

RESOLVING THE TRAGEDY OF
THE COMMONS BY CREATING PRIVATE
PROPERTY RIGHTS IN WILDLIFE

Robert J. Smith

During man's relatively brief existence on this planet, he has relied on the bounty of its flora and fauna for his existence. He has harvested wildlife for food, clothing, shelter, medicines, beasts of burden, pets, and companionship. Over most of this period, this harvesting and exploitation had little impact on those resources. Human population was very low, and most animal and plant populations were relatively large. Animal and plant communities, populations, and species that became extinct did so from other than human causes. Only in recent centuries has man's exploitation of wildlife begun to have a deleterious effect. This was the result of rapid population growth, more efficient means of capture and kill, and expansion into new continents, especially islands and tropical areas where many species of wildlife had evolved with small, localized populations and without contact with man or his camp followers, such as dogs, cats, and rats. Western exploration and colonization quickly created serious problems of overharvesting and overexploitation of wildlife and led to a slow development of human-caused extinctions.

However, there is increasing evidence that primitive man also had a profound impact on many species. Humans did not live in the idyllic harmony with nature that has been so rapturously portrayed by the more romantic environmentalists who question the direction of modern life and call for a new environmental ethic. At least

Cato Journal, Vol. 1, No. 2 (Fall 1981). Copyright © Cato Institute. All rights reserved.

The author is an economic consultant in Washington, D.C.

This paper was prepared for "Property Rights and Natural Resources: A New Paradigm for the Environmental Movement," a conference held in December 1980 and sponsored by the Cato Institute and the Center for Political Economy and Natural Resources, Montana State University, Bozeman.

some of the large mammals, such as mammoths and mastodons, that roamed the earth during the Pleistocene Epoch and immediately thereafter and whose disappearance has been attributed to natural causes, were forced into extinction by primitive men with primitive tools. They drove herds over cliffs, into swamps, or into box canyons, often setting massive grassland fires to assist in the drive.

It would appear that precivilized, or at least preindustrial, man exploited wildlife just as carelessly and as effectively as does modern man. The mythologized American Indians also used wasteful and ecologically unsound methods of hunting and killing. Regarding the Plains Indians' exploitation of the buffalo, Baden, Stroup, and Thurman point out that

it is generally held that these highly diverse groups shared a common reverence for the land and the interdependencies of nature that provided man his niche. . . . The actual behavior attributed to these cultures reads like an admonition from Francis of Assisi, the patron saint of the ecology movement.

Prior to the introduction of the horse, the hunting of bison was uncertain, and relatively unproductive. In the pre-horse period the capture of a buffalo was comparatively rare. Its biomass was highly valued and hence fully utilized.

In effect, the introduction of the horse, steel tools and later firearms lowered the "price" of the animal. As the price fell due to technological adaptation, patterns of utilization changed dramatically. During this period many buffalo were killed by Indians merely for the tongue and the two strips of back strap. By 1840 the Indian had driven the buffalo from portions of its original habitat.¹

It is not true, however, that the Indians' "wasteful" use of wildlife occurred after the introduction of white man's tools. There is abundant evidence that the Indians engaged in wasteful harvesting methods whenever the opportunity arose. Long before they had horses and rifles, the Plains tribes regularly set vast prairie fires in the late summer and fall in order to stampede buffalo herds over cliffs or bluffs. "A successful drive produced a large number of carcasses, often more than could be used before the meat spoiled. . . . At a large kill much of the meat spoiled before it could be processed."² Fires were so commonly used that millions of acres were blackened each year. The Washo tribe of the Great Basin lived in an extremely hostile environment, barely eking out a precarious ex-

¹John Baden, Richard L. Stroup, and Walter Thurman, "Good Intentions and Self-Interest: Lessons from the American Indian," in *Earth Day Reconsidered*, ed. John Baden (Washington, D.C.: The Heritage Foundation, 1980), pp. 7-9.

²Francis Haines, *The Buffalo* (New York: Thomas Y. Crowell, 1970), p. 20.

istence, yet, during the fall they would drive such enormous numbers of jackrabbits into their nets that after the skins were taken, the meat was left to rot.³

Overexploitation of wildlife is not a peculiar characteristic of Western man, nor is it a consequence of some form of the modern economic system or the much maligned "commerce" so frequently condemned by environmentalists. Whenever and wherever there have been incentives to overharvest or deplete wildlife it has taken place, whether by primitive or modern man.

While the environmental movement comprises a diverse amalgamation of different groups, with concerns ranging from visual "pollution" such as clear-cuts, to chemical- and smoke-induced damage to human health, the glue that binds the groups is wildlife conservation and preservation. Even here there is a wide and growing chasm among organizations. The more "conservative" groups are interested in wildlife management, such as increasing the numbers of commonly hunted species of fish and game. The "middle-of-the-roaders" are interested in developing sustained-yield management programs for species where it is clear that wise management and international cooperation can achieve better results than ending all harvesting. The "liberals" push for an end to the exploitation of most species and a complete ban on all trade in most threatened wildlife. Finally, there are the animal rights groups, the "radicals," who value the rights of animals to life and liberty at least as highly as human rights.

The growth, influence, and public support of these organizations has increased rapidly over the past two decades. Since 1970, conservationists have painted a dismal picture of an increasing struggle for survival of wildlife, with one species after another being pushed to the brink of extinction. There is no doubt that human-caused extinctions are occurring at an increasing rate and generating momentum for the environmental movement.

Norman Myers treats the problem of disappearing species in considerable detail and emphasizes the accelerated rate of extinction:

At least 90% of all species that have existed have disappeared. But almost all of them have gone under by virtue of natural processes. Only in the recent past, perhaps from around 50,000 years ago, has man exerted much influence. As a primitive hunter, man probably proved himself capable of eliminating species, albeit as a relatively rare occurrence. From the year A.D. 1600, however, he became able, through advancing technology, to overhunt animals

³James F. Downs, *The Two Worlds of the Washo: An Indian Tribe of California and Nevada* (New York: Holt, Rinehart and Winston, 1966).

to extinction in just a few years, and to disrupt extensive environments just as rapidly. Between the years 1600 and 1900, man eliminated around seventy-five known species. . . . Since 1900 man has eliminated around another seventy-five known species. . . . The rate from the year 1600 to 1900, roughly one species every 4 years, and the rate during most of the present century, about one species per year, are to be compared with a rate of possibly one per 1000 years during the "great dying" of the dinosaurs.⁴

Since 1960, human population growth and worldwide development have greatly accelerated the extinction rate, which may have reached 1,000 species per year by 1975. Myers projects that by the late 1980s it may reach one species per hour.⁵ This is, indeed, a dismal picture, and it is important to recognize that it is not merely small and local populations of wildlife that have suffered. Many animal species that have disappeared or have been drastically reduced were at one time found in truly enormous numbers.

The passenger pigeon, which was native to North America, was once probably the most numerous species of bird on earth. At its peak, its population may have numbered around 3 billion. Its migrating flocks darkened the skies over towns and cities and sounded like an approaching tornado, yet they were extinct by 1914, mainly because of massive market-hunting. A similar fate befell the great auk, a large, flightless seabird that nested in vast numbers on islands in the North Atlantic. It was exterminated by whalers and fishermen who slaughtered it for food, eggs, feathers, and oil.

Many other species that survived overexploitation, although often only barely so, were slaughtered in equally staggering numbers. The Spanish explorers described the buffalo herds as a limitless "brown sea." At one time, 75 million roamed the western plains, but by 1895 there were little more than 800 left, most in captivity or on private ranches. Vast flocks of ducks, geese, prairie chickens, and shorebirds were decimated by market hunters to provide relatively inexpensive meat for the large cities. Naturalist Frank Graham, Jr., points out:

In 1873 Chicago markets bought 600,000 prairie chickens at \$3.25 a dozen. Frank M. Chapman, the ornithologist, recalled as a boy in

⁴Norman Myers, *The Sinking Ark* (Oxford: Pergamon Press, 1979), p. 4.

