

Public Land: Adaptive Management

As recently as 1950 the old-growth forests covered nineteen million square miles, or nearly 40 percent, of the ice-free land on Earth. Today forests cover less than thirteen million square miles and are shrinking rapidly. Half of the surviving forests have been significantly degraded. In the past half-century the loss of forests has been one of the most rapid environmental changes in the history of the planet.¹

Forests all over the world have been logged for lumber to support economic development and to clear land for agriculture and cattle grazing. In the United States the debate about logging forests on public land has been cast into a conflict between *conservation* and *preservation*. The reason is history.

At the beginning of the twentieth century US Forest Service policy required *conservation* of forests to provide the best use of natural resources for the public good. The head of the Forest Service, Gifford Pinchot, relied on this argument to support the Hetch Hetchy Dam, which now provides water for San Francisco. He was opposed by John Muir, founder of the Sierra Club, who argued for *wilderness preservation*. Near the end of the twentieth century defenders of these conflicting views fought over the policy of *adaptive management*.

We will consider some of these arguments involving forests and parks and also the restoration of deserts and wetlands. In addition, we will look briefly at the use of public lands in Asia and Africa, where reserves to protect wildlife have been established.

Conservationists versus Preservationists

Pinchot believed that the purpose of US forest policy should not be to preserve the forests as habitats for animals or because of their beauty.² His view was anthropocentric as well as utilitarian: “Forestry is the art of producing from the forest whatever it can yield for the service of man.”³ For Pinchot, the goal of conservation was “a planned and orderly scheme for national efficiency, based on the elimination of waste, and directed toward the best use of all we have for the greatest good of the greatest number for the longest time.”⁴

Preservationists offer two counterarguments: a *character* argument identifying forests as places of beauty and peace that inspire us to be better persons, a *duty* argument asserting that we should preserve wilderness, because it has intrinsic worth for itself.

Sustainable Yield

Early in the twentieth century, the conservationist position was supported by political groups that were resisting the inequities of wealth and land ownership in American society. Pinchot’s approach to conservation was opposed to laissez-faire Social Darwinism, which characterized economic thinking in the nineteenth century. He agreed with President Theodore Roosevelt and other progressives that natural resources should benefit all citizens, not just the wealthy.⁵

In the 1930s US forestry policy concerned “sustainable yield,” and because of the high demand for lumber for construction after World War II, the emphasis was on yield. The Sustained-yield Forest Management Act of 1944 made “community stability” an official goal of the Forest Service, and in practice this meant forests were to be regulated to ensure a regular supply of wood.⁶

1 | Text from Chapter 13 of *Doing Environmental Ethics* by Robert Traer (Westview Press, 2013).

At the same time highway construction and a greater use of the automobile brought more people into the forests for recreation. The Multiple Use-Sustained Yield Act of 1960 reflects the growing importance of recreational use of the forests and also reaffirms the emphasis on producing lumber.⁷

Those supporting preservation were generally unable to prevent the use of the forests for logging and recreation, but in 1964 they secured passage of the Wilderness Act, which protects some forest areas from roads. In the 1980s, however, forestry began to respond to the new environmental movement in the United States by embracing the idea of environmental sustainability.

Adaptive Management

In 1993 President Bill Clinton ordered ecosystem management for public land.⁸ Negotiations involving diverse stakeholders in drafting and implementing regulations became the standard for federal efforts to control pollution and other damage to the environment. The goal was to encourage a flexible, place-by-place approach to enforcing pollution control standards.⁹

To conceptualize this process, the Clinton administration promoted land-use *adaptive management* that is (1) ecologically sustainable (by protecting ecosystem interrelationships), (2) economically feasible, and (3) socially acceptable (by respecting “recreational, aesthetic, spiritual, and other noncommodity values” of public lands).¹⁰

Instead of forestry experts (like Pinchot) deciding the best use of forests, these decisions are to reflect local constraints and perspectives, as well as the collaboration of government agencies with corporate interests. Adaptive management envisions networks of individuals acting as agents of reform within their institutions and creating new strategies to ensure the best use of public land.¹¹

Forestry policy is crucial worldwide, because governments own nearly 80 percent of the forests that remain intact in developing countries. Too often, timber concessions have been granted to corporations at less than market value and without the regulations needed for good forest management. Government subsidies for building roads into forests have often stimulated the logging of trees and conversion of the land to agriculture and ranching.¹²

At times, international intervention has made things worse. For instance, the policies of the World Trade Organization that promote international competition also encourage higher levels of foreign investment, weaker domestic regulation protecting the forests, and loss of local community controls.

