international community in the 1980's has begun to perceive the importance of considering the total natural environment where a wildlife species is located, recognizing the inherent interdependency of all lifeforms. Protection of wildlife species cannot be separated from protecting the habitats which nurture them.[6] Ecosystems, in all their complexity and dynamics, are the crucible of life.[7] Laudable international agreements have been drafted in the last ten years which have made tremendous strides forward in the global wildlife protection. However, these conventions contain inherent flaws either by only targeting select species for protection or by providing protection for habitats on a limited regional basis. A major international treaty remains to be drafted which bridges the essential gap between habitat protection and species preservation. One author writes that "[h]abitat

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2. Heppes & McFadden, *The Convention on International Trade in Endangered Species of Wild Fauna and Flora: Improving the Prospects for Preserving Our Biological Heritage*, 5 B.U. INT'L L.J. 229, 230 (1987). A species can be defined as "a group of individuals that interbreed." Coggins & Russell, *Beyond Shooting Snail Darters in Pork Barrels: Endangered Species and Land Use in America*, 70 GEO. L.J. 1433, 1436 (1982).

3. S. LYSTER, INTERNATIONAL WILDLIFE LAW 299 (1985). "The first international measures for nature protection were primarily economic in purpose, intended for the protection of agriculture or commerce." L. CALDWELL, INTERNATIONAL ENVIRONMENTAL POLICY: EMERGENCE AND DIMENSIONS 186 (1984).

4. L. CALDWELL, *supra* note 3, at 3. "An ecological view of man on earth has emerged which, departing from the traditional perception of human dominance over nature, moves toward a more realistic appreciation of man's place in the biosphere." *Id.*

5. *Id.*

6. "Habitat preservation and species preservation must go hand in hand." L. CALDWELL, *supra* note 3, at 188.

7. "It was not readily apparent to many of the early conservationists or governmental protectors of wildlife that survival of particular plants and animals might be contingent upon the survival of the ecosystem of which they were a part." *Id.* at 187.

degradation, particularly the loss of tropical forests, is the single most important cause of species extinction, yet there is no worldwide treaty for the protection of habitats of endangered species or of endangered ecosystems."[8]

This article will advocate that treaties based on international environmental policy which favor global ecosystem preservation are the best, perhaps the only solution, which will ensure the survival of wildlife for present and future generations. The article begins with an overview of the alarming rates of species' extinction occurring presently on the earth. Particular emphasis will be placed on extinction rates occurring in tropical rainforests which provide habitats for the greatest diversity of the world's life forms.[9] Deforestation of tropical rainforests has been characterized as "one of the world's great ecological disasters in the closing decades of the twentieth century."[10] Thereafter, the article proceeds to examine the justifications for the protection and conservation of the earth's wildlife, showing that these reasons can sometimes be in conflict with each other. Next, the article traces the evolution of wildlife law to the present date with particular emphasis on the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).[11] Although an exemplary model of the ongoing international effort to conserve wildlife,[12] CITES contains many infirmities that work to the detriment of wildlife conservation, the foremost of which is its failure to provide for habitat protection. Lastly, the article will present future trends in international environmental policy, followed by conclusions and recommendations which will ensure that ecosystem preservation is the blueprint for the protection of wildlife in the twenty-first century.

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8. S. LYSTER, *supra* note 3, at 303; Galvin, *What Rights for Animals? A Modest Proposal*, 2 PACE ENVTL. L. REV. 245, 253 (1985). *See also* Comment, *International Trade in Wildlife: How Effective is the Endangered Species Treaty*, 15 CAL. W. INT'L L.J. 111, 126 n.99 (1985).

9. Approximately 40% of the world's plants and animals reside in tropical rainforests. Stowe, *United States Foreign Policy and the Conservation of Natural Resources: The Case of Tropical Deforestation*, 27 NAT. RESOURCES J. 55, 57 (1987).

10. L. CALDWELL, *supra* note 3, at 192.

11. Convention on International Trade in Endangered Species of Wild Fauna and Flora, *opened for signature* March 3, 1983, 27 U.S.T. 1087, T.I.A.S. No. 8249; ILM 12 (1973) 1088. [hereinafter CITES].

12. Comment, *Promise and Peril: A New Look at the Endangered Species Act of 1973*, 27 ST. LOUIS U.L.J. 959, 961; CITES has been called the "world's most widely accepted international treaty." Milliken, *The International Wildlife Trade: Japan as Number One*, Saura Sam, Apr. 1987, at 2, *quoted in* Heppes & McFadden, *supra* note 2, at 229 n. 4.

II. THE ROAD TO ECOLOGICAL CATASTROPHE

The fragile integrity of the Earth's biosphere presently faces its most crucial hour since man began sharing this planet with fellow life forms. The term "biosphere" can be defined as "the part of the Earth's crust, waters, and atmosphere where living organisms can subsist."[13] During the short span of the Earth's history in which humans have emerged as the planet's dominant species, man has tragically metamorphosized into one of life's rare creatures, one that fouls its own nest.[14] In the process, he has imperiled his world to the brink of ecological catastrophe. One leading environmental scholar lists the following six extremely critical environmental issues that have risen in the latter half of the twentieth century, which are directly correlated to man's reckless exploitation of his environment:

> 1. Genetic loss (threatened extinction of presently endangered species).
> 2. Ecosystem disruption and destruction (massive loss of habitat, genetic material, quality of life, and regenerative capabilities — marine as well as terrestrial).
> 3. Deforestation (many of the above effects as well as destruction of forest-dwelling peoples, soil deterioration, flooding, siltation, and possible reduction of atmospheric oxygen).
> 4. Desertification (caused or exacerbated by human activities, reducing food and fiber productivity and simultaneously causing wind erosion of topsoil and impairment of atmospheric clarity by dust).
> 5. Contamination of the environment — air, water, soil, and biota (by industrial toxicants including radioactive materials).
> 6. Degradation and depletion of fresh water (many of the above effects, eutrophication or acidification of lakes and streams, and exhaustion of groundwater aquifers).[15]

This article will examine in depth the first three environmental issues. First, it will explore the frightening reality of species extinction, es-

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13. THE RANDOM HOUSE COLLEGE DICTIONARY, 136 (revised unabridged ed. 1980).

14. "The rational man finds that his share of the costs of the wastes that he discharges into the commons is less than the cost of purifying his wastes before releasing them. Since this is true for everyone, we are locked into a system of 'fouling our own nest'. . . ." Hardin, *The Tragedy of the Commons* (1968), 162 Science 1243, 1244-45 *quoted in* Emond, *Co-operation in Nature: A New Foundation for Environmental Law*, 22 OSGOODE HALL L.J. 323, 334 (1984).

15. L. CALDWELL, *supra* note 3, at 16.

pecially targeting the higher life forms, the mammals and birds. It will show that the disappearance of wildlife results from many forms of man-related exploitation, including abusive trade and, most destructive of all, habitat degradation[16] in ecosystems that are a product of millions of years of evolution.[17] Furthermore, the article will illustrate the close nexus existing between ecosystem loss and species' extinction, particularly with respect to the world's most fragile and impaired ecosystems, the tropical rainforests.

A. *The Sinking of Noah's Ark*[18]

The world is a biological treasure house, blessed with a great abundance and diversity of life forms. At the present time, scientists estimate that the Earth is populated by approximately five[19] to ten million[20] species of plants and animals, excluding sub-species and isolated populations. As one author writes, "[o]ften taxonomic classification of plants and animals does not end at the species level: subspecies and populations within a species can be identified on the basis of reproductive compatibility or geographical isolation, or even by the presence of one differing genetic trait."[21] Therefore, it is apparent that if the sub-species and populations are included in this taxonomic compilation, the estimate of living life forms would be much higher by a factor of "three to five times the number of species."[22] Tragically though, "approximately ten percent of all species of plants and animals"[23] face probable extinction by the year 2000 because of mankind's reckless exploitation of the environment.

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16. *See generally* Smith, *The Endangered Species Act and Biological Conservation*, 57 S. CAL. L. REV. 361 (1984).

17. Galvin, *supra* note 8, at 253 n.34.

18. N. MYERS, THE SINKING ARK: A NEW LOOK AT THE PROBLEM OF DISAPPEARING SPECIES (1979). The idea for this appropriate heading is respectfully borrowed from this reknowned work on the subject of species' extinction.

19. Stowe, *supra* note 9, at 57.

20. Coggins & Russell, *supra* note 2, at 1436; Kosloff & Trexler, *The Convention on International Trade in Endangered Species: Enforcement Theory and Practice in the United States*, 5 B.U. INT'L L.J. 327, 329 n.12 (1987).

21. Coggins & Russell, *supra* note 2 at 1436 n.31.

22. *Id.*

23. S. Exec. Rep. No. 14, 93d Cong., 1st Sess. 1 (1973), *quoted in* Comment, *supra* note 8, at 113 n.9. Extinction of insects is projected to be much higher. As one author states, "by the end of [the] century more than one-half of the world's insect species may be extinct, even before they are collected or made known to science." Smith, *supra* note 16, at 376 n.58.