The distinction between natural and human-caused extinction seems to be a philosophically loaded one. Once we make human beings some special type of causative agent apart from the rest of nature, it is very easy to begin to single out specific groups of humans as "good" or "bad," e.g., conservation organizations are good and multinational timber companies are bad. What does it matter to the species whether its extinction results from natural or human causes?—it is just as dead.

⁵*Ibid.*, pp. 4-5.

RESOLVING THE TRAGEDY OF THE COMMONS

the 1870s the glut of prairie chickens in the butcher shops. . . . By the end of the century he had to travel to the sand hills of Nebraska to find them in any numbers.⁶

It is obvious, however, that not all natural resources or wildlife have disappeared or even been seriously depleted. Environmentalists, journalists, and writers draw our attention to the most shocking cases. But there are many species that are more common today than they were at any previous time. Many plant and animal species exist in large numbers today that were not present in North America before the arrival of the white man. Furthermore, certain animals and plants are thriving under some specific ownership and management conditions but vanishing under other conditions. It is extremely important to examine these cases in order to understand why overexploitation of some resources and wildlife takes place and why other living or renewable resources are managed on a self-sustaining basis.

Why are some species disappearing and others thriving? First, we can examine what is disappearing and what is not. Apparently, few environmentalists have taken the time to do this in their haste to catalog extinct and vanishing species. It is true that the prairie chicken nearly vanished—the heath hen is extinct, the Atwater's greater prairie chicken has been reduced to endangered species status, and the rest are uncommon, localized, and greatly reduced in numbers—but what about other chickens? Why is the Atwater's greater prairie chicken on the endangered species list but not the Rhode Island Red, the Leghorn, or the Barred Rock? These chickens are not even native American birds. They came to this continent with the first European settlers, and the small flocks at the settlement in Jamestown, Virginia, in 1607 became the basis for a broiler industry that produces 3 billion birds a year.⁷

Similar questions can be asked: Why was the American buffalo nearly exterminated but not the Hereford, the Angus, or the Jersey cow? Why are salmon and trout habitually overfished in the nation's lakes, rivers, and streams, often to the point of endangering the species, while the same species thrive in fish farms and privately owned lakes and ponds? Why do cattle and sheep ranchers overgraze the public lands but maintain lush pastures on their own property? Why are rare birds and mammals taken from the wild in

⁶Frank Graham, Jr., *Man's Dominion: The Story of Conservation in America* (New York: M. Evans and Co., 1971), pp. 23–24.

⁷Robert E. Cook, Harvey L. Bumgardner, and William E. Shaklee, "How Chicken on Sunday Became an Anyday Treat," in *The 1975 Yearbook of Agriculture: That We May Eat* (Washington, D.C.: Government Printing Office, 1975), p. 125.

a manner that often harms them and depletes the population, but carefully raised and nurtured in aviaries, game ranches, and hunting preserves? Which would be picked at the optimum ripeness, blackberries along a roadside or blackberries in a farmer's garden?

In all of these cases, it is clear that the problem of overexploitation or overharvesting is a result of the resource's being under public rather than private ownership. The difference in their management is a direct result of two totally different forms of property rights and ownership: public, communal, or common property vs. private property. Wherever we have public ownership we find overuse, waste, and extinction; but private ownership results in sustained-yield use and preservation. Although it may be philosophically or emotionally pleasing to environmentalists to persist in maintaining that wildlife, the oceans, and natural resources belong to mankind, the inevitable result of such thinking is the opposite of what they desire.

Harold Demsetz defines communal ownership as

a right which can be exercised by all members of the community. . . . The community denies . . . to individual citizens the right to interfere with any person's exercise of communally-owned rights. Private ownership implies that the community recognizes the right of the owner to exclude others from exercising the owner's private rights. . . .

Suppose that land is communally owned. . . . If a person seeks to maximize the value of his communal rights, he will tend to overhunt and overwork the land because some of the costs of his doing so are borne by others. The stock of game and the richness of the soil will be diminished too quickly. . . .

If a single person owns the land, he will attempt to maximize its present value by taking into account alternative future time streams of benefits and costs and selecting that one which he believes will maximize the present value of his privately-owned land rights. . . . It is very difficult to see how the existing communal owners can reach an agreement that takes account of these costs.⁸

It is important to recognize that this distinction between the destructive overuse of common property resources and careful sustained-yield use of private property resources does not merely apply to a comparison of wild with domesticated populations of plants and animals.

Common property problems involving wildlife have been especially prevalent in America, and they continue to be extremely vex-

⁸Harold Demsetz, "Toward a Theory of Property Rights," *American Economic Review* 57 (May 1967): 354-56.

RESOLVING THE TRAGEDY OF THE COMMONS

ing precisely because of American wildlife law. The President's Council on Environmental Quality has stressed that "under U.S. law, native wildlife belongs to the people; it is not private property, even on private land."⁹ Victor B. Scheffer points out that

wildlife in the United States is the property of the people. . . . No animal may be reduced to private ownership except by permission of the state. Wild animals do not belong to the owner of the land upon which the animals live, though the owner can post his land against entry and thus restrain the public from using its property.¹⁰

In Europe, native wildlife often belongs to private landowners or is managed under a combination of private and public property. Some European countries have fewer problems of overexploitation of wildlife, regardless of population pressures and economic and political systems. In other words, we find precisely what economic analysis has predicted about the treatment of common property and private property wildlife resources.

The salmon fishery provides a nearly perfect example of the differences between private and common property management. Salmon are anadromous fish. They hatch in the clear, shallow waters of the upper reaches of rivers, go downstream to the sea where they grow to maturity, and then return upstream to spawn another generation in the same rivers where they were hatched. Management of a fishery should be a relatively low-cost operation because the only requirements are to maintain a high-quality spawning environment and to prevent overfishing. The fish don't need to be fed because they grow to maturity in the sea and return as a highly valuable source of protein.

Yet most of the salmon in the United States have either disappeared from their ancestral rivers or are being rapidly depleted precisely as a result of their being treated as part of the common heritage. As a common property resource, they belong to everyone, can be caught by everyone, and essentially belong to no one. They run a gantlet of competing users at every stage of their migration. They are sought at sea by commercial fishing boats, off the river mouths by sports fishermen, in the rivers by netting operations, and upstream by rod fishermen and Indians, all of whom are interested in taking all the salmon they can before others do. In addition, foreign fishing fleets take all the salmon they can beyond the

⁹Council on Environmental Quality, *The Sixth Annual Report of the Council on Environmental Quality* (Washington, D.C.: Government Printing Office, 1975), p. 257.

¹⁰Victor B. Scheffer, *A Voice for Wildlife: A Call for a New Ethic in Conservation* (New York: Charles Scribner's Sons, 1974), p. 138.

200-mile limit. Furthermore, the rivers are also common property; dams and logging operations often make them impassable, and pollution makes them uninhabitable.

Because no one owns the salmon, each user is pitted against all other users, and the result has been a rapid depletion of the stock. As each group catches fewer fish, they turn to the government for special legislation that will limit, control, and regulate the catch and the fishing techniques used by their competitors. As a result, fishing techniques have become increasingly inefficient and costly. But this still does not prevent overfishing.

Douglass C. North and Roger LeRoy Miller have commented on the alarming decline of the Bristol Bay salmon fishery in Alaska.

In an attempt to reverse the trend, regulations over the season, fishing hours, boats, and gear increased in complexity. . . .