Yet logging can be both sustainable and profitable. The Menominee tribe in Wisconsin has logged its reservation sustainably for over a century, “cutting only the weaker trees, leaving the strong mother trees and enough of the upper canopy for squirrels and other arboreal animals to continuously inhabit.”¹³ The logging has provided a steady income, and the 1.3 billion standing board feet of timber cut in 1870 has grown to 1.7 billion standing board feet.

Because the adverse impact of human society on forests is unavoidable, forests must now be managed.¹⁴ The Forestry Stewardship Council (FSC) is an international NGO that certifies responsible forestry use. The certification process involves third-party auditing to

ensure that international standards are enforced, which protect the rights of indigenous communities and workers as well as the integrity of ecosystems.¹⁵

The FSC does not certify clear cutting, but examples on its website confirm that sustainable logging is profitable.¹⁶ The Rainforest Alliance, an NGO active in forest preservation, affirms that: “FSC certification has helped strengthen business structures, fire prevention measures, and low-impact harvesting practices.”¹⁷

National Forests and Parks

Bruce Babbitt, US secretary of the interior from 1993 to 2001, played a crucial role in applying adaptive management to public land use. He took office soon after a federal judge in Seattle ruled that enforcing the Endangered Species Act (ESA), in order to protect the northern spotted owl, required a halt to logging in the national forests of the Pacific Northwest. After a public meeting in Portland, Oregon, which President Clinton attended, Babbitt was charged with forging a plan that would protect the owl and its habitat and also allow sufficient logging to be economically feasible and socially acceptable.

Babbitt enlisted more than two hundred geologists, hydrologists, biologists, zoologists, and land planners to figure out what area to protect as the owl’s habitat. In 1995 the US Fish and Wildlife Service (FWS) exercised its authority under a 1982 amendment to the Endangered Species Act of 1973, which allows it to accept a habitat conservation plan. The FWS negotiated an agreement with Weyerhaeuser, one of the world’s largest pulp and paper companies, to maintain areas of forest large enough to support spotted owls and sufficiently close to enable the owls to move between the forested areas.¹⁸

Babbitt was unsuccessful, however, in persuading Congress to support a bill that would require the process of conducting a “biological survey” in conjunction with enforcing the ESA. Opponents, fearing that more endangered species would be identified, argued that the federal government should stay out of land-use planning. Clearly, however, the federal government has an enormous impact on land use. The Army Corps of Engineers and the Bureau of Reclamation have opened lands for development by building flood-control projects and damming rivers. Moreover, the interstate highway program funded by the federal government has directly affected the growth of cities and suburbs.

Babbitt argues that: “Throughout our history land use planning has been a one-way street down which we relentlessly race toward government-subsidized exploitation of every resource. The question we now face is whether and how to create a parallel process that includes a broader consideration of the public interest in our land and resources.”¹⁹

Adaptive management is an effort to combine the science of ecology with the realization of intrinsic values. Foresters, who have long seen their work as an applied science, now need to explain their reasoning to interested communities (industry, local people, environmentalists, and recreational users).

Adaptive Management Areas

Adaptive management areas (AMAs) were created in the Northwest to resolve conflicts between logging and the northern spotted owl. The assumption of adaptive management is that our knowledge of an ecosystem is incomplete and elusive. This means management itself is a process of learning, which utilizes scientific assessments as well as the knowledge and values of others who know and use the forests.²⁰

A 1995 statement for the Cispus AMA in Washington State explains that adaptive management is “a continuing process of action-based planning, monitoring, researching, evaluating, and adjusting; with the objective of improving implementation and achieving the goals that have been identified. In forest management, our limited understanding of ecosystem behavior leads to uncertainty about the effects of management activities.”²¹ In short, adaptive management is a strategy for dealing with uncertainty by designing opportunities for learning.