Since life's inception some 3.5 billion years ago, extinction has been a natural phenomenon of Earth's evolution.[24] "Extinction occurs when a breeding population is reduced below a critical size necessary for the population to sustain itself . . . . Minimum critical population size varies depending upon the species involved."[25] Approximately ninety percent of all life forms have become extinct over the eons.[26] Many of these lost species have never been identified; others are universally recognized animals such as the dinosaurs. The driving force behind this evolutionary progression is called natural selection,[27] first immortalized in the classic work of Charles Darwin entitled *The Origin of the Species*.[28] However, the arrival of man some one million years ago dramatically upset nature's complex balance of the evolutionary process. At man's beginning, extinction rates of plant and animal life were approximately one species per every thousand years.[29] However, his efficiency as a predator accelerated extinction rates. Between the years 1600[30] and 1900, the loss of life forms averaged around one per every four years;[31] thereafter it increased steadily to one per year in 1975.[32] Alarmingly today, human-induced extinction of both plant and animal life is occurring at the rate of one to three species per day.[33] Scientists have currently identified "over six hundred species of fauna and twenty thousand species of flora" facing extinction.[34]

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24. Versteeg, *The Protection of Endangered Species: A Canadian Perspective*, 11 ECOLOGY L.Q. 267 (1984); Chopra, *Introduction: Convention on International Trade in Endangered Species of Wild Fauna and Flora*, 5 B.U. INT'L L.J. 225 (1987). "The fossil record indicates prehistoric periods during which there were greater than normal numbers of species extinctions, but these extinctions occurred over millions of years. Peaks in the rate of species extinction occurred at the end of the Permian, Cambian, Devonian, Triassic and Cretaceous periods." Coggins & Harris, *The Greening of American Law?: The Recent Evolution of Federal Law for Preserving Floral Diversity*, 27 NAT. RESOURCES J. 247, 249-250 n.13 (1987).

25. Comment, *International Management of Cetaceans Under the New Law of the Sea Convention*, 3 B.U. INT'L L.J. 477, 477-78 n.3 (1985); Note, *Genetic Ark: A Proposal to Preserve Genetic Diversity for Future Generations*, 40 STAN. L. REV. 279, 291 n.65 (1987).

26. Versteeg, *supra* note 24, at 267.

27. *Id.* at 268.

28. C. DARWIN, THE ORIGIN OF THE SPECIES, *cited in* Versteeg, *supra* note 24, at 268.

29. Versteeg, *supra* note 24, at 268; Coggins & Harris, *supra* note 24, at 249 n.13.

30. In North America, these species of mammals and birds have become extinct since 1600: Eastern elk; Queen Charlotte Islands caribou; Eastern bison; Badlands bighorn sheep; Southern California kit fox; stellar's sea cow; six species of wolves; Atlantic gray whale; Carolina Parakeet; Passenger pigeon; Palas cormorant and Labador duck. Comment, *supra* note 8, at 112 n.7.

31. Myers, *supra* note 18, at 30-31.

32. *Id.*

33. COUNCIL ON ENVIRONMENTAL QUALITY, ELEVENTH ANNUAL REPORT 31 (1980) [hereinafter CEQ], *cited in* Versteeg, *supra* note 24, at 268; Note, *supra* note 25, at 279.

34. Comment, *supra* note 8, at 113. *See also* Heppens & McFadden, *supra* note 2, at 230.

Of particular concern is the modern insidious threat to higher animals, the mammals and birds. These close biological cousins of man[35] are being lost at the rate of one species per year.[36] "In the case of mammals alone, nearly sixty percent of recorded extinctions have occurred in the twentieth century in less than four percent of the two thousand years of record."[37] Researchers believe that extinction rates will accelerate to one per hour in the latter 1980's.[38] If this tragic projection is left unchecked, the loss of all life forms will be catastrophic, resulting in the disappearance of "between five hundred thousand and two million species — fifteen to twenty percent of all existing species."[39] Man's unconscionable exploitation of the environment in the next decades will eradicate "more species than evolution has culled in the past 3.5 million years."[40]

Four major factors have been identified which contribute to wildlife extinction. These are "habitat destruction, abusive trade, heavy use as a food source, and adverse climatic conditions."[41] Of these four threats, climatic adversity is the only one which is not directly attributed to man but which results tangentially from the squandering of natural resources, such as the reckless deforestation of the tropical rainforests and combustion of fossil fuels.[42] The following section will examine the extensive, often tragic, problem of abusive trade in wildlife to be followed by an in depth discussion of habitat destruction, especially as it pertains to rainforests.

1. Abusive Trade

The present volume in the international trade, both legal and illegal, of live wildlife, animal parts, and derivatives is staggering. Prior

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35. *See generally* Favre, *Wildlife Rights: The Ever-Widening Circle*, 9 ENVTL. L. 241 (1979).

36. Comment, *supra* note 8, at 113 n.9.

37. 68 DEPT. ST. BULL. 613 (1973) (statement of Mr. Train, Chairman of U.S. Delegation), *quoted in* Comment, *supra* note 8, at 113 n.9.

38. CEQ, *supra* note 33, at 31. At least one biologist feels that this estimate is too low, claiming that species loss is instead closer to two dozen species per hour. G. Hardin, *Filter Against Folly* 37 (1985), *cited in* Linder, *"Are All Speices Created Equal?" and Other Questions Which Are Shaping Wildlife Law*, 12 HARV. ENVTL. L. REV. 157, 190 n.150 (1988).

39. Coggins & Russell, *supra* note 2, at 1436 n.36; Coggins & Harris, *supra* note 24, at 249 n.13.

40. Versteeg, *supra* note 24, at 268-69.

41. Comment, *supra* note 8, at 126 n.99.

42. Stowe, *supra* note 9, at 59; Lewis & Wood, *Will Species Die Out as the Earth Heats Up*, 17 INT'L WILDLIFE, Nov.-Dec., 1987, at 18.

to the twentieth century, man treasured animals both as pets and servants. Today, however, humans desire to possess live animals for much more varied reasons. Live wildlife is desired not only as pets but also as specimens for medical and scientific research, private collections and zoos.[43] These demands have generated an incredible volume of legal trade around the globe. For example, in 1975, "over seven million live birds were shipped internationally."[44] Also, the developed nations of the world have increasingly been prime consumers of live wildlife, even those purporting to be environmentally conscious, such as the United States. As an illustration, in 1982 America imported over "five million live animals."[45] Moreover, the United States is thought to "consume approximately twenty-five percent of all wildlife and wildlife products" in the world.[46]

The international legal trade in live animals, however extensive, is not nearly as voluminous as the trade in wildlife parts and derivatives.[47] "Examples of 'parts' include such items as tanned skins, elephant or walrus ivory, and eagle feathers . . . . 'Derivatives' include items such as whale oil, jewelry made from turtle shells or bear claws, fur coats and snakeskin shoes."[48] Importation of animal parts and derivatives is international in scope. For example:

> In 1982 the United States wildlife imports included . . . five million furs, 958,000 leather skins and 943,000 reptile skins. Often one particular species is the subject of an immense volume of trade. Between 1967 and 1972, for example, the United Kingdom imported over 1.2 million specimens of one species, the Mediterranean spur-thighed tortoise. Wildcat furs imported into Europe totalled almost one million skins in 1976, and the tonnage of African ivory exports to Europe that year represented approximately 700,000 elephants.[49]

Perhaps the most universally known group of animals that have been exploited for their parts and derivatives is the marine mammals

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43. Comment, *supra* note 8, at 112 n.5.

44. *Id.*

45. *Id.*

46. *Id.* at 135 n.159. "The United States alone imports at least $600 million worth of wildlife in an average year." Fuller, Hemley & Fitzgerald, *Wildlife Trade Law Implementation in Developing Countries: The Experience in Latin America*, 5 B.U. INT'L L.J. 289, 290 (1987). Estimated yearly trade in wildlife and derivatives worldwide is an astounding $5 billion U.S. dollars. *Id.* at 289.

47. Comment, *supra* note 8, at 141.

48. *Id.* at 141 n.195.

49. *Id.* at 112 n.5.

of the Order Cetacea, which include the great whales and the smaller porpoises and dolphins.[50] The Cetacean Order contains seventy-eight species grouped into two suborders, the baleen and the toothed whales.[51] In the past fifty years, it has been conservatively estimated that over two million whales have been slaughtered.[52] Their critical need as mammals to surface and breathe terrestrial air made them extremely "vulnerable and attractive to capture."[53] The great whales have especially been the targets of massive exploitation, an "infamous example of human mismanagement of the earth's natural resources."[54] Great whales are the earth's largest living creatures[55] and also among the most endangered.[56] Historically, the most exploited whales have been the "blue, fin, sei, sperm, humpback, gray, Bryde's, Minke, North Atlantic, North Pacific, Greenland, and Southern Right Whales."[57] Of these species, the blue whale is virtually extinct.[58] Furthermore, the right and bowhead whales are considered to be almost equally imperiled,[59] with current world population numbers estimated at around two hundred and fifty individuals for each species.[60]

The problem of illegal trade vastly compounds the threat to wildlife survival globally. One commentator states that, "[o]ver one third of the annual global trade of all wildlife and wildlife derivatives is illegal."[61] In addition, illegal trade is an incredibly lucrative venture for smugglers and poachers. Illegal export in live animals, parts, and

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50. Comment, *supra* note 25, at 477-78. Today, whales are hunted primarily for their meat and oil. *Id.* at 478 n.9. The majority of the world's whaling is conducted by Japan and the USSR. *Id.*

51. *Id.* at 477 n.1.