Naturally, the results in real life are more like a nightmare than a fairy tale. Fishermen are poor because they are forced to use inefficient equipment and to fish only a small fraction of the time, and of course there are far too many of them. The consumer pays a much higher price for red salmon than would be necessary if efficient methods were used. Despite the ever-growing intertwining bonds of regulations, the preservation of the salmon run is still not assured.

The root of the problem lies in the current non-ownership arrangement. It is not in the interests of any individual fisherman to concern himself with perpetuation of the salmon run. Quite the contrary: It is rather in his interests to catch as many fish as he can during any one season.¹¹

The consequence of treating the salmon as common property has been to destroy the salmon resource and to waste economic resources through regulations. John Baden describes the results:

The regulations are such that it is increasingly more difficult and more expensive to obtain salmon. . . . The state and federal regulations are now such that salmon . . . have a negative social value, if one includes the cost of government management of the industry. Given current institutions, society would be better off if the salmon disappeared; it costs society more to get a salmon than it is worth for food.¹²

The environmental literature has reported at length on the sad plight of the salmon fisheries; but many authors appear either to be

¹¹Douglass C. North and Roger LeRoy Miller, *The Economics of Public Issues*, 2d ed. (New York: Harper & Row, 1973), pp. 109-11.

¹²John Baden, "Persona Grata: An Interview with John Baden," *World Research Ink* (November-December 1979), p. 22.

RESOLVING THE TRAGEDY OF THE COMMONS

unaware of common property theory or, worse, to ignore it because it clashes with their philosophical view that wildlife should belong to everyone. So we continue to read their attacks on profit-seekers, free enterprise, big business, and a consumptionist lifestyle. And we continue to watch the salmon disappear.

Fortunately, salmon are a highly desirable fish, and American entrepreneurs are attempting to remove them from the common property trap, even though they generally run afoul of our wildlife laws, which act to prevent private property solutions. Obviously, under a common property system, there is no incentive for any user to restock the fishery by creating a private hatchery because everyone else would merely receive a cost-free benefit from his investment. But attempts at salmon mariculture or farming are being made where private owners can avoid the problem of having their fish migrate along common property rivers.

One such effort is being made by Bay Center Mariculture Company in Washington State. Until recently, raising salmon in ponds in order to market them for profit was not permitted in Washington, although taxpayer-supported state fish hatcheries were used to help alleviate overexploitation. Bay Center reports:

It has been discovered in recent years that salmon go through their early development and growth much faster in brackish water than in the fresh water we are accustomed to expect them in during their early life. . . . We take advantage of this by both sea-farming salmon and raising them to market size in controlled ponds. Because of the specificity of salmon to return to the spot of their birth, it is possible to release them at an early age and allow them to mature in the sea and return to the hatchery site a year earlier than they would if raised in nature in freshwater streams. The expected return is a very small percentage, but still very profitable.¹³

In 1977 Weyerhaeuser initiated a similar system in southern Oregon, where the young salmon will be raised in ponds at the head of a bay and then released into the bay, whence they will go out to sea. They will not be able to prevent fishermen from catching the returning salmon at the mouth of the bay, but Weyerhaeuser expects to make a profit if one percent of the adult salmon return to the company's fish ladders. In the wild, approximately 2 to 5 percent of the salmon survive to return to their spawning grounds.

Such programs not only solve wildlife conservation problems at private rather than at taxpayer expense, but they reduce the take

¹³Bay Center Mariculture Company brochure, Bay City (Willapa Bay), Wash., n.d.

on the wild common property populations and, as a positive externality, provide food for the wild food chain.¹⁴

Outside the United States we find a strikingly different situation. In Iceland and in some northern European countries, the salmon fishery is in much healthier shape because the rights to the salmon or the salmon rivers are privately owned. Some of the finest stretches of rivers are owned or leased by individuals, groups of fishermen, or fishing lodges, and the salmon are not overfished. It is in the economic self-interest of the resource owners to conserve the salmon. Limits are effectively placed on the number of fish that can be caught, enough fish are released to maintain a healthy population, and the owners carefully protect their streams and see that agricultural and grazing activities do not adversely affect the quality of the water.

In Iceland private property rights have also been extended to the common eider, a large sea-dwelling duck of the North Atlantic. The eider supplies meat, eggs, and especially eiderdown (a brownish down under the breast feathers of the female that she plucks for her nest to insulate the eggs) for the farmers and local populations. As early as 1281, the civil and ecclesiastical codes stated that the eiders "belong to the occupiers of the lands where they occurred." The farmers have protected the eider nesting colonies for centuries and actually farm them. Robin W. Doughty writes:

Skuli Magnusson, pioneer agriculturalist and industrialist, and others, who protected and farmed the nesting places of wild eiders for down and eggs, promoted the concept of farming. In the 1770s, Magnusson protected a very large colony on the island of Videy, where reportedly he gathered and cleaned about 90 pounds of down from his "favorite" birds. On a visit to the same place in 1810, Sir George MacKenzie noted that eider ducks were "assembled in great numbers to nestle," and that severe penalties were imposed on persons killing them.¹⁵

The number of such farming operations grew during the nineteenth century and peaked during the 1920s, when there were more than 250 farms. Because many farmers have moved into towns, the number of farms has declined, currently totaling about 200, and eiderdown production is now about half of its peak fig-

¹⁴Another interesting experiment is being conducted by Maine Sea Farms, where the common property problem has been eliminated by raising the salmon in a fenced sea-water cove. They are fed a special diet of ground shrimp and crab, achieve a nearly 50 percent survival rate, and are marketed twenty months later as 9- to 12-ounce "yearlings" in the luxury fresh fish markets of the Northeast.

¹⁵Robin W. Doughty, "Farming Iceland's Seafoal: The Eider Duck," *Sea Frontiers* (November-December 1979), p. 346.

ures. One result of this decline has been an increase in predation on the eiders by gulls, ravens, and feral mink and fox. Even though the number of wild predators has increased, the eider are still carefully protected on the existing farms, where property owners shoot and poison predators.

Iceland's management of the wild eider as a private property resource has been a great success. The private eider farms have benefited both the property owners and the eider population. The farmers have protected the birds from overexploitation, from poachers, and from natural predators. They have also created artificial nesting sites in which the female will nest. The combined provision of protected nesting areas and artificial nesting sites has served to maintain a thriving population.

The individual self-interest of private property owners has caused them to protect and carefully manage a valuable wildlife resource. Because private property rights were extended to the wild eider, the harvesters of eiderdown and eider eggs were allowed to manage the resource in a nonconsumptive and non-destructive manner. If they had killed the eider to obtain the down, they would have been killing the fabled golden goose. Instead, they harvested the resource on a sustained-yield basis and realized a far greater return.

If the eider had been treated as a common property resource, the only way the Icelanders could have captured any economic value from the resource would have been to take all they could before other users did the same. It would not have been profitable to wait for the eider to line their nests with down; someone else might have collected it first. The rational course of action for each user would have been to kill the eider and immediately appropriate all of the down. It also would not have been in anyone's self-interest to invest in conservation programs, such as nest site construction or predator control. All of the other down collectors would have benefited from the actions of the conservationist. We would have seen the creation of a new fable: "Who killed the eider that provided the golden down?"

It is also instructive to compare wildlife ownership and management in Great Britain with that in the United States. Throughout much of British history, the right to harvest wildlife belonged to owners of the land.¹⁶ For centuries landowners in England were entitled by law to the wildlife on their lands. This was supported by

¹⁶For an important discussion of British and American wildlife laws, see Thomas A. Lund, *American Wildlife Law* (Berkeley and Los Angeles: University of California Press, 1980.)