By 1997 a long-range plan for the Cispus AMA was adopted by a committee including staff from the Fish and Wildlife Service, the Environmental Protection Agency (EPA), the National Marine Fisheries Service, industry leaders, elected officials, and citizens. “What we had here was true citizen partnerships with government. A variety of perspectives came to the table and we all generally walked away agreeing with a common vision for the future,” said David Jennings of the Black Hills Audubon Society. “The path we have set with this decision focuses on protecting the remnants of our native forests while at the same time learning how to sustain logging on public lands.”²²

The Bush Administration

In 2005 the George W. Bush administration dropped several regulations from the forest planning rules, including the requirements to sustain viable populations of plants and animals across their natural range²³ and to prepare an environmental impact statement (EIS) when a forest plan is significantly amended or revised.²⁴ Critics found support for their position in March 2007 when a federal judge prohibited the use of the 2005 planning rules on the grounds that these changes were not in compliance with the National Environmental Policy Act (NEPA).²⁵

The Bush administration also promoted the Healthy Forests Initiative (HFI), which was created by the Healthy Forest Restoration Act of 2003 to reduce the risks that severe wildfires create for communities and the environment. The HFI excludes some decisions from the review provisions of the NEPA and also creates an exception to the ESA, which requires federal agencies to consult with the Fish and Wildlife Service and the National Marine Fisheries Service to ensure an action will not threaten a listed species or damage its habitat.

The HFI is administered by the US Forest Service and also by the US Bureau of Land Management (BLM), which exercises authority over 30 percent of federal public land. The BLM added provisions for administering the HFI that made wildfire management decisions effective immediately, if the BLM determined there was a serious risk of wildfire on public lands due to drought or other reasons, or when public lands are at risk of erosion due to wildfire.

Critics of the HFI warned that the law will result in more logging of mature and old-growth forests, damage to wildlife habitats, and greater risk of destructive fires, and will provide few benefits for local communities. The Sierra Club said the HFI was based on a false assumption that landscape-wide logging will reduce forest fires.²⁶ President Bush argued that this initiative would (1) prevent loss of property due to forest fires, (2) reduce the costs of fighting fires, and (3) prevent expensive lawsuits.²⁷

Zander Evans, research director of the Forest Guild, an association of more than six hundred professional foresters, criticized the HFI decision-making process. “Based on

available data, early and substantial public participation is a much more effective tool for facilitating fuel reduction projects than are administrative attempts to curtail litigation.”²⁸

The Bush administration’s fight against adaptive management also involved regulating coal mining and wetlands. In September 2007, however, a survey conducted by the Civil Society Institute found that 65 percent of Americans opposed the administration’s proposal to weaken environmental regulations to permit wider use of *mountain top removal* (MTR) coal mining in the United States. The study also found that 74 percent of Americans opposed the expansion of MTR coal mining in general, and that 90 percent of those polled thought more mining should be permitted only after the government has assessed the impact on safety and the environment.²⁹

In 2008 the Bureau of Land Management wrote new rules for wilderness areas to allow off-road vehicles use of about fifteen thousand miles of designated trails. The Southern Utah Wilderness Alliance, an environmental group, has argued that many of these routes come directly from maps prepared by off-road vehicle associations and have not been surveyed to assess potential harm to the soil and animal habitats.³⁰

The Obama Administration

By 2010, through a process of adaptive management, the HFI legislation was being used to fund a Healthy Watersheds through Healthy Forests Initiative (HWHF) that affects several states and two forest conservation NGOs, including the Pinchot Institute for Conservation in the upper Delaware River Basin.³¹ In Virginia a three-year project will educate local governments, businesses, environmental groups, and landowners about the value of forests and the services they provide for the ecosystem.³²

In 2011 public hearings were held on a set of new rules for managing the fifty-five national forests and twenty grasslands (an area as large as Texas) that belong to the American people. These rules (known collectively as the Forest Planning Rule) will be used to implement the National Forest Management Act.

In October 2011 the Forest Service published the rules for the Community Forest and Open Space Conservation Program—which provides grants to local governments, Native American tribes, and qualified nonprofit organizations—to assist in establishing community forests. The program emphasizes the economic and environmental benefits of forest stewardship as well as recreation including hiking, fishing, and hunting.³³

Restoring Deserts and Wetlands

Many criticize the idea of restoring environments,³⁴ but Andrew Light believes philosophers can contribute to ecological restoration and to environmental issues in general by articulating the normative foundations for policy in ways that reflect the moral intuitions of most people.³⁵ “When we engage in acts of benevolent restoration,” he writes, “we are bound by nature in the sense that we are obligated to respect what it once was attempting to realize before we interfered with it.”³⁶ Our efforts have personal as well as social benefits and enable us to renew the aspect of our culture that has historically reflected the value and wonder of nature.