52. Note, *The Rights of Nonhuman Animals and World Public Order: A Global Assessment*, 28 N.Y.L. SCH. L. REV. 377, 392 (1983). The principle of the "tragedy of the commons" proposed by Thomas Hardin (*see generally supra* note 14) has been applied to shared resources such as the whales. Birnie, *The International Organization of Whales*, 13 DEN. J. INT'L L. & POL'Y 309, 312 (1985). This phenomenon is characterized by a scenerio where "unregulated exploitation of a common property resource by a large number of users inevitably results in overuse and ultimately, destruction of the resources." Comment, *supra* note 25, at 482.

53. Birnie, *supra* note 52, at 309.

54. S. LYSTER, *supra* note 3, at 117.

55. Birnie, *supra* note 52, at 309.

56. Comment, *supra* note 25, at 477; Travalio & Clement, *International Protection of Marine Mammals*, 5 COLUM. J. ENVTL. L. 199, 200 (1979).

57. Birnie, *supra* note 52, at 309 n.1.

58. Comment, *supra* note 25, at 478 n.4.

59. *Id.* at 478 n.9.

60. *Id.* at 478 n.4.

61. Comment, *supra* note 8, at 111.

derivatives generates approximately $500 million annually, making this dirty business more profitable than the illegal drug trade.[62]

> Wildlife trade can generate profits ranging from three hundred to four hundred percent. For example, the horn of the white rhinoceros (ceratotherium simum cottoni) yields between twenty to fifty dollars per horn for the poacher who kills the animal in the wild. The average horn of a full grown specimen weighs anywhere between twenty to fifty pounds depending upon its age. The horn's value will rise to approximately $250 per pound upon reaching a major exporting city and eventually will bring up to $1000 per pound in the pharmacies of the Far East, where it is believed to have medicinal value, and up to $13,000 in North Yemen, where young men wear rhino horn daggers as ceremonial signs of maturity.[63]

Trafficking in illegal live wildlife, parts, and derivatives is attractive to the poachers and smugglers because 1) there is less chance of being apprehended; and 2) sanctions, such as fines and prison sentences, are minimal.[64] Moreover, the confiscated contraband itself shows just how pervasive and varied the illegal trade is. For example, in 1979, illegal confiscations worldwide included $2.5 tons of fur pelts in Texas, 141 rhinoceros horns in West Germany (worth several million deutschemarks), and 150,000 snakeskins and furs in India.[65] Furthermore, the United States Fish and Wildlife Service's office located at Los Angeles International Airport is currently "filled to capacity with confiscated wildlife products."[66] Once before, in 1981, the collection had grown so huge and cumbersome that the government was forced to dispose of over five million dollars worth of illegal goods.[67]

Many species of wildlife are the present target of the illegal trade. For instance, it has been documented that a few of the more exploited animals include the saltwater crocodile,[68] sea turtles,[69] bald eagles,[70]

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62. Comment, *Enforcement Problems in the Endangered Species Convention: Reservations Regarding the Reservation Clauses*, 14 CORNELL INT'L L.J. 429, 429 n.5 (1981).

63. Comment, *supra* note 8, at 111 n.4. Approximately two thirds of all rhinoceros' deaths in Luangwa Valley Game Reserve in Zambia are attributed to poaching. *Id.* at 150-51 n.270.

64. Comment, *supra* note 62, at 429.

65. *Id.* at 437 n.62.

66. Comment, *supra* note 8, at 145 n.255.

67. *Id.*

68. Comment, *supra* note 62, at 439. This highly endangered species' native habitat includes the countries of Australia, Papua, New Guinea, Indonesia, Philippines, Thailand, Malaysia, Burma, Bangladesh, India, Cambodia, Sri Lanka and Vietnam. *Id.* at 439 n.80. Although endangered, the saltwater crocodile is heavily exploited for its skin by the luxury leather industries.

grizzly bears,[71] elephants,[72] and exotic birds.[73] In addition, one tragic irony of the illegal trade is that in many instances the legitimate trade of wildlife has encouraged exploitation. As an illustration, trade in exotic birds — such as the Amazon parrots, macaws, and cockatoos — is an extremely profitable business, generating approximately $300 million annually in legal trade in America alone.[74] "All of these numbers with zeros trailing after them have inspired a lucrative and increasingly sophisticated business in parrot smuggling."[75]

It is believed that about one quarter of the world trade in exotic birds is illegal.[76] In the United States alone, some 350,000 exotic birds are transported illegally into the country.[77] Moreover, bird smuggling is an extremely dirty business, resulting in a tragic toll of suffering and deaths. For example, in recent years, wildlife agents apprehended an illegal shipment of birds from Africa at Miami International Airport where all the birds on board the airplane, some three thousand to

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France, Italy, West Germany and Japan are the world's leading consumers. The first three countries are responsible for processing over "one million crocodile hides annually, which amount to sixty percent of the international trade in that species." *Id.* at 439.

69. Although there is some disagreement, one authority has divided sea turtles into eight different species: "leatherback turtle, flatback; Pacific black turtle; loggerhead turtle; green turtle; Pacific or olive ridley turtle; hawksbill turtle; Mexican or Kemp's or Atlantic ridley turtle." Carr, *Great Reptiles, Great Eniqmans*, AUDUBON, Mar. 1972, at 24-26, *cited in* Comment, *supra* note 62, at 443 n.101. The numbers of turtles killed each year for tortoiseshell are overwhelming. For example, "between 150,000 and 360,000 [turtles] entered the world market in 1976; 190,000 to 460,000 in 1977; and 250,000 to 590,000 in 1978 . . . . Additionally approximately 200,000 olive ridley turles are killed annually for the skin trade." Comment, *supra* note 62, at 444 n.103.

70. One bald eagle can fetch $1,000 on the illegal market. Comment, *supra* note 8, at 111 n.4.

71. The gall bladder of a grizzly can be sold illegally for $300 an ounce in some oriental quarter. *Id.*

72. Elephants have historically been the target of illegal exploitation for their ivory. Over "160,000 kilograms of ivory [was shipped] to Hong Kong and Japan in 1979 and 1980 combined. This represents about 10,000 elephants." Address by David Mack, Assistant Director of TRAFFIC (U.S.A.), presented at 1983 American Association of Zoological Parks and Aquariums Conference, Vancouver, Canada (Sept. 20, 1983), *quoted in* Comment, *supra* note 8, at 156 n.313. In the United States between October 1976 and October 1977, wildlife agents reported that one half of the 1205 violations were "related to illegal trade in elephant ivory." Note, *International Trade in Endangered Species under CITES: Direct Listing vs. Reverse Listing*, 15 CORNELL INT'L L.J. 107, 112 n.45 (1982).

73. Comment, *supra* note 8, at 111 n.4; Heppes & McFadden, *supra* note 2, at 237-238.

74. Simmons, *Macaw Madness*, NATIONAL WILDLIFE, June/July 1982, at 5.

75. Jackson, *Pursued in the Wild for the Pet Trade, Parrots are Perched on a Risky Limb*, SMITHSONIAN, Apr. 1985, at 61.

76. *Id.* at 61.

77. Simmons, *supra* note 74, at 8.

four thousand birds, had perished from lack of air circulation.[78] As exotic birds continue to grow in popularity around the globe as pets,[79] it is becoming increasingly difficult to stop these avian atrocities, as well as similar ones involving other illegally exploited animals.

2. Habitat Destruction in Ecosystems

While it is clear from the previous discussion that abusive trade presents a grave threat to wildlife survival, most environmental experts feel that habitat destruction is the greatest "contemporary source of human-caused extinction both in the United States and around the world."[80] Habitat can be defined as the "sum of the attributes of an area that assist in a species' survival, including food, shelter, cover, and solitude."[81] Furthermore, habitat perturbation and its adverse effect on wildlife can result from many complex factors. As one commentator illustrates:

> There is no doubt now what constitutes the main form of threat [to wildlife]: habitat disruption . . . . Habitat disruption includes any significant modification of natural environments and life-support systems. It extends from agriculture and forestry to settlement schemes, highway construction, pollution and a long list of man's activities. Even before the arrival of advanced technology, habitat disruption caused massive loss of living space for wild creatures. Super-sophisticated technology can now inflict as much damage on wildlife in a single year as would have taken a decade in earlier times.[82]

Of all the detrimental factors listed above, conversion of the natural landscape is the greatest adverse threat facing wildlife around the globe.[83] Examples include modification of virgin prairie into cropland,[84]

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78. Jackson, *supra* note 75, at 59-60.

79. Simmons, *supra* note 74, at 5. On the other hand, an interesting quote that would support removing animals from the wild for pets is found in Livingston, *Rightness or Rights?*, 22 OSGOODE HALL L.J. 297 (1984). "The ways in which creatures in nature die are typically violent: predation, starvation, disease, parasitism, cold. The dying animal in the wild does not understand the vast ocean of misery into which it and billions of other animals are born only to drown." *Id.* at 303.

80. Smith, *supra* note 16, at 367.

81. Coggins, *Protecting the Wildlife Resources of National Parks from External Threats*, 22 LAND & WATER L. REV. 1, 6 (1987).