"qualification statutes," which determined the amount of land or income that was necessary in order to have the right to own and harvest game. The landowner owned the game, and he had the right to what was supported by his land. It was recognized that the economic incentives engendered by the right to own wildlife often led the landowners not to use their land for agricultural purposes that would be harmful to wildlife. To the extent that wildlife was valued as a source of economic gain, or even of hunting pleasure, wildlife would be protected, and it would be hunted on a sustained-yield basis to ensure the preservation of breeding stock and the continuous replenishment of the population. Landowners even employed gamekeepers who managed the game, protecting it against predators, preserving habitat, and guarding against poachers.¹⁷

The evidence indicates that there have been far fewer problems of vanishing wildlife in Britain than in the United States. We can still witness the benefits of the private ownership system in the management of Britain's most famous game bird, the red grouse. The opening of grouse season each August is reverently referred to as the "Glorious Twelfth." So highly prized and desired are the grouse that restaurants throughout the London area compete to see which can deliver the first meal of grouse. Commercial airlines, private jets, and even helicopters are used in the race, and the resulting roast grouse may cost \$85.

The grouse are clearly a valuable resource, and they provide a substantial income to the landowners of the great estates in Scotland, where wealthy hunters gather to participate in the hunts. Reservations for the shoots are required well in advance, and social status and wealth may be necessary in order to hunt on the best and most productive lands. Landowners obviously have incentives to carefully manage the grouse on a sustained-yield basis, to keep the habitat in prime condition, to prevent the heather from being burned, to control predators, and to keep out poachers. As a result, the birds are not overexploited, in spite of heavy shooting and even though commercial marketing is allowed. Compare the results of

¹⁷Opponents of private ownership of wildlife have occasionally used the example of overzealous attempts by English gamekeepers to destroy all predatory species of birds and mammals as an argument against the system. However, much of that happened long before the enlightened understanding of the role of predators in the ecosystem. Furthermore, this hardly seems a convincing argument in view of the incalculable loss of predators in the United States resulting from three centuries of shooting, poisoning, and trapping of predators by local, county, state, and federal government agents, as well as an enormous payout in bounty fees by the government to private citizens for eliminating predators and "nuisance" animals.

this system with the overexploitation of the American prairie chicken.

Unfortunately, because so much of the ownership of land in Britain, especially the great estates, was based on government grants of privilege, the landowner's property right to wildlife increasingly came under attack as a special privilege accorded to the wealthy. In the eighteenth century, the great egalitarian and democratic debates over property rights in land and wildlife resulted in America's rejection of the English system. Private property rights in wildlife and game were viewed as part of an undemocratic system emanating from government grants to the ruling classes. But in rejecting them, Americans threw out the baby with the bath water. The English system was attacked because it supposedly benefited the rich at the expense of the poor, and it was held that wildlife in America should belong to all. From the earliest time American law adopted a policy of "free taking," which recognized everyone's right to take game. Only the law of trespass kept anyone from entering another's property, and its efficacy was severely restricted by the requirement that the land be posted against hunting if the owner wanted exclusive use of it.

Thomas A. Lund essentially approves of the egalitarian approach to wildlife law. Nevertheless, he states:

Early American law sought to dispatch the antidemocratic vices of its legacy while at the same time to preserve the system's virtues. . . . Following these seemingly harmless improvements to the English system, American wildlife populations fell as if afflicted by a plague. While the incursion of new settlers into habitat played a role in this decline, subsequent proof that wildlife can coexist and even thrive alongside agricultural development shows that the spread of primitive farming and ranching does not bear principal responsibility. Instead the affliction upon wildlife must be attributed to a surprising source: those democratic policies that were injected into wildlife law. Their unforeseen impact was to undercut totally the bases upon which English wildlife law had been so effective.¹⁸

Another especially illustrative example of private property rights in wildlife appears in the Montagnais Indians of Quebec and Labrador.¹⁹ The Montagnais dwelled in the forests of the Labrador Peninsula, hunting such fur-bearing animals as caribou, deer, and

¹⁸Lund, *American Wildlife Law*, p. 103.

¹⁹This remarkable development of private property rights in land and especially in wildlife by an aboriginal people was first treated by anthropologists Frank Speck and Eleanor Leacock. More recently it has been subjected to economic analysis by Harold Demsetz and by John Baden, Richard Stroup, and Walter Thurman. See

beaver. They treated wildlife as a common property resource, with everyone sharing in the bounty of the hunt. Because game was plentiful and the Indian population was relatively low, the common property resource system was able to work. "The externality was clearly present. Hunting could be practiced freely and was carried on without assessing its impact on other hunters. But these external effects were of such small significance that it did not pay anyone to take them into account."²⁰

However, with the arrival of the French fur traders in the 1600s, the demand for beaver began to rise rapidly. As the value of the furs rose, there was a corresponding increase in the exploitation of the resource. Increasing use of the common property resource would have led to overexploitation of the beaver. However,

with the beaver increasing in value, scarcity, depletion, and localized extinction could be predicted under the existing system of property rights. But unlike the buffalo, virtually condemned to extinction as common property, the beaver were protected by the evolution of private property rights among the hunters. By the early to mid-18th century, the transition to private hunting grounds was almost complete and the Montagnais were managing the beaver on a sustained-yield basis.²¹

It was a highly sophisticated system. The Montagnais blazed trees with their family crests to delineate their hunting grounds, practiced retaliation against poachers and trespassers, developed a seasonal allotment system, and marked beaver houses.

Animal resources were husbanded. Sometimes conservation practices were carried on extensively. Family hunting territories were divided into quarters. Each year the family hunted in a different quarter in rotation, leaving a tract in the center as a sort of bank, not to be hunted over unless forced to do so by a shortage in the regular tract.²²

This remarkably advanced system lasted for over a century and certainly served to prevent the extinction of the beaver. Unfor-

Frank G. Speck, "The Basis of American Indian Ownership of Land," *Old Penn Weekly Review* (January 16, 1915); idem, "A Report on Tribal Boundaries and Hunting Areas of the Malechite Indians of New Brunswick," *American Anthropologist* 48 (1946); Eleanor B. Leacock, "The Montagnais 'Hunting Territory' and the Fur Trade," *American Anthropologist* 56, no. 5, pt. 2, memoir no. 78 (October 1954); Demsetz, "Toward a Theory of Property Rights"; and Baden, Stroup, and Thurman, "Good Intentions and Self-Interest."

²⁰Demsetz, "Toward a Theory of Property Rights," pp. 351-52.

²¹Baden, Stroup, and Thurman, "Good Intentions and Self-Interest," p. 10.

²²Demsetz, "Toward a Theory of Property Rights," p. 353.

RESOLVING THE TRAGEDY OF THE COMMONS

tunately, more whites entered the region and began to treat the beaver as a common property resource, trapping them themselves rather than trading with the Indians, and the beaver began to disappear. Finally, the Indians were forced to abandon their private property system and joined the whites in a rapid overexploitation of the beaver. Baden, Stroup, and Thurman sum up this sorry return to a common property system:

With the significant intrusion of the white trapper in the 19th century, the Indian's property rights were violated. Because the Indian could not exclude the white trapper from the benefits of conservation both joined in trapping out the beaver. . . . In essence, the Indians lost their ability to enforce property rights and rationally stopped practicing resource conservation.²³

Another example of how private ownership can successfully preserve wildlife is found on game ranches, hunting preserves, safari parks, and animal and bird farms. Many of these private ventures, especially the game ranches, were established to generate profits from private hunting. Consequently, there has been a tremendous outcry from environmentalists and conservationists because the animals are raised for profit and some of them are killed. Yet, if emotional responses can be put aside, it seems clear that these game ranches produce many positive results. Many of the animals they stock are rapidly disappearing in their native countries because of pressures resulting from a rapidly expanding human population. Native habitats are disappearing through the encroachment of agriculture, cattle grazing, timber harvesting, and desertification arising from overexploitation of common property water resources, overgrazing of grasslands, and overutilization of brush, scrub, and trees for firewood and shelter. So serious are these problems and so insoluble under a common property system that there is little hope of saving many species of wildlife in the developing countries. Indeed, some of the more spectacular and most sought-after big-game mammals may now have healthier and more stable populations on some of the game ranches than in their native countries.