Deserts

Under Babbitt, the Department of the Interior wielded federal authority to try to restore and protect desert and wetland environments. In 1993 the US Fish and Wildlife Service recommended that the California gnatcatcher be listed as an endangered species,

because its population had shrunk to less than three thousand birds. Listing the gnatcatcher, however, put a land-use moratorium over hundreds of thousands of acres between Los Angeles and San Diego.

The political conflict seemed intractable, but federal action under the ESA enabled the governor to enforce the Natural Communities Conservation Program, a 1992 California law giving local communities new powers to draft comprehensive plans to preserve open space. It was also helpful that in Orange County a single landowner held title to a hundred thousand acres of coastal plain, and he preferred to negotiate rather than go to court.

In San Diego County, however, there was no single large landowner to work with. The preserves had “to be stitched together from thousands of landholdings through careful use of zoning incentives to protect sufficient area while freeing less critical land for development. On smaller tracts and as a condition of developing them, landowners could opt to purchase other land designated for protection as mitigation. And in some areas outright purchases by the county” were necessary.³⁷

After the San Diego Zoo campaigned for community support, both Republican and Democratic members of Congress began to secure federal grants to help pay for the planning process. By 1998 thirty thousand acres in Orange County had been set aside as two permanent reserves, to provide a habitat for the gnatcatcher and thirty-two other species under threat, and both the city of San Diego and San Diego County had approved significant habitat preserves.

“The plans took in nearly two hundred thousand acres of crucial sage habitats, stream corridors, and vernal pools throughout the county, protecting essential habitat for more than one hundred species, including the least Bell’s vireo, the ship-tailed lizard, a number of invertebrates, a long list of plants endemic to the region, and of course the gnatcatcher. These plans demonstrated that the Endangered Species Act could be made to work even on complex, partially developed landscapes with highly fragmented ownership.”³⁸ A habitat was not only protected, but partially restored.

The ESA was also helpful in preserving the habitat of the desert tortoise. This required restricting development around Las Vegas on the sandy alluvial fans extending away from the mountains. Business leaders, politicians, and environmentalists collaborated to end grazing on public land and purchase sufficient private land to create a preserve. (In this case “restoration” meant buying grazing rights so the desert terrain could recover.) The costs for implementing this plan were assessed to the developers in Las Vegas, who agreed to pay a \$565 fee for each new subdivision lot they developed.³⁹

The ESA has been crucial in the southern and western parts of the country, where many species are endangered, whereas few such species exist in the northeast. Babbitt was unsuccessful in persuading Congress to amend the act to protect open space and watersheds, forests, and other threatened ecosystems. This would have authorized the federal government to apply the precautionary principle to protect any endangered ecosystem.

Wetlands

In the 1940s the state of Florida petitioned Congress to help control flooding, and after legislation was passed in 1948 the Army Corps of Engineers, in collaboration with the South Florida Water Management District, constructed an elaborate system that divided

the Everglades ecosystem into three parts: “a third to be drained for the sugar plantations, a third to store water for the cities, and a third for nature.”⁴⁰

The Everglades is not only a swamp but a river, miles wide and inches deep, that flows slowly on land with a slope of about two inches per mile.⁴¹ Under the 1948 plan the canals below Lake Okeechobee, which lead southward and eastward to the Atlantic, were enlarged, and pumping plants were installed to irrigate the sugar cane fields directly from Lake Okeechobee in times of drought. These changes expanded agricultural land to more than a million acres.

South of this area the plan reserved a million acres for water storage to refill underground aquifers, and the corps built earthen dikes to store water on the surface at a depth of five to six feet. This system was also designed to capture irrigation water draining from the sugar plantations, and all this water was designated for the growing cities on the Atlantic coast. The national park in the southern part of the watershed was to receive the rest of the water. The Florida legislature created the South Florida Water Management Agency to oversee this water system, and its costs were to be split between the federal and state governments.