82. Myers, *supra* note 18, at 38-39, *quoted in* S. LYSTER, *supra* note 3, at 300.

83. Coggins & Russell, *supra* note 2, at 1442.

84. *Id.*

deforestation of temperate regions[85] and tropical regions,[86] and dredging of estuarine areas and marshland.[87] Also, closely related to landscape modification is "water resources development"[88] and the threat to species which rely upon "a free-flowing stream habitat."[89]

Especially vulnerable to habitat perturbation are the large self-contained ecosystems. The term ecosystem can be defined as "the climate, soils, bacteria, fungi, plants and animals at any particular place . . .,"[90] the total sum of all the habitats and of its indigenous life forms. Foremost examples of these vulnerable ecosystems are the tropical rainforests,[91] nature's wondrous masterpieces of biological complexity scattered around the globe. As one legal commentator demonstrates:

> There are currently about 7.7 million square miles of tropical forest around the globe. This figure includes about 4.6 million square miles of closed or moist forest and about 3.1 million square miles of open, drier woodlands. Thirteen countries account for more than eighty percent of the total moist forest, most of which is also known as tropical rainforest. In order of forested area, they are Brazil, Indonesia, Zaire, Peru, India, Colombia, Mexico, Bolivia, Papua, New Guinea, Burma, Venezuela, Congo and Malaysia. Brazil alone has about a third of the total. Approximately two-thirds of the drier open woodlands are found in tropical Africa.[92]

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85. *Id.*

86. S. LYSTER, *supra* note 3, at 98.

87. The decline in America's wetlands is a tragic example of environmental irresponsibility. Since the United States was founded over 200 years ago, approximately one half of this country's wetlands have vanished; today, wetland loss is on the average of 600,000 acres annually in America. Granling, *Wetland Regulation and Wildlife Habitat Protection: Proposals for Florida*, 8 HARV. ENVTL. L. REV. 365 (1984).

88. Coggins & Russell, *supra* note 2, at 1442.

89. *Id.* Wildlife declines have been directly attributed to the construction of water-diversion projects and large dams. *Id.* The highest court in one of the world's most powerful nations has addressed the issue of water-diversion projects and wildlife survival. In the famous United States Supreme Court case — TVA v. Hill, 437 U.S. 153 (1978) — the completion of the Tellico Dam in Tennessee was halted due to the loss of the endangered snail darter's critical habitat. Coggins & Russell, *supra* note 2, at 1442 n.71.

90. E. PIANKA, EVOLUTIONARY ECOLOGY 4 (1974).

91. S. LYSTER, *supra* note 3, at 303; Linder, *supra* note 38, at 191. Although the majority of the rainforests occur in the tropics, they can also be found sometimes in the cooler regions of the earth. For example, the Tongass National Forest is located in Alaska. Occurring on Alaska's islands and panhandle, it is the United States' "only major continental rainforest . . . [with] at least 5.2 million acres designated as wilderness." Some of the rainforest trees are 400 years old. *Our rain forests are under seige*, Miami Herald, Aug. 29, 1988, at A-15, col. 1.

92. Stowe, *supra* note 9, at 56. Tropical rain forests can be classified into two broad categories — closed and open. Closed tropical forests are moist, humid environments charac-

Moreover, tropical rainforests are the world's greatest treasure houses of biological diversity,[93] containing an estimated forty percent of the earth's life forms of which only approximately twenty percent have been identified.[94] Biological diversity can be defined as the sum result of genetic diversity and ecological diversity.[95] Genetic diversity is the "genetic variability among individuals within a single species' breeding population,"[96] while ecological diversity is the "number of species within a single community."[97]

Tragically, over 30,000 square miles of global tropical rainforest are being lost annually,[98] inexorably destroying critical wildlife habitat.[99] An additional 45,000 square miles are irrevocably altered.[100] For all their wondrous biological complexity, rainforests are paradoxically fragile environments. They have little or no resistance to habitat perturbations,[101] possessing diminished capabilities of regeneration after deforestation. Rainforests are characteristically of "low futility, [their] survival depending upon the integrity of rapid recycling, leak-free nutrient systems."[102] Whenever the nutrient rich tree canopy is destroyed, the vital integrity of the total nutrient system contained in the ecosystem is broken, and the thin tropical soil once anchored by trees becomes susceptible to erosion.[103] When the complex soil mineralogy is swept away, the remaining impoverished soils are, in most cases, incapable of regenerating the lush rainforest canopy so essential for wildlife survival.[104]

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terized by heavy tree canopy, often more than one story, so thick that grass is unable to adequately grow on the floor due to intense shade. *Id.* at 56 n.3. Open tropical forest, on the other hand, is still heavily populated by trees, but enough area remains unshaded to allow a continuous grass carpet to grow. *Id.*

93. Smith, *supra* note 16, at 368; S. LYSTER, *supra* note 3, at 98; Note, *supra* note 25, at 282; Coggins & Harris, *supra* note 24, at 248 n.5.

94. Smith, *supra* note 16, at 368; Stowe, *supra* note 9, at 56-57; Note, *supra* note 25, at 282 n.13. Remarkably, the moist tropical rainforests contain "100,000 of the planet's 250,000 species of higher plants." *Id.*

95. Smith, *supra* note 16, at 369.

96. *Id.*

97. *Id.*

98. Stowe, *supra* note 9, at 56.

99. Critical habitat "consists of specific areas where the physical or biological features essential to the conservation of the species are found." Comment, *Habitat Conservation Plans Under the Endangered Species Act*, 24 SAN DIEGO L. REV. 243, 266-67 (1987).

100. Stowe, *supra* note 9, at 56.

101. *Id.* at 58.

102. L. CALDWELL, *supra* note 3, at 193.

103. Stowe, *supra* note 9, at 58.

104. L. CALDWELL, *supra* note 3, at 193. Regeneration may also be retarded due to the present lack of favorable climatic conditions which previously existed thousands of years ago promoting rainforest growth. Linder, *supra* note 38, at 191.

Four major human factors have been identified which collectively contribute to the destruction of the tropical rainforests and their wildlife. They are "(1) excessive population growth, (2) poverty, (3) inordinate demand for raw materials in the industrial societies, and (4) technologies that facilitate forest exploitation."[105] The first of these two factors tragically illustrates how social impoverishment directly causes ecological impoverishment by illustrating that the plight of the rainforest is a microcosm of the age-old international conflict between the "have" and the "have-not" nations with respect to natural resource utilization. Tropical rainforests have become social safety-valves for many developing Third World Countries coping with exponential population growth and corresponding weak economies. Faced with the prospect of social anarchy, rainforest-rich nations, such as Brazil and Indonesia, have sponsored quick-fix solutions to social disorder by promoting "resettlement policies"[106] in remote forested regions. These resettlement projects for the greater part have been monumental testaments to human folly. For example:

> The World Bank has committed $434 million to Brazil for the Northwest Region Integrated Development Program (Polonoreste), a continuing project which involves the resettlement of hundreds of thousands of people to a very large forested area whose soil cannot sustain continuous cultivation. The Bank has given a series of loans totaling about $600 million to Indonesia for relocating families from Java to the heavily forested outer islands. The Polonoroeste project in particular has become a notorious environmental disaster.[107]

Additionally, these rainforest settlers exert pressure on the rainforest ecosystem by felling trees for firewood. Approximately one-third of the human race utilizes firewood as an energy source[108] because of

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105. Caldwell, *supra* note 3, at 193. "Timber production and agricultural expansion both have more impact on [exotic] birds than traders do." Fran Lipscomb of the National Audubon Society, *quoted in* Jackson, *supra* note 75, at 61-62. Approximately "70% of tropical forest acreage is being lost to slash-and-burn agriculture, 15% is being lost to cattle raising in Latin America (mainly to provide cheap beef for America's fast food restaurants), and 15% is being cut for lumber." Linder, *supra* note 38, at 190 n.157. *See also* Myers, *The Ends of the Lines*, NAT. HIST., Feb. 1985, at 2.

106. Stowe, *supra* note 9, at 63.

107. *Id.* at 90-91 n.102. By the turn of the century, is it estimated that human development of the tropical rainforest in southeast Asia will reduce the present forest by 80%. Note, *supra* note 25, at 282.

108. Stowe, *supra* note 9, at 64.

the inability to afford oil and related fossil fuel byproducts.[109] "Rural entrepreneurs in southeast Brazil and in India, for example, harvest tens of millions of cubic meters of wood annually to provide charcoal and firewood for urban industries and homes. Ninety percent of all tropical wood that is harvested (as opposed to being cleared and left unused) is cut for energy production."[110]

The foregoing discussion leads inevitably to the conclusion that wildlife survival faces its most crucial period in history due to mankind's reckless exploitation of the natural world. The next section of the paper will explore the reasons for preserving this precious resource.

III. Justifications for the Protection and Conservation of Global Wildlife

The international community should preserve wildlife, both terrestrial and aquatic, for numerous reasons, but for simplicity's sake, the reasons can be divided into four major categories — economic, pharmacological, philosophical and ecological. This article will explore each of these justifications in depth. It is known, though, that these rationales "sometimes work at cross-purposes,"[111] thus complicating the international goal of stemming species' extinction.

A. *Economic Justifications*

By the end of the 1990's, scientists project that the current human population will have increased by approximately fifty percent.[112] During this same time span, "per capita world food production will grow by less than fifteen percent."[113] Some of the pressure to provide protein for man's increased numbers will fall upon existing wildlife species.[114] Wildlife species can be invaluable food sources by themselves or by hybridization with domestic species to increase food production. For example, "[c]attle-bison hybrids (beefalo) reach market weight fifty

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109. Smith, *supra* note 16, at 368.