As human population growth accelerates throughout the Third World, as annual incomes hover at the subsistence level, and as rising costs of petroleum and agricultural fertilizers and chemicals continue to compound the misery, fewer and fewer internal resources will be available to preserve wildlife. In spite of the noble intentions of India and some African and South American nations to preserve their vanishing wildlife, there are few signs of any real

²³Baden, Stroup, and Thurman, "Good Intentions and Self-Interest," pp. 10-11.

accomplishments. Impoverished people have little patience with elephants rampaging through their meager crops or with lions, cheetahs, and leopards preying on their livestock. Poachers take a terrible toll, for food as well as for ivory and spotted cat skins that bring high prices on the black market. And there is ready evidence that government officials in many of these countries, while publicly showing great concern for wildlife, are profiting handsomely from the illegal trade. If these common property resources are going to be depleted anyway, what incentives do they have to act otherwise?

Many environmentalists bemoan the fact that the once free-roaming animal herds of the African continent are now kept in captivity for the benefit of American hunters and safari park visitors. But free-roaming is a relative concept. These animals are certainly free-roaming within the boundaries of the game ranches, and many of these ranches are enormous. Furthermore, as the African plains are increasingly delimited with hostile political boundaries and with warring armies and starving populations, there seems little point in mounting campaigns against so-called immoral game ranches and preserves. The growth of agriculture and cattle ranching in these countries is also restricting the free-roaming nature of the wildlife herds.

If the profits gained by giving hunters access to exotic game can provide the economic incentive for these landowners to manage the animals on a sustained-yield basis, some species will be saved. The same holds for the profits to be derived from visitors to game parks and preserves. In fact, the protection provided at some of the parks, preserves, and gardens has actually produced a glut of some animals. There have been well-publicized efforts by some preserves to return their surplus animals to Africa. Lions from America have even been taken to Africa to appear in movies that were filmed there. While we read of zoological parks attempting to discover reversible birth control techniques in order to control their tiger populations, we continue to read about the never-ending difficulties of preserving the remaining tigers in the wild.

Perhaps we should judge all of these activities by their achievements rather than by their motives, for it may turn out that in the future the developing countries will be restocked with their native fauna from specimens now thriving on game ranches and preserves.

It is important not to cloud the issue of common vs. private property resources with philosophical judgments regarding competing economic systems or with attacks on a free-market system or profit-

seeking activities. The books on disappearing wildlife abound with stories of captive breeding of birds and mammals and the successful preservation of species that have either become extremely rare or have disappeared entirely in the wild.

Among the many mammals in this category are Père David's deer, which does not exist in the wild and was "discovered" living in the royal zoological park in Peking. It has been saved from extinction by breeding in zoos and private parks. The European bison, or wisent, was reduced to three animals in 1927 and now survives in preserves in Poland. There are similar stories for the Asiatic lion, Przewalski's Mongolian wild horse, the Arabian oryx, the wild ass or onager, and the Bactrian camel.

Private waterfowl breeders exist widely in many countries, and perhaps the most notable success story has been the preservation of the Hawaiian goose, or nene. Once they numbered over 25,000 in the wild, but under common property management the population had plummeted to 20 to 30 birds by 1949. Fortunately, they had been bred by aviculturists as early as 1824. A Hawaiian rancher had many on his farm, and there was a flock at the Wildfowl Trust at Slimbridge, England. Through the combined efforts of many interested parties, an intensive captive breeding program was begun in the United States and Europe, and thousands of young nenes were produced. Beginning in the 1960s, they were reintroduced to the wild in Hawaii, and by the mid-1970s there were as many as 600 in their native habitat.²⁴

Many species of pheasant have always had small and local populations and would not have survived long under common property pressures. Many of the rarest species have been preserved in private aviaries and ornamental collections, with at least six endangered species being raised in captivity in the United States.

The same is true for many members of the parrot family. The familiar budgerigar, or budgie, is commonly kept as a pet in the United States and is bred in enormous numbers by thousands of breeders. Practically the entire trade is supplied by captive-bred birds. This demonstrates another conservation aspect of extending private property rights to wildlife, as captive breeding can supply the market demand for the birds and reduce or eliminate the demand on wild populations.

In all of these examples it is clear that the single most important element in wildlife survival was their removal from common prop-

²⁴See David R. Zimmerman, *To Save a Bird in Peril* (New York: Coward, McCann & Geoghegan, 1975), pp. 113-29.

erty ownership. Under private property ownership, others were prevented from exploiting the resource, and there were incentives for the owners to preserve them. Furthermore, these incentives were not solely motivated by the possibility of economic gain. With the exception of game ranches, economic gain has seldom been the primary motivation behind most captive breeding projects. Many of these examples were fostered for the pleasure of owning and breeding attractive or rare wildlife, as well as for more "altruistic" reasons, such as a deep commitment to the preservation of vanishing wildlife. Private ownership includes not only hunting preserves, commercial bird breeders, parrot jungles, and safari parks, it also includes wildlife sanctuaries, Audubon Society refuges, World Wildlife Fund preserves, and a multitude of private, non-profit conservation and preservation projects.

The problems of environmental degradation, overexploitation of natural resources, and depletion of wildlife all derive from their existence as common property resources. Wherever we find an approach to the extension of private property rights in these areas, we find superior results. Wherever we have exclusive private ownership, whether it is organized around a profit-seeking or nonprofit undertaking, there are incentives for the private owners to preserve the resource. Self-interest drives the private property owners to careful management and protection of their resource.

It is important not to fall into the trap of believing that the different results arising from these two forms of resource management can be changed through education or persuasion. The methods of using or exploiting the resources are inherent in the incentives that are necessarily a part of each system. The overuse of common property resources and the preservation of private property resources are both examples of rational behavior by resource users. It is not a case of irrational vs. rational behavior. In both cases we are witnessing rational behavior, for resource users are acting in the only manner available to them to obtain any economic or psychological value from the resource.

It has nothing to do with the need for a new environmental ethic. Asking people to revere resources and wildlife won't bring about the peaceable kingdom when the only way a person can survive is to use up the resource before someone else does. Adopting a property system that directs and channels man's innate self-interest into behavior that preserves natural resources and wildlife will cause people to act as *if* they were motivated by a new conservationist ethic.

Any resource held in common—whether land, air, the upper at-

RESOLVING THE TRAGEDY OF THE COMMONS

mosphere and outer space, the oceans, lakes, streams, outdoor recreational resources, fisheries, wildlife, or game--can be used simultaneously by more than one individual or group for more than one purpose with many of the multiple uses conflicting. No one has exclusive rights to the resource, nor can any one prevent others from using it for either the same or any noncompatible use. By its very nature a common property resource is owned by everyone and owned by no one. Since everyone uses it there is overuse, waste, and extinction. No one has an incentive to maintain or preserve it. The only way any of the users can capture any value, economic or otherwise, is to exploit the resource as rapidly as possible before someone else does.

But private ownership allows the owner to capture the full capital value of the resource, and self-interest and economic incentive drive the owner to maintain its long-term capital value. The owner of the resource wants to enjoy the benefits of the resource today, tomorrow, and ten years from now, and therefore he will attempt to manage it on a sustained-yield basis.

Given the nature of man and the motivating forces of self-interest and economic incentive, we can see why the buffalo nearly vanished, but not the Hereford; why the Atwater's greater prairie chicken is endangered, but not the red grouse; why the common salmon fisheries of the United States are overfished, but not the private salmon streams of Europe.