As development spread in the area south of Lake Okeechobee, more land was drained and the flow of water to the park in the south declined. By the 1990s it became clear that the park could not survive unless the entire ecosystem from Lake Okeechobee to the park was at least partially restored, so water could flow through the region as it once had. This required ending some of the agricultural uses of water, filling in drainage canals, and letting some farms revert to swamp.

Babbitt learned that the Army Corps of Engineers was open to restoring the Everglades watershed and that Florida officials would support a feasibility study. However, the problems could not be resolved without restricting both housing development and the use of water by the sugar plantations. A federal lawsuit filed against the plantation owners in 1989 for phosphorus pollution in the watershed gave the Department of the Interior leverage.

“The obvious solution was to regulate sugar growers and other farms to meet the ten parts per billion discharge standard recommended by scientists as necessary for protection of these waters. Under the complex provisions of the federal Clean Water Act, the state had to be a party to the agreement; that would require legislation, and to get action from the Florida legislature we had to demonstrate that requiring compliance would be economically feasible.”⁴²

The solution involved reducing by more than half the quantity of fertilizer being used by the sugar growers, because studies revealed that this lower level would produce the same yield. In addition, scientists calculated that dedicating about 4 percent of the sugar fields on the downstream side to cattail planting would provide a “filter” and thus reduce the phosphorus moving downstream to acceptable levels. When the federal government agreed to drop the lawsuit and the federal and state governments agreed to share the costs of the changes with the sugar growers, the growers accepted the necessary 4 percent dedication of their land to cattails.⁴³

Finally, subdivisions in the watershed area had to be recovered. Congress agreed to help buy out these landowners, and by 1999 the Park Service had purchased or condemned more than two thousand swampland lots for inclusion in the expanded park boundaries. In

2000, as part of the Water Resources Development Act (WRDA), the Comprehensive Everglades Restoration Plan (CERP) was approved, covering sixteen counties and an area of eighteen thousand square miles.⁴⁴

Implementing the CERP will require more than thirty years of collaborative decision-making and will cost at least \$8 billion.⁴⁵ Its success is necessary to protect fifteen endangered species and at least eight distinct habitats.⁴⁶ The CERP is not the plan most environmentalists wanted, but it did shift the ethical and legal presumption from using water for development and agriculture to restoring and protecting the ecosystem.⁴⁷

After a US Supreme Court ruling in 2006 extended the protection of the Clean Water Act of 1972 to wetlands and small streams, the Bush administration fought back by writing new regulations that made such federal intervention less likely.⁴⁸ These rules required the EPA to prove a “significant nexus” between small streams and nearby navigable waterways.⁴⁹

In 2011 the Obama administration held hearings on new rules that will reaffirm protections for small streams that feed larger streams, rivers, bays, and coastal waters. These new rules will also clearly protect wetlands that filter pollution and help protect communities from flooding. Discharging pollution into protected waters or filling protected waters and wetlands will require a permit.⁵⁰

Rainforests

Scientists report that the same ecological processes govern diverse environments, but history and geology make places very different. This is what accounts for the incredible biodiversity of the remaining rainforests and the differences between old forests on different continents.⁵¹ The rainforests are precious natural habitats, which provide homes for tens of thousands of unique plant and animal species. These forests also reduce greenhouse gases (GHGs) in the atmosphere through photosynthesis, which converts carbon dioxide into oxygen and enables plants to grow.

Many believe small farmers clearing land for firewood and food are the major cause of tropical deforestation, but recent data show these populations are stable or decreasing. Instead, logging and agribusiness are to blame.⁵² Forests are rapidly being destroyed and degraded, primarily by logging for (1) the paper and pulp industry, (2) palm oil agribusiness, and (3) cattle ranches for the beef industry. For almost two decades NGOs have tried to reduce the deforestation of rainforests by supporting certification overseen by the FSC. Now, however, some are questioning this strategy.