110. Stowe, *supra* note 9, at 64.

111. Travalio & Clement, *supra* note 56, at 270.

112. Versteeg, *supra* note 24, at 270. Over 6 billion people are expected to inhabit the earth by the 21st century. Note, *supra* note 25, at 287 n.44. Currently, approximately three fourths of the world's inhabitants live in what is known as the "Third World." *Id.* at 280 n.5. Population growth in these regions is projected to double within the next few decades. *Id.* at 287 n.44; Coggins & Harris, *supra* note 24, at 253.

113. Versteeg, *supra* note 24, at 270.

114. Smith, *supra* note 16, at 374. Japan today alone consumes "120,000 tons of whalemeat" per year. Travalio & Clement, *supra* note 56, at 204.

percent faster, and reputedly produce meat costing twenty-five to forty percent less than purebred cattle. Geneticists saved the Cornish chicken from extinction by crossing it with other breeds to produce the modern fast-growing broiler chicken."[115] Therefore, it is apparent that the international community should actively conserve common and rare wildlife species as a potential safeguard against potential world hunger. As one author summarizes, "the destruction of a species before researchers have fully explored its potential as a food source is an unthinkable waste of our natural resources with far-reaching implications."[116]

B. *Pharmacologial Justifications*

Mankind has been plagued since time immemorial with innumerable diseases and afflictions. Even in today's advanced technological world, medical science still struggles to abate human suffering attributed to maladies such as bacteria, viruses and cancers. Wild creatures have the potential to eradicate some of these diseases. One legal scholar writes that "while the possibility for medical advancement through the study of any particular exotic species may be limited, recent scholarship indicates that vast potential exists in hundreds of plants and animals thought to have no value to mankind."[117] Although the medical potential of some wildlife species remains to be tapped by the global community, there are numerous examples where the study of wildlife has directly benefited medical research.

> Animal physiology can provide researchers with invaluable information concerning the nature and potential cures of many human maladies. The sophisticated heart and circulatory system of long-flying birds, such as the stormy petrel, the albatross and the hummingbird, offer clues to many human cardiovascular ailments. The blood clotting problems of the endangered Florida manatee may assist in hemophilia research. The remarkable tolerance of the rare desert pupfish to salinity extremes can aid research into human kidney disorders.[118]

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115. Versteeg, *supra* note 24, at 271.

116. *Id.*

117. Smith, *supra* note 16, at 375.

118. Versteeg, *supra* note 24, at 272; *See also* Heppes & McFadden, *supra* note 2, at 231 (discussing other medical contributions from the animal kingdom).

C. *Philosophical Justifications*

Throughout history, man's perceptions and actions towards wildlife have been predicated on the arrogance of speciesism. Speciesism can be defined as "an arbitrary limiting of moral and ethical concerns to members of only our own species."[119] Speciesism, in turn, has been the basis for "anthropocentric utilitarian arguments" involving the treatment of wildlife,[120] whereby the natural world is viewed as "a resource to be manipulated at will for human benefit."[121] Today, however, there is a philosophical trend for preserving wildlife bases on both a spiritual and biological kinship with man.

There have been enlightened men in past centuries who have advocated protecting wild creatures for their own intrinsic value. These men include such famous thinkers as Montaigne, Voltaire, David Hume, Charles Darwin and Jeremy Bentham.[122] Extending moral concern to animals became more widespread in the twentieth century,[123] culminating in the international environmental movement of the 1970's.[124] Many scholarly works on the fate of wildlife and the environment were published during that decade, but two of the most famous and thought-provoking are Christopher Stone's *Should Trees Have Standing*,[125] and Laurence Tribe's *Ways Not to Think About Plastic Trees: New Foundations for Environmental Law.*[126] In his farsighted article, Stone proposed that legal rights should be given to "the natural environmental as a whole,"[127] including the animal and plant world and "forests, oceans [and] rivers."[128] Tribe supported Stone's conclusion[129] but expounded upon it by viewing wildlife and the surrounding

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119. Galvin, *supra* note 8, at 245.

120. Elder, *Legal Rights For Nature — The Wrong Answer to the Right(s) Question*, 22 OSGOODE HALL L.J. 285, 286 (1984).

121. *Id. See also* Comment, *Antinomy: The Use, Rights, and Regulation of Laboratory Animals*, 13 PEPPERDINE L. REV. 723, 728 (1986); Coggins & Russell, *supra* note 2, at 1437.

122. Note, *supra* note 52, at 383.

123. *See generally* P. SINGER, ANIMAL LIBERATION: A NEW ETHICS FOR OUR TREATMENT OF ANIMALS (1975). Animals were historically viewed as chattel. "Perhaps the most concrete limitation to be imposed on the common law doctrine of animals as property has resulted from the passage of statutes by many governments 'designated to prevent cruelty and neglect to animals.'" Note, *supra* note 52, at 382 n.31.

124. L. CALDWELL, *supra* note 3, at 4; Kindt & Wintheiser, *The Conservation and Protection of Marine Animals*, 7 U. HAWAII L. REV. 301, 302 (1985).

125. 45 S. CAL. L. REV. 450 (1972).

126. 83 YALE L.J. 1315 (1974).

127. Stone, *supra* note 125, at 456.

128. *Id.*

129. Elder, *supra* note 120, at 285.

environment based on the principle of immanence,[130] recognizing that there is "something sacred in the natural."[131]

A related philosophical argument for the protection of international wildlife lies in the "commonality of interest" between animal and man based on their biological kinship.[132] Humans and animals share the same form of biological communication, known as deoxyribonucleic acid (DNA) — the alphabet of life common to all life forms from bacteria to man.[133] For example, "the only difference between the DNA of humans and that of a snail or eagle is the length and order of units of the DNA molecule."[134] Furthermore, man and wildlife share additional biological similarities at the molecular level. The blood component, hemoglobin, is a good illustration.

Finally, there are anatomical similarities between man and the higher species of the animal kingdom. Their vital internal organs are the same, "although they exhibit different levels of sophisticiation."[136]

In summation, wildlife should be conserved globally because of both the spiritual and the biological kinship shared between man and animals as living beings, forged in Earth's primeval crucible of life billions of years ago. Not only do wildlife species merit preservation because of their own intrinsic and extrinsic values but also because the psyche of man is enriched by just knowing that these life forms exist. One author writes that "[t]his non-humanistic value of communities and species is the simplest of all to state: they should be conserved because they exist and because this existence itself is but the present expression of a continuing historical process of immense antiquity and majesty."[137]

D. *Ecological Justifications*

The Earth's wildlife should be protected because of the invaluable role each species plays within ecosystems around the globe as a whole. Ecosystems are complex marvels of nature that have taken eons to evolve.[138] "The science of ecology studies the intricate web of relation-

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130. Tribe, *supra* note 126, at 1337.
131. *Id.*
132. Favre, *supra* note 35, at 259-60.
133. *Id.* at 261.
134. *Id.*
135. *Id.* at 260 n.88.
136. *Id.* at 261.
137. D. EHRENFELD, THE ARROGANCE OF HUMANISM 207-08 (1978), *quoted in* Versteeg, *supra* note 24, at 277.
138. Versteeg, *supra* note 24, at 275.

ships between living organisms and their living and nonliving surroundings" within ecosystems.[139] It is now understood by ecologists that there is an interdependency among living creatures within ecosystems,[140] and that the internal strength of an ecosystem lies in the diversity of life forms it houses.[141] "Indeed, diversity has evolved because it maximizes the probability that some individuals of a particular species will survive environmental stress."[142]

Sadly though, scientists are finding themselves in a race with time to identify the ecological roles of animal species before they become extinct, thereby not only eliminating potential lines of evolution[143] but also endangering the survival of interdependent species as well. Within natural environments, the roles of certain wildlife can be classified either as keystone or as indicator species. A keystone species is "one that provides critical support to other species within the ecosystem,"[144] while an indicator species is one which can signal "general ill health of an ecosystem."[145] Untold thousands, perhaps even millions, of keystone and indicator species of wildlife are yet to be identified. It is, therefore, apparent that the international community should strive to conserve wildlife by protecting species diversity within global ecosystems because diversity is the foundation of ecological stability. The next section will discuss the evolution and current status of international law as it pertains to wildlife protection.

IV. INTERNATIONAL WILDLIFE LAW

A. *Historical Background*

Man's efforts to protect wildlife species by enacting conservation laws can be traced back through the centuries. Ancient Babylonians sought to protect the natural landscape by passing forestry laws in 1900 B.C.[146] The Egyptians possessed similar conservation values and enacted laws to "set aside land as a nature reserve in 1370 B.C."[147] Although the historical record is replete with laws evidencing man-

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139. *Id.*

140. Note, *supra* note 52, at 391.

141. Comment, *supra* note 8, at 114-15; Favre, *supra* note 35, at 277; Coggins & Harris, *supra* note 24, at 249.

142. Versteeg, *supra* note 24, at 276; Coggins & Harris, *supra* note 24, at 249 n.12.

143. Favre, *supra* note 35, at 277.

144. Smith, *supra* note 16, at 370 n.23.

145. *Id.* at 388 n.123.