It should be equally clear that the analysis applies to broader environmental issues. Many of the most beautiful national parks are suffering from severe overuse and a near destruction of their recreational values, but most private parks are maintained in far better condition. The National Audubon Society does a better job of preserving its wildlife refuges and protecting wildlife than do many federal wildlife refuges. The public grazing lands have been repeatedly over-grazed, while lush private grazing lands are maintained by private ranchers. National forests are carelessly logged and overharvested, but private forests are carefully managed and cut on a sustained-yield basis, and costly nursery tree farms have been developed. In addition, the basic concept of self-interest explains why people don't litter their own yards but do litter public parks and streets, and why people don't dump old refrigerators and tires in their own farm ponds or swimming pools, but repeatedly dump them in the unowned streams, rivers, and swamps.

Perhaps the most important treatment of the common property syndrome was that of the noted biologist and environmentalist, Garrett Hardin:

Picture a pasture open to all. It is to be expected that each herdsman will try to keep as many cattle as possible on the commons. Such an arrangement may work reasonably satisfactorily for centuries because tribal wars, poaching, and disease keep the numbers of both man and beast well below the carrying capacity of the land. Finally, however, comes the day of reckoning, that is, the day when the long-desired goal of social stability becomes a reality. At this point, the inherent logic of the commons remorselessly generates tragedy.

As a rational being, each herdsman seeks to maximize his gain. Explicitly or implicitly, more or less consciously, he asks, "What is the utility to me of adding one more animal to my herd?" The utility has one negative and one positive component.

1. The positive component is a function of the increment of one animal. Since the herdsman receives all the proceeds from the sale of the additional animal, the positive utility is nearly +1.

2. The negative component is a function of the additional overgrazing created by one more animal. Since, however, the effects of overgrazing are shared by all the herdsmen, the negative utility for any particular decision-making herdsman is only a fraction of -1.

Adding together the component partial utilities, the rational herdsman concludes that the only sensible course for him to pursue is to add another animal to his herd. And another; and another. . . . But this is the conclusion reached by each and every rational herdsman sharing a commons. Therein is the tragedy. Each man is locked into a system that compels him to increase his herd without limit—in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all.²⁵

Unfortunately, environmentalists have either overlooked the economic analysis of common property resources or they have deliberately ignored it because of the profound difficulties it raises for a philosophy that is opposed to private ownership of natural resources and wildlife. Certainly, the former is true, but there is also evidence of the latter, since some of the more scholarly treatments of wildlife problems refer rather fleetingly to the problems of common property resources and to Hardin's analysis. But they mainly refer to Hardin when they are following his proposals for limiting human population growth to preserve the natural world. Meanwhile, the logic of the commons continues to generate a remorseless loss of the world's wildlife.

Where, then, do most environmentalists place the blame for our

²⁵Garrett Hardin, "The Tragedy of the Commons," *Science* 162 (December 13, 1968):1244.

RESOLVING THE TRAGEDY OF THE COMMONS

environmental problems? Most environmental literature and treatments by the public media consistently repeat attacks on man's greed, self-interest, consumerism, piggishness, the profit system, the market economy, and Western political, legal, economic, religious, and property institutions and beliefs. *Newsweek* points to "entrepreneurial greed." The *New York Times* mentions "commercial exploitation." Michael Satchell writes, "The road ahead seems to lead to more extinctions on the altar of consumerism."²⁶

This level of thinking is especially prevalent in popular magazines published by the major wildlife, conservation, and environmental organizations, ranging from the Audubon Society to the World Wildlife Fund. A typical example, written by the editor, John Strohm, appeared in a recent issue of *International Wildlife*. He asked why there were growing problems of overfishing, overcutting, overgrazing, overplowing, and disappearing species of plants and animals. Following a discussion of too many people, too many wasteful demands, and the haves vs. the have-nots, he wrote: "We must eliminate waste . . . and adopt a more frugal lifestyle. . . . You cut a tree, you plant a tree. You catch a fish, you leave some behind so you can fish tomorrow."²⁷

But even the most serious, scholarly books on wildlife conservation fail to rise much above this level. Norman Myers, in *The Sinking Ark*, writes about how we like hamburgers, our consumerist lifestyle, our desire to be consumers and fat cats, and our love of inexpensive foreign beef.²⁸ David Ehrenfeld, in *Conserving Life on Earth*, finds the problem to be economic success and increases in consumption. He calls for the disassociation of progress from growth, blames the pet trade, attacks private land ownership as unplanned, and points out that one of his students had discovered that people believe that China is the only country that has successfully coped with environmental problems. Ehrenfeld calls for the creation of a radically altered economic system that would produce labor-intensive and nonpolluting goods, such as guitars, rather than goods that are capital-intensive and highly polluting, such as snowmobiles.²⁹

These examples make one wonder whether the intellectual

²⁶Michael Satchell, "How the Smuggling Trade Is Wiping Out Wildlife," *Parade* (December 3, 1978), p. 25.

²⁷John Strohm, "An Open Letter to Colleen," *International Wildlife* (September-October 1978), p. 19.

²⁸Myers, *The Sinking Ark*.

²⁹David W. Ehrenfeld, *Conserving Life on Earth* (New York: Oxford University Press, 1972).

leaders of the environmental movement are more interested in a visionary society patterned after Rousseau and Thoreau than in grappling with the difficult problems of finding a method of conserving life on earth.

Two major themes repeatedly appear in the environmental literature as the source of all our problems with environmental preservation and conservation: commerce and the free-enterprise or free-market economic system. We find emotional references to the role of commerce in the overexploitation of wildlife. Victor Scheffer has written:

By market hunting I mean the trapping and clubbing of furbearers, the shooting of animals for the pet-food industry, the live-capturing of rabbits for coursing, the capturing of hawks for sale to falconers, and similar pursuits of wild birds and mammals for commercial ends. The Friends of the Earth organization has already taken the position that the use of wild animal products as objects of commerce should be discouraged.³⁰

In *Time of the Turtle*, Jack Rudloe describes a conversation with Dr. Archie Carr, widely recognized as the world's foremost sea turtle scientist:

Inevitably a discussion on the morality of eating this heavenly tasting, but nearly extinct creature arose. Was it wrong to eat it when we knew the endangered status of the green turtle?

"That touches on a very deep and fundamental problem," said Archie in a defensive tone. "If we had gone out and bought it, paid cash for it, and encouraged its commercial sale, then we would have been wrong. More than anything else, the commercialization of turtle meat and products has pushed the species to extinction. It isn't the Indian eating a few turtles on the beach for subsistence. At least five thousand turtles each year are being slaughtered in Nicaragua right up the coast from us. Thousands used to be shipped into the Keys for soup. And last year thirty thousand pounds of meat came in from Colombia, Mexico, and even from the Middle East to the United State. It isn't coastal people sharing the meat among themselves in the village that's the problem, it's that mass marketing that's going on in the world trade that is."³¹

However, it seems totally inappropriate to refer to the harvesting of unowned wild populations as commerce. Environmentalists and scientists make exceptions for wildlife harvesting by native populations and Indians, whether it is for food, clothing, medicine, ornamentation, religious rites and ceremonies, or for pets. Yet, when European exploration and settlement began to affect wildlife popu-

³⁰Scheffer, *A Voice for Wildlife*, p. 210.

³¹Jack Rudloe, *Time of the Turtle* [New York: Penguin Books, 1980], pp. 251-52.

lations by providing food, clothing, and ornamentation for growing settlements, it was referred to as commerce. It is somehow suggested that exchanging wildlife for money is somehow immoral.