146. S. LYSTER, *supra* note 3, at xxi.

147. *Id.*

kind's efforts to protect wildlife, "no definite customary law has developed which requires nations to conserve living resources or to prevent their extinction."[148] Instead, international law, as embodied in international agreements and conventions, has become the driving machinery behind wildlife protection around the globe, forged in "the emergence of a new configuration of international policy"[149] and "a transnationally shared perception of mankind's environmental predicament."[150]

International treaty law aimed at conserving wildlife has evolved only in the past one hundred years.[151] The Treaty Concerning the Regulation of Salmon Fishing in the Rhine River Basin signed by Germany, Luxembourg, the Netherlands, and Switzerland in 1886 was the first international agreement which sought to protect wildlife.[152] Although numerous other wildlife treaties were drafted in the following years, the last twenty five years have proved the most important, as seen in the number of treaties drafted and their effectiveness for conservation.[153]

> Wildlife treaties have generated from a variety of different sources. International organizations such as the Pan American Union (now the Organization of American States), the United Nations Educational, Scientific and Cultural Organization, and the Organization of African Unity have all been responsible for the formation of important wildlife treaties. Another significant driving force has been the International Union for Conservation of Nature and Natural Resources (IUCN). Formed in 1948 as an independent international organization with the objective of promoting wise usage of the Earth's natural resources, IUCN has a membership consisting of governments, governmental agencies and non-governmental organizations from 111 countries. It played a major role in the formation of the African Convention on

148. Kindt & Wintheiser, *supra* note 124, at 356. The world community can receive little guidance from international jurisprudence. Only two International Court of Justice cases deal with wildlife species, each addressing fishing zone disputes. *Id.* at 12. *See also* Lang, *Environmental Protection: The Challenge for International Law*, 20 J. WORLD TRADE L. 489, 490 (1986).

149. Caldwell, *supra* note 3, at 7.

150. *Id.* at 18.

151. S. LYSTER, *supra* note 3, at xxi. International environmental law first appeared in bilateral treaties drafted between nations sharing common riparian resources such as freshwater lakes and streams. Lang, *supra* note 148, at 496.

152. S. LYSTER, *supra* note 3, at xxi.

153. *Id.*

> the Conservation of Nature and Natural Resources, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Agreement on the Conservation of Polar Bears, and the Convention on the Conservation of Migratory Species of Wild Animals.[154]

There is almost universal concensus that of all the wildlife treaties presently in force within the world today, CITES is the "best wildlife protection treaty to be enacted since the international community first recognized the need for international cooperation."[155] The following section will explore this important multilateral agreement, illustrating both its strengths and inherent weaknesses.

B. *The Convention on International Trade in Endangered Species of Wild Flora and Fauna*

CITES was negotiated in Washington, D.C., on March 6, 1973[156] and was initially signed by twenty-one nations.[157] The multilateral treaty did not enter into force until July 1, 1975,[158] that date representing "ninety days after the date of deposit of the tenth instrument of ratification, acceptance, approval or accession, with the Depositary Government."[159] At the end of 1987, ninety-six sovereign nations were parties to CITES.[160]

CITES was drafted to combat commercial overexploitation of endangered and threatened wildlife (and plants) by imposing interna-

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154. *Id.* at 4. The United Nations Conference on the Human Environment convened in Stockholm, Sweden in 1972. "This meeting was attended by representatives of most U.N. members, of various U.N. and other international and regional bodies, and observers from non-governmental organizations. The Conference adopted a Declaration for the preservation and enhancement of the human environment and made over 100 recommendations for governmental action at the international level." Belsky, *Management of Large Marine Ecosystems: Developing a New Rule of Customary International Law*, 22 SAN DIEGO L. REV. 733, 740-41 n. 33 (1985). It marked "a watershed in international relations . . . . It legitimized environmental policy as a universal concern among nations." CALDWELL, *supra* note 3, at 19. *See also* Report of the United Nations Conference on the Human Environment, U.N. Doc. A/Conf. 48/14/Rev. 1, U.N. Pub. E. 73, II.A.14.

155. Note, *supra* note 72, at 119. Numerous other exemplary international agreements exist which strive to further the international public policy for wildlife conservation. However, it is beyond the scope of this paper to discuss them all. It is the author's opinion that the most thorough and interesting of all scholarly sources detailing wildlife treaties is found in S. LYSTER, *supra* note 3.

156. S LYSTER, *supra* note 3, at 6.

157. *Id.*

158. *Id.* at 240.

159. CITES, *supra* note 11, art. XXII(1).

160. Heppes & McFadden, *supra* note 2, at 229.

tional trade restrictions on parties to the Convention.[161] CITES seeks to achieve this laudable goal by balancing conflicting interests among its signatories. Specifically, the Convention strives to "insure that endangered wildlife is not over-exploited by trade and that non-endangered wildlife flows freely in international commerce."[162] The language of CITES' preamble clearly reflects the balancing intent of its drafters by stating:

> The Contracting States,
> RECOGNIZING that wild fauna and flora in their many beautiful and varied forms are an irreplaceable part of the natural systems of the earth which must be protected for this and the generations to come;
> CONSCIOUS of the ever-growing value of wild fauna and flora from aesthetic, scientific, cultural, recreational and economic points of view, ...[163]

Moreover, the Convention recognized that international unity was an essential prerequisite for accomplishing its inherent purpose. Again the language of CITES clearly expresses this intent by stating that "international cooperation is essential for the protection of certain species of wild fauna and flora against overexploitation through international trade . . . ."[164]

International trade in wildlife (as well as plants) is controlled through a strict export and import permit system.[165] The permit system is implemented by dividing endangered and threatened wildlife into one of three appendices that categorizes species depending on the degree of endangerment.[166] This listing process has been praised as one of the treaty's most successful innovations and strengths.[167] Appendix I wildlife are the most stringently protected.[168] CITES provides

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161. Welsch, *CITES: Trade in Appendix I Species*, 13 ENVTL. POL'Y & L. 100, 100-01 (1984). Where warranted, CITES extends the same protection to marine animals as that extended to their terrestrial cousins. Travalio & Clement, *supra* note 56, at 219-20. As of this writing, all species of the Order Cetacea are listed on one of the three appendices of the treaty. Comment, *supra* note 25, at 481 n.28. Today CITES' "three appendices contain an aggregate of 1,549 species of wildlife." Note, *supra* note 72, at 109 n.13.

162. Comment, *supra* note 8, at 118.

163. CITES, *supra* note 11, preamble.

164. *Id.*

165. Comment, *supra* note 62, at 430-31.

166. Note, *supra* note 72, at 109.

167. *Id.* at 119.

168. Birnie, *supra* note 52, at 323; Comment, *supra* note 8, at 119.

that "Appendix I shall include all species threatened with extinction which are or may be affected by trade. Trade specimens of these species must be subject to particularly strict regulation in order not to endanger their survival further and must be only authorized in exceptional circumstances."[169] International trade in Appendix I wildlife is never authorized when the animal is used for "primarily commercial purposes."[170] However, CITES permits noncommercial trade in endangered species for "*bona fide* scientific or cultural endeavors such as zoos, museums or biomedical research firms."[171]

Appendix II wildlife species are not as tightly controlled as those in Appendix I, but restrictions on their import and export are still substantial. Specifically, "controls imposed on the export or re-export of Appendix II species are similar to those which apply to Appendix I species, but the rule for imports are less stringent."[172] Also, export of Appendix II wildlife is authorized only if the export will not be detrimental to the survival of the species.[173] However, unlike Appendix I wildlife, international trade of Appendix II animals for commercial purposes is permitted by CITES.[174] As a consequence, "trade in tens of thousands of a single Appendix II species for which there is a large commercial demand may be carried on quite legally each year."[175]

Appendix III wildlife are the least regulated, and CITES imposes less stringent requirements on parties desiring to trade in these animals. Briefly, Appendix III wildlife regulations include:

> [A]ll species that individual Parties have regulated within their own jurisdictions whose protection require the cooperation of other parties. The Convention requires an export permit for Appendix III species only when the export is from a state that has included that species on its Appendix III list. In order to import an Appendix III specimen, the importer must present only a certificate of origin, an export permit, or a re-export certificate.[176]

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169. CITES, *supra* note 11, art. II(1). Examples include "the Humpback whale, Northern white rhinoceros, and Mountain gorilla." Comment, *supra* note 8, at 119.

170. Note, *supra* note 72, at 109.

171. Comment, *supra* note 8 at 120.

172. S. LYSTER, *supra* note 3, at 249.

173. CITES, *supra* note 11, art. IV 2(a).

174. S. LYSTER, *supra* note 3, at 251.

175. *Id.* Particularily vulnerable are the exotic parrots listed on Appendix II. *Id.* at 179; Comment, *supra* note 8, at 130 n.127.

176. Comment, *supra* note 62, at 432.

Another strength of CITES lies in the bureaucratic machinery drafted to implement the Convention administratively.[177] CITES mandates that each signatory has to establish a national authority, comprised of "both a scientific and management division."[178] The scientific division is charged with making "biological and ecological determinations required by CITES,"[179] such as determining the degree of endangerment to an animal and the necessity of CITES protection.[180] On the other hand, the management branch of the national authority is authorized to act on the data provided by the scientific division and accordingly governs the permit system discussed above.[181] Additionally, the management division is in charge of "carrying out the law enforcement aspects of the treaty."[182] Lastly, the activities of each Party's national authority are coordinated under the auspices of the Convention's Secretariat[183] which functions as a "switchboard to facilitate direct contracts between the countries concerned."[184]

Although CITES has made historic and laudable headway combating both species' extinction and wildlife smuggling,[185] the Convention suffers from serious infirmities which impede its purpose.[186] First, CITES is aimed at curbing abusive trade in the international arena and does not address "domestic depletion."[187] Second, the multilateral treaty has only been signed by less than one-half of the nations of the world.[188] Of those nations that have not yet become signatories to the Convention, two of these are among the most influential and populous — Japan and the People's Republic of China.[189] Furthermore, this lack of unity among the international community directly contributes to enforcement problems associated with CITES regulations.[190] Inadequate enforcement has been proposed as a major flaw of the Convention.[191] A number of factors exasperate enforcement problems.