The overharvesting of the earth's wildlife can no more be labeled commerce than the primitive gathering of wild fruits, vegetables, and grains can be called agriculture—even if those products are subsequently sold in the marketplace. Jacques-Yves Cousteau has written: "Unlike livestock rearing and fish farming, fishing and hunting are really sheer pillaging of the environment and quickly lead to the destruction of the very resources they seek to cull."³²

The disappearance of wildlife has nothing to do with commerce or a lack of reverence for wildlife. The more rapid disappearance of common property wildlife during the past century is due to the fact that much larger human populations are using it, more efficient means of capture and kill are employed, and a larger number of uses have been found for the resources. Furthermore, many of the most populous species of wildlife had been reduced to a severely depleted state long before the development of modern business and commerce. This is especially true regarding sea turtles.

Sea turtles have been on earth for up to 100 million years and were probably one of the first wildlife foods used by man. They abounded in the warm water between the Tropics of Cancer and Capricorn. The green turtle, *Chelonia mydas*, has been called the world's most valuable species of reptile. Before Europeans arrived in the Caribbean its population was as high as 50 million. On Columbus's fourth voyage to the New World he recorded that on May 10, 1503, his ship "raised two small islands full of turtles" and the surrounding sea "seethed with turtles." He named the islands Las Tortugas.³³

By the time the British renamed their colony the Cayman Islands the turtles were a valuable source of meat and eggs for seamen and early colonists. One scientist noted that the green turtle was the most valuable dietary factor in opening up the Caribbean, although at a heavy cost to the species.³⁴ Originally their numbers were so great that mariners lost in the fog could navigate by following the sound of the turtles swimming toward their breeding beaches. But decades of overexploitation rapidly depleted the population. As early as 1620 the Bermuda turtle population was so reduced that

³²Jacques-Yves Cousteau, "The Endangered Sea," *Vision* (July-August 1974), p. 53.

³³Quoted in Sir Alan S. Parkes, "Captive Breeding: A Double Landmark," a *Mariculture, Ltd.* (which later became the Cayman Turtle Farm), supplement to *The Cayman Islands Northwester*, October 1973, p. 17.

³⁴*Ibid.*, p. 7.

the assembly passed an act prohibiting their killing. Today there are not more than a few thousand green turtles in the Caribbean and possibly no more than 400,000 worldwide. The appearance of a wild turtle in Caymanian waters is now a rarity.

The logic of the commons worked its inexorable tragedy for the green turtle long before the development of any modern commercial trade in sea turtles and turtle products, and thus it is all the more inappropriate for so excellent a scientist as Professor Carr to single out commerce as the cause of the turtles' depletion and to state: "Turtles aren't feeding protein-poor Indians, but rich gringos in high-rise hotels."³⁵ Clearly, the current plight of the sea turtles has nothing to do with rich gringos in high-rise hotels. Common property exploitation had nearly doomed the turtles long before Miami Beach was developed.

Many farsighted scientists and conservationists have supported the development of commercial sea turtle farms in an effort to reduce the exploitation of the remaining wild turtles. Even Archie Carr wrote:

The one move that appears most promising as a way to accomplish the dual aim of feeding people and saving natural turtle populations is to set up turtle farms. If the teeming people of the future are to have turtle products—tortoise-shell, calipee, meat, soup, hides—they should come from captive stock. They cannot keep coming from the small, shrinking, natural populations of the world. . . . Turtle farming will be commercially profitable, however, only when it is done on a big scale.³⁶

Unfortunately, following the successful development of Cayman Turtle Farm, Ltd., many American environmentalists and some scientists launched an attack on farming. Essentially they were opposed to commercial use of sea turtles and the profit-seeking nature of the farm. They also argued that it was likely to stimulate trade in sea turtles. In spite of strong support for the farm from other sea turtle experts, scientists, and conservationists, the antifarmers ultimately persuaded the United States government to ban the import of farm-bred turtle products. This followed an earlier ban on the importation of endangered wild turtle products.

The predictable result has been the increased exploitation and smuggling of a rapidly dwindling wild population. The demand for turtle products is now being met through illicit channels, that is,

³⁵Quoted in Sharon Begley and Mary Hager, "The Plight of the Turtle," *Newsweek* (January 14, 1980), p. 56.

³⁶Archie Carr, *The Turtle: A Natural History* (London: Cassell & Co., 1967), pp. 234–35.

black market smuggling. It is a sad irony that while the Cayman Turtle Farm is being forced to reduce the size of its captive stock because its American markets are closed, the *Washington Star* reports that two huge shipments of illegal wild sea turtle meat have recently been seized by United States agents.³⁷ These shipments contained fifty-three tons of wild olive ridley meat, the results of the slaughter of nearly nine thousand irreplaceable wild sea turtles.

For some perplexing reason Archie Carr reversed his position on turtle farms, and he, David Ehrenfeld, and some of their associates have been leading the fight against farming. Rudloe's conversation with Carr concluded:

"That's absolutely correct," Archie rationalized as we ate the last piece. "No money exchanged hands. The meat was not swapped for dollars. The soldiers divided the meat up among the villagers, themselves, their major, and ourselves. If a turtle is going to be butchered, that's the only way it should be done. That's why I'm against turtle farming. It isn't increasing the species, all it's doing is putting more commercial pressure on an already endangered species."³⁸

Farming was, of course, doing precisely the opposite. The species was increased because the pressure on the remaining wild population was reduced. Further, the Cayman Turtle Farm became a closed-cycle operation and no longer needed to collect breeding stock eggs from the wild, most of which were "doomed" eggs that would not have hatched anyway because of beach erosion, harvesting by natives, or predation. The Cayman Turtle Farm achieved the first recorded instance of captive sea turtle breeding and served as a living laboratory for scientific research on sea turtle biology. Yet the more successful the farm became, the more vocal its opponents were. The farm's major markets are closed, and economic survival is in doubt. Scientists still visit the farm to carry on research, but the future of the green turtle and of all sea turtles is now dim. One of the most disheartening aspects of the antifarm campaign is that the farm has been forced to reduce its captive stock by an amount considerably larger than all the remaining wild green turtles in the Caribbean.

We can see just how counterproductive the emotional and philosophical opposition to turtle farming has been. By successfully halting the development of private farming and the extension of private property rights into the wildlife commons, environmentalists and

³⁷Boris Weintraub, "The Lowly Sea Turtle vs. Man," *Washington Star*, September 16, 1980, pp. C1-2.

³⁸Rudloe, *Time of the Turtle*, p. 253.

antifarming scientists are subjecting sea turtles to the tragedy of the commons. Unless there is a rapid turnaround in their views or in the United States laws, the worldwide demand for turtle products will soon drive the remaining wild turtles to near extinction.³⁹

The second common theme used by most environmentalists is the private enterprise system and the free market. Myers has written at length about the evils of the system:

But within the American system, with its emphasis on private profit to be derived from private property, common property of society's heritage gets short shrift; farmers' interests are allowed precedence over the nation's needs. . . .

The guts of the issue are that private interests do not necessarily run parallel with public interests. In certain circumstances, private interests undermine public interests. This runs counter to much conventional wisdom concerning a free-market economy, as exemplified by Adam Smith's dictum that, through pursuing his own interests, an individual is "led by an invisible hand to promote the public interest."⁴⁰

In the concluding section of Myers's book, he develops his strategy for conservation:

Much decline of species is due to the deficiencies and failures of the market-place system, which sometimes favors the here-and-now needs of private individuals to the detriment of long-term needs of the community in general. Moreover, the market-place tends to ignore the value of resources without a price tag. . . . Governments should step in to take account of the fact that the open market-place does not cater for all economic needs of society, and especially that the market-place ignores and even depletes the common heritage species.⁴¹

Ehrenfeld argues from a nearly identical position:

The greatest barrier to the implementation of a strong and unified conservation policy is the difficulty of protecting those parts of the public domain that have traditionally been exploited

³⁹The full story of this controversy is still to be discovered. The carefully orchestrated attack on the Cayman Turtle Farm as well as the apparent campaign of abuse against its supporters raise a number of disturbing questions regarding the true motives of the antifarming people. What do they have to gain by closing the farm and encouraging rapid exploitation of the few remaining wild turtles? Most people who have heard only the official antifarm party line are usually astounded when they learn the facts. Scientific objectivity has vanished in a biopolitical debate in which philosophical and personal considerations carry more importance than the facts surrounding the achievements of the turtle farm. This may prove to be a scientific scandal: America's own version of Lysenkoism.