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177. S. LYSTER, *supra* note 3, at 302.
178. Comment, *supra* note 8, at 123; *See also* CITES, *supra* note 11, art. IX (1)(a)(b).
179. *Id.* Comment, *supra* note 8, at 123.
180. *Id.*
181. *Id.* at 124.
182. *Id.*
183. *Id.*; *see also* CITES, *supra* note 11, at art. XII.
184. Comment, *supra* note 8, at 124.
185. Note, *supra* note 72, at 119; Comment, *supra* note 8, at 127
186. Travalio & Clement, *supra* note 56, at 222.
187. *Id.* at 223.
188. Note, *supra* note 52, at 398 n.145.
189. Travalio & Clement, *supra* note 56, at 223; Comment, *supra* note 25, at 481 n.28.
190. Note, *supra* note 52, at 398 n.145.
191. Travalio & Clement, *supra* note 56, at 223. "CITES is not a self-executing treaty and the responsibility for enforcing its provisions is relegated to each Party State." Comment, *supra*

Among these are the high volume of wildlife smuggling,[192] falsified legal trade by means of "laundering CITES documentation,"[193] the lack of adequate sanctions, both penal and monetary, necessary to deter violations of the Convention,[194] the "lack of funds and personnel,"[195] the frequent inability of customs' personnel to identify species protected by CITES,[196] the unfamiliarity among parties with each other's domestic wildlife laws,[197] and the non-harmonization of domestic wildlife legislation within the international community.[198]

Another major infirmity of CITES is that it allows "substantial trade exemptions."[199] One of these exemptions "allows any country with an economic interest in exploiting a species to override the ecological, aesthetic, and moral purposes of the lists"[200] by entering "specific reservations to species in any of the appendices."[201] The unfortunate consequence of this permissible action is that a party upon declaring a specific reservation becomes a nonparty which is not subject to CITES' trade regulations with respect to that wildlife species or its derivatives.[202] Most legal scholars believe that permitting reservations

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note 8, at 122. In this type of treaty, enabling legislation by each Party is the primary mechanism to facilitate enforcement. *Id.* at 122 n.75.

192. S. LYSTER, *supra* note 3, at 304.

193. Comment, *supra* note 8, at 146. Forgery of import and export permits is recognized as a significant problem. For example, "the secretariat uncovered eight instances of forgeries in 1980, including one instance involving trade worth twelve million dollars." Comment, *supra* note 62, at 440-41 n.87.

194. Note, *supra* note 52, at 398 n.145; Comment, *supra* note 8, at 154.

195. Note, *supra* note 52, at 401-02 n.162.

196. Note, *supra* note 72, at 113; Comment, *supra* note 8, at 141.

197. Comment, *supra* note 8, at 152. "CITES is implemented differently by each party according to its own enabling wildlife legislation." *Id.* at 123. In the United States, the Endangered Species Act (ESA) is the legal vehicle for implementing CITES. *Id.* at 123 n.79. Individual Parties are free to adopt domestic legislation that is stricter than the regulation proposed in CITES. CITES, *supra* note 11, art. XIV (1)(a).

198. Comment, *supra* note 8, at 156.

199. *Id.* at 158.

200. Note, *supra* note 72, at 110-11.

201. *Id. See* CITES, *supra* note 11, art. XXIII(2). General Reservations by Parties are prohibited. *Id.*, art. XXIII(1). A reservation "to a treaty or other international agreement is 'a unilateral statement, however phased or named, made by a state, when signing, ratifying, acceding to, accepting, or approving a treaty, whereby it purports to exclude or to vary the legal effect of certain provisions of the treaty in their application to that State.'" Vienna Convention on the Law of Treaties, art. II(1)(d), U.N. Doc. A/Conf. 39/27 (1970), *quoted in* Travalio & Clement, *supra* note 56, at 222 n.180.

202. McFadden, *Asian Compliance with CITES: Problems and Prospects*, 5 B.U. INT'L L.J. 311,313 (1987). "As of Jan. 1, 1984, the following parties still retained reservations: Japan

to the Convention was a concession on the part of the drafters to promote general support for and participation in the treaty by the world community.[203] Another troublesome trade exemption is "the Convention's willingness to allow parties to trade wildlife freely with nonparties."[204] Lastly, in certain instances, trade exemptions are permitted under CITES if claimed as tourist souvenirs or personal effects.[205]

The last grave flaw of CITES is that it does not provide for wildlife habitat protection within the body of the treaty.[206] This ommission is also perhaps its most fatal flaw with far reaching implications. The fragile nexus between wildlife survival and habitat integrity is now well understood.[207] If wildlife is to survive into the twenty-first century, the nations of the world must adopt global multilateral international agreements which favor ecosystem preservation. The following section will examine in detail this approach and other innovative wildlife conservation strategies.

V. Future International Environmental Policies and Recommendations for the Global Conservation of Wildlife

International environmental policy has been transformed within the last half of the twentieth century. Predicated in large part on the environmental movement of recent decades, "treaties and other international agreements have been negotiated to such an extent that environmental protection is now recognized as a significant aspect of international law."[208] Wildlife preservation has been a major focal point of this modern international policy. Moreover, the international community has witnessed an evolving concept rooted in the United Nations Conference on the Human Environment in Stockholm in 1972 which views wildlife as "part of the common heritage of all people and that

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(13), Switzerland (9), France (7), USSR (6), Norway (4), Brazil (3), Peru (3), Thailand (3), Suriname (2), Austria (2), Botswanna (1), Zimbabwe (1), Zambia (1)." Comment, *supra* note 8, at 134 n.150.

203. Comment, *supra* note 62, at 436.

204. Comment, *supra* note 8, at 131. This type of transaction may represent 30% of all wildlife trade worldwide. Heppes & McFadden, *supra* note 2, at 241. "Nonparty trade in wildlife comprises a substantial percentage of the overall global trade of endangered species." Comment, *supra* note 8, at 131.

205. Comment, *supra* note 8, at 136.

206. *Id.* at 126 n.99.

207. *See supra* text accompanying notes 80-110.

208. L. Caldwell, *supra* note 3, at 260.

wildlife conservation is an international concern, rather than being solely of interest to the state in whose territory the wildlife occurs."[209]

Experience and scholarly research have demonstrated that wildlife protection treaties and strategies which attempt to protect wildlife on an individual species basis are not as effective as those which emphasize ecosystem conservation.[210] Although no rule of international law forces sovereign states to apply ecosystem management regimes to natural resources,[211] international environmental policy is proceeding towards an ecosystem approach[212] which protects wildlife while maximizing genetic diversity.[213] Hopefully, the eventual culmination of this policy will be a worldwide international agreement which will protect "habitats of endangered species or of endangered ecosystems."[214]

International cooperation and unity are the essential amalgam for the long-term, global preservation of wildlife and ecosystems. Domestic legislation, though laudable and extensive within the international community, has proven historically insufficient to stem effectively the tide of species extinction.[215] While not a global wildlife treaty, the Convention on the Conservation of Antarctic Marine Living Resources[216] has shown that "the management of Antarctica's resources can be an international demonstration of the possibility and potential of total ecosystem management."[217] Therefore, this Convention will be examined more closely in the following section. Additionally, other wildlife conservation measures will be proposed to supplement existing strategies.

A. *The Convention on the Conservation of Antarctic Marine Living Resources — An Ecosystem Approach*

The wisdom of ecosystem management as the basis of wildlife protection is widely supported by both legal and biological research. As one legal commentator summarizes:

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209. S. LYSTER, *supra* note 3, at 181.
210. Smith, *supra* note 16, at 403.
211. Belsky, *supra* note 154, at 739 & 757.
212. S. LYSTER, *supra* note 3, at 300.
213. L. CALDWELL, *supra* note 3, at 220.
214. S. LYSTER, *supra* note 3, at 303.
215. Comment, *supra* note 8, at 117 n.37; Comment, *supra* note 62, at 436 n.58.
216. Convention on the Conservation of Antarctic Marine Living Resources, *done* May 7, 1980, T.I.A.S. No. 8826, *reprinted in* 19 ILM 837.
217. Belsky, *supra* note 154, at 761.

> The ecosystem itself is always present and is the best measure of the actual and potential presence of the animal kingdom; as the common denominator, it is the best measuring device of the potential interference with the interests of wildlife. In addition, not all wildlife are found in all places so the best measure of which wildlife have an interest in a particular geographic location is the natural ecosystem at that location.[218]

This philosophy is embodied in the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) which entered into force on April 7, 1982.[219] At the present time, CCAMLR has eighteen parties to the treaty.[220] Historically, "under customary international law, the living resources of the high seas are *res nullis*, and they may be appropriated by anyone in the absence of definitive law to the contrary."[221] CCAMLR restricts this international norm with respect to its signatories. The inherent primary purpose of the Convention is to "limit fishing in the Antarctic waters to a level which will not harm the Antarctic marine ecosystem" and specifically "to prevent krill, the principal diet of baleen whales, from being fished in quantities which would impede the recovery of depleted whale populations."[222] This salient feature of the treaty recognizes the interdependency of all marine life and implements a management strategy which focuses on "a total conservation standard," as opposed to a management plan centering solely on the "harvested target species."[223] CCAMLR seeks to balance the immediate need of mankind to utilize wildlife against the long term goal of their preservation.

Future worldwide international agreements for the protection of terrestial wildlife and marine animals not covered by CCAMLR should incorporate the ecosystem approach laudably pioneered by CCAMLR. Although existing international treaties such as CITES have been

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218. Favre, *supra* note 35, at 267. *See also* Linder, *supra* note 38, at 195-98 (discussing the merits of an ecosystem approach to species preservation over a species-by-species approach). Species preservation has too often in the past been hampered by human preference for one type of animal over another. For example, "the preference for giant pandas over worms is mainly aesthetic, as the panda has an infinitely greater capacity to amuse and delight." *Id.* at 197.

219. S. LYSTER, *supra* note 3, at 157.

220. *Id.* The eighteen Parties are Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa, U.K., U.S.A., USSR, Spain, Sweden, and the European Economic Community. *Id.* at 157-58.

221. Kindt & Wintheiser, *supra* note 124, at 356.

222. S. LYSTER, *supra* note 3, at 96.

223. Belsky, *supra* note 154, at 761.

shown to be helpful, species of wildlife will continue to fade into extinction, unless the primary focus is on both the preservation of habitat integrity and the maintenance of the complex interdependency of wildlife. Like CCAMLR, conservation of wildlife species in future agreements cannot be subordinated to man's need to harvest them.

Moreover, nowhere on Earth is this approach more needed than in tropical rainforest environments, the greatest depositories on Earth for genetic diversity.[224] In the final analysis, ecosystem and habitat conservation strategies are the best way to further international environmental policies which seek to preserve global genetic diversity among wildlife.

B. *Other Wildlife Preservation Strategies*

In the intervening time until a worldwide treaty for wildlife habitat is drafted, there are other interim protection measures that might be implemented which would help preserve wildlife. One of the most influential would be to enforce existing treaties more aggressively.[225] For example,

> The early European migratory bird treaties, the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere and the African Convention on the Conservation of Nature and Natural Resources, have all proved relatively ineffectual because, among other things, none of them established a system of administration to monitor and oversee their enforcement. They have become "sleeping treaties" which have been allowed to drift from the forefront of their Parties' attention, and, in consequence, have had nothing like as much practical impact as they might have done if they had been given the proper encouragement.[226]

In particular, the degree of compliance with wildlife treaties has been directly correlated to the establishment of a "central administrative body to oversee enforcement" and a "means of chastising Parties which do not comply with their treaty obligations."[227] Also, future and

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224. *See supra* text accompanying notes 91-110.

225. S. LYSTER, *supra* note 3, at 301.

226. *Id.* Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere, *opened for signature*, 12 Oct. 1940, *entered into force*, 30 Apr. 1942, 161 U.N.T.S. 193, U.S.T.S. 981, 56 Stat. 1374; African Convention on the Conservation of Nature and Natural Resources, *opened for signature*, 15 Sept. 1968, *entered into force* 7 May 1969.

227. S. LYSTER, *supra* note 3, at 301.

existing treaties should encourage the participation of nongovernmental organizations (NGOs). NGOs are represented by diverse "private conservation groups and economic lobby groups."[228] Despite their occasional conflict of interests, most legal scholars credit NGOs with substantial influence in "international environmental policy making."[229] They have been instrumental in the drafting of many "treaties and international cooperative arrangements."[230] However, NGOs' primary influence and advantage are that with respect to the formation and "execution of international policy they may act more rapidly and directly, . . . with less risk to national sensitivities than can the offical intergovernmental agencies."[231]

Another possible avenue of global wildlife conservation lies in the establishment of international parks.[232] While no international park exists at the time of this writing,[233] the creation of international parks would go far towards achieving both protection of wildlife habitat and establishing the concept of wildlife as a common heritage among the nations of the world.[234] A last, but very important, strategy for wildlife preservation is the pursuit and subsequent sharing of research data.[235] The importance of "first class biological research"[236] cannot be under-

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228. Comment, *supra* note 8, at 125 n.95. Examples of NGOs include "Greenpeace International, International Exotic Leather Council, World Wildlife Fund, International Fur Trade Federation, International Pet Trade Organizations, Sierra Club, Canadian Sealers Association and Defenders of Wildlife." Faure, *Tension Points Within the Language of the CITES Treaty*, 5 B.U. INT'L L.J. 247, 248 n.4 (1987). Others are the International Council of Scientific Unions (ICSU) and the International Union for Conservation of Nature and Natural Resources (IUCN). L. CALDWELL, *supra* note 3, at 266.

229. L. CALDWELL, *supra* note 3, at 264.

230. *Id.* The International Union for the Conservation of Nature and Natural Resources (IUCN) is credited as being the impetus behind the formation of CITES. Faure, *supra* note 228, at 248-49; Chopra, *supra* note 24, at 226.

231. Caldwell, *supra* note 3, at 264.

232. *Id.* at 209-10. Another legal commentator proposes a similar concept but calls it an "ecological reserve." Versteeg, *supra* note 24, at 296. "An ecological reserve may be defined as a legally protected natural area where human influence is kept to a minimum. While an established ecological reserve will serve a multiplicity of purposes, two primary goals include the preservation of the habitat of vulnerable flora and fauna and the conservation of genetic resources to promote biological diversity." *Id.* "Parks, national forests, wildlife sanctuaries, wilderness areas and the like" are believed by many people at the present time to constitute "humankind's principal effort to preserve the world's biological diversity." Lewis & Wood, *supra* note 42, at 20.

233. L. CALDWELL, *supra* note 3, at 209.

234. *Id.*

235. *Id.* at 263.

236. Comment, *supra* note 99, at 271.

scored. Man is just beginning to unravel the complex dynamics of ecosystems, and thorough knowledge is the essential foundation for any measures of wildlife and habitat preservation, whether they be the formation of international agreements or parks. Furthermore, the nations of the world have to share their learning. If wildlife is viewed as a common heritage among mankind, so must be the knowledge necessary to conserve animal species. Future and existing treaties should provide both for international cooperation and methods of funding for biological research. Environmental problems transcend state boundaries, and the sharing of data is vital to remedial action. The tragic accident at Chernobyl is sad testimony of where one nation, the USSR, stood mute in the face of ecological catastrophe by initially denying a nuclear accident.[237] The nations of the world must not adopt a similar posture of non communication with respect to the extinction of wildlife species.

VI. CONCLUSION

> The death of a species is profound, for it means nature has lost one of its components, which played a role in the interrelationship of life on earth.
>
> Here the cycle of birth and death ends. Here there is no life, no chance to begin again — simply a void. To cause the extinction of a species, whether by commission or omission, is unqualifiedly evil. The prevention of this extinction . . . must be a tenet among man's moral responsibilities.[238]

Wildlife species are among the world's most precious natural resources. Tragically though, many of these animals face extinction by the advent of the twenty-first century. Although the extinction of life forms has been a natural phenomenon throughout the billions of years of the earth's evolution, the present loss of animal life is alarming. While extinction can occur from many factors, the current unprecendented loss is primarily attributed to habitat destruction resulting

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237. "The Chernobyl plant 600 miles southwest of Moscow was the site of the world's worst nuclear power accident in April, 1986 when, during an unauthorized experiment, an explosion of radioactive material contaminated much of Europe." The Miami Herald, Nov. 5, 1987, sec. A, at 21, col. 1. Since then, there have been 36 more nuclear accidents at the Chernobyl. While not as catstrophic as the one in 1986, these accidents have resulted in an unspecified number of deaths attributed to "sloppy work practices and poor management." *Id.*

238. Senator Alan Cranston, 116 Cong. Rec. 17, 198 (1970), *quoted in* Travalio & Clement, *supra* note 56, at 206.

from man's reckless exploitation of the natural environment. Biological science has demonstrated that habitat preservation is the crucial foundation for preventing wildlife extinction.

The international community has become more sensitive to the plight of wild creatures in recent decades. Although receiving no guidance from customary international law or international jurisprudence, nations of the world have drafted agreements focusing on the preservation of wildlife. The most exemplary of these treaties is the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES). CITES has been very successful in protecting many animals from abusive trade but suffers from flaws that impeded its purpose, the principal of these being the failure to provide protection for wildlife habitat. Although limited in its participation by the members of the international community, the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) bridges the essential evolutionary gap in wildlife conservation by incorporating into the agreement consideration of the whole ecosystem where the animal is found. CCAMLR's ecosystem approach can serve as a laudable model for the future drafting of an essential global wildlife treaty aimed at the protection of endangered species by preserving their critical habitat. Finally, other conservation measures which would supplement a world-wide wildlife habitat agreement are the more aggressive enforcement of existing wildlife treaties, the creation of international parks, the encouraged participation by nongovernmental organizations (NGOs), and the pursuit of scientific knowledge on ecosystem dynamics.