⁴⁰Myers, *The Sinking Ark*, pp. 88-89.

⁴¹*Ibid.*, pp. 235-36.

RESOLVING THE TRAGEDY OF THE COMMONS

by private interests. Both Keynes and later Hardin have explained that there is no logically consistent reason why an individual, corporation, or nation acting in self-interest should voluntarily abstain from exploiting the public domain even when the result will be certain destruction of the valuable features of that domain. Hardin, in fact, goes somewhat farther in "The Tragedy of the Commons" by asserting that it is usually *damaging to private interests* (at least in the short run) to act for the collective good as far as the commons are concerned. . . .

If private interests cannot be expected to protect the public domain, then external regulation by public agencies, governments, or international authorities is needed. If that regulation is effective, the commons will be managed to provide the maximum *sustained* yield of natural products, which in turn will ultimately maximize the sum total of the profits for the various interests that rely on the commons. This concept, simple in theory, is difficult to put into practice.⁴²

It is difficult to decide how to deal with Myers's and Ehrenfeld's critiques of free enterprise and the tragedy of the commons. One can understand their philosophical objection to private ownership of property and to the free-market economy, yet it is difficult to deal with their analyses of the tragedy of the commons. Nowhere does Hardin state that the tragedy of the commons is the result of free enterprise, the profit system, or the existence of private property.⁴³ Since common property is the antithesis of private property, there is simply no way in which private property can be the cause of the tragedy. Hardin clearly stresses that it is by treating a resource as *common property* that we become locked in its inexorable destruction. The conservationist-minded common property resource user has no more incentive to restrain his overexploitation of the resource than the most shortsighted and greedy common property resource user has. That is precisely why such a system remorselessly generates tragedy.

Regarding the whaling industry in the ocean commons, Hardin mentions the Japanese and the Russians.⁴⁴ But the ocean's common property resources are being overexploited by the ships of all na-

⁴²Ehrenfeld, *Conserving Life on Earth*, p. 322.

⁴³Discussing pollution of the commons, Hardin does say, "We are locked into a system of 'fouling our own nest,' so long as we behave as independent, rational free-enterprisers." See Hardin, "Tragedy of the Commons," p. 1245. However, it is evident that socialist and communist nations have been even less successful in solving pollution problems. See Robert J. Smith, "The Environment under Socialism," *Policy Review* 2 (Fall 1977): 113-18, for a brief review of the Soviet experience with environmental degradation.

⁴⁴Garrett Hardin, *Exploring New Ethics for Survival: The Voyage of the Spaceship Beagle* (New York: The Viking Press, 1972), p. 121.

tions, regardless of economic and political systems. It is certainly true that ships sailing out from the United States are seeking to take all the fish they can, but ships from socialist and communist nations are following a similar course. Indeed, because individual profit-and-loss calculations play such a small role in the economic activities of socialist nations, there is less incentive for their fleets to desist in their overexploitation when it becomes economically unprofitable than there is for a private American fishing boat. One can only conclude that writers like Myers and Ehrenfeld have either completely failed to grasp the concept of the commons or they have deliberately misrepresented it in order to support their philosophical positions.

It is true that Hardin is somewhat ambiguous in recommending a solution to the tragedy of the commons. He points out that there is no technological solution and that a political solution must be found that will create some form of ownership for the earth's resources. While he does not explicitly recommend private property rights, he appears to lean in that direction in his discussion of parks as commons:

What shall we do? We have several options. We might sell them off as private property. We might keep them as public property, but allocate the right to enter them. The allocation might be on the basis of wealth, by the use of an auction system. It might be on the basis of merit, as defined by some agreed-upon standards. It might be by lottery. Or it might be on a first-come, first-served basis, administered to long queues. These, I think, are all the reasonable possibilities. They are all objectionable. But we must choose—or acquiesce in the destruction of the commons that we call our National Parks.⁴⁵

At least in certain areas Hardin views the creation of private property rights as a solution: "The tragedy of the commons as a food basket is averted by private property, or something formally like it."⁴⁶

Unfortunately Hardin swings in the other direction in his treatment of the ocean commons:

Faced with the tragedy of the commons, we can have only one rational response: change the system. To what? Basically, there are only two possibilities: free enterprise and socialism. Free enterprise in the oceans would require some sort of fences, real or figurative. It is doubtful if we can create territories in the ocean by fencing. If not, we must—if we have the will to do it—adopt the

⁴⁵Hardin, "The Tragedy of the Commons," p. 1245.

⁴⁶Ibid.

RESOLVING THE TRAGEDY OF THE COMMONS

other alternative and socialize the oceans: create an international agency *with teeth*. Such an agency must issue not recommendations but directives; and enforce them.⁴⁷

It is possible that in perceiving the difficulties involved in solving the intricate boundary problems Hardin seems to acquiesce to some form of state or socialist ownership and control of ocean resources. Hardin does stress that our experience with the League of Nations and the United Nations gives us little hope that a system of state ownership would succeed. Indeed, the decade-long debates at the Law of the Seas conferences have repeatedly been mired over the establishment of suprastate authority over the manganese nodules carpeting vast areas of the ocean bottom—a far more tractable problem than managing the highly fugitive wildlife resources of the oceans.

However, the problem of "fencing" the seas may not be as difficult to solve as Hardin imagined. North and Miller have written:

Notice that, until recently, it would have been immeasurably difficult, or even impossible, to maintain and enforce private rights in the ocean, but the invention of modern electronic sensing equipment has now made the policing of large bodies of water relatively cheap and easy. Through the centuries it has often become feasible for common property to give way to private property precisely because technology has made possible the enforcement of private rights (exclusivity).

We are not saying that making the oceans into private property is "good." We are saying that doing so would lead to more output and fewer ecological disasters. . . .⁴⁸

The problems of overexploitation and extinction of wildlife appear to derive consistently from their being treated as a common property resource. Example after example bears this out. It is also predicted by the economic analysis of common property resources. Both the economic analysis of common property resources and Hardin's treatment of the tragedy of the commons suggest that the only way to avoid the tragedy of the commons in natural resources and wildlife is to end the common property system by creating a system of private property rights.

Private property rights have worked successfully in a broad array of cases to preserve wildlife and resolve the tragedy of the commons. Experience and the logical implications of common property resource theory suggest that private property rights are far superior to state or public property rights partly because of the unam-

⁴⁷Hardin, *Exploring New Ethics*, p. 121.

⁴⁸North and Miller, *The Economics of Public Issues*, p. 112.

biguous exclusivity of private property rights and the difficult problem of preventing too many from using the public domain under a system of state ownership. Furthermore, private property owners have a direct and immediate incentive not to mismanage their own property, while government owners or managers do not have the same incentives, nor are there many incentives that prevent all of the public from overusing the resources held in the public domain.

It seems that Hardin's proposal that resolution of the tragedy of the commons comes down to a choice between private ownership or government ownership is insufficient. State ownership appears to be little more than a more regulated commons. We witness the same overuse and destruction of the public domain as we do in the purest commons.

The proper path toward resolving the vexing issues of wildlife conservation lies in removing wildlife from common property resource treatment and creating private property rights. This entails an outright rejection of the concept that wildlife should be viewed as the common heritage of all mankind. It also poses a direct challenge to the basic philosophical beliefs of many environmentalists. But if we are to resolve the tragedy of the commons and preserve our natural resources and wildlife, we must create a new paradigm for the environmental movement: private property rights in natural resources and wildlife.