The Rainforest Alliance, a founding organization of the FSC, is the largest FSC-accredited certifier. It reported on its website in November 2011 that it has certified over 167,413,895 acres of forest lands worldwide. In defense of the FSC certification process, the Rainforest Alliance argues that the FSC standards “cover environmental protection, wildlife protection, worker rights and safety, just wages, good living conditions and healthcare.”⁵³ Also, a recent study by the Rainforest Alliance verifies that World Heritage Sites and other protected environments benefit when nearby forests have achieved FSC certification.⁵⁴

Rainforest Action Network (RAN) states that the FSC: “has been an effective tool in some forest struggles and provides a useful tool for RAN in conducting market campaigns. It provides third party minimum standards for performance that forest management and products can be measured against. However, like voluntary certification in general, it is no panacea and it has some very definite shortcomings. While there is broad general

agreement among environmental and other observers that the FSC is the most credible of the major forestry certification schemes, none believe that it is perfect.”⁵⁵

RAN defends its continued support for the FSC by citing the opportunities this provides to try to strengthen certification standards, but RAN acknowledges that logging companies now achieving certification from FSC are trying to weaken current safeguards that protect intact and old forests. RAN also points out that logging industry associations are promoting weaker certification systems that largely exclude indigenous peoples and NGOs working to protect endangered forests.

Greenpeace, also a founding member of the FSC, published a report in 2008 entitled “Holding the Line on FSC.” An online version of this report (November 2010) documents several weaknesses in FSC performance and identifies “Ten Immediate Changes Required to Restore FSC’s Credibility.”⁵⁶ In March 2011 Greenpeace urged that the FSC “instigate a moratorium on new certification of industrial-scale forestry in the Congo Basin, until a regional FSC standard has been established and the pre-conditions for robust certification in the region have been agreed.”⁵⁷

In May 2011 Glen Barry, an active Wisconsin-based environmentalist and the voice of Ecological Internet, demanded that RAN resign from FSC in order to end the “shameful greenwash of primary forest logging.”⁵⁸ In an October 2011 post on Rainforest Portal, he asserted the following ecological presumption: “Standing, intact primary rainforests and all old forests must be fully protected from certified and carbon forestry, and restored to continue powering global ecosystems and advance local communities.”⁵⁹

Certification of logging by companies that have legal permits does not prevent illegal logging. A 2011 report by Interpol and the World Bank states that illegal logging accounted for two-thirds of the timber harvested in fifteen of the largest timber-producing countries in the tropics.⁶⁰ China imports more than half of the timber being shipped anywhere in the world, so the failure of its government to require some kind of sustainable certification process is a major cause of deforestation.

International funding is also to blame. For more than thirty years the World Bank arranged funding to support the development of palm oil production in Indonesia. Rather than working with the millions of people living in the forests and with NGOs supporting a rational use of the country’s natural forests, the World Bank funded some of the world’s largest agribusiness corporations. The disastrous results are clear even to the World Bank, which admits now that its funding for palm oil production led to the logging of rainforests.

“Major reforms are needed,” Marcus Colchester of the Forest Peoples Programme says, “in places like Sarawak and Indonesia to stop oil palm development doing further harm.”⁶¹ These reforms should protect land tenure, recognize the rights of indigenous peoples, and ban the clear cutting of forests.⁶²

When certification is insufficient and international institutions are funding corporations that clear cut rainforests, then the best strategy may be to boycott the products made from wood that is logged illegally or without certification. This is the reasoning behind RAN’s efforts to persuade corporate buyers to boycott two of Indonesia’s largest corporations, Asian Pulp & Paper (APP) and APRIL,⁶³ which continue to level the rainforest. RAN’s campaign also puts pressure on Chinese manufacturers making branded products for well-known companies, often to be sold in retail stores like Walmart, as many of these retailers have made commitments to sell only wood products made from certified lumber.

Wildlife Reserves in Asia and Africa

International NGOs, such as the World Wildlife Fund and the International Union for Conservation of Nature, have lobbied governments and raised funds to support the creation of wildlife reserves in Asian and African countries. Yet some of these efforts to preserve wildlife and biodiversity in endangered habitats have been criticized by Asian and African environmentalists.

The problem, as Ramachandra Guha sees it, reflects the American view that preservation means preventing the utilization of forest resources (Pinochet's view of conservation). Preserving wildlife habitats in Asia and Africa, Guha argues, requires allowing access for local communities that rely on these natural areas for food and other resources.

India

India is a densely populated country with agrarian populations that have a long-standing and balanced relationship with nature. Designating tiger reserves, such as Project Tiger,⁶⁴ has displaced local communities and thus generated strong opposition. The consequence, Guha asserts, of setting aside wilderness areas for Project Tiger is a direct transfer of resources from the poor to the rich. Identifying environmental action with preservation has meant neglecting “environmental problems that impinge far more directly on the lives of the poor—e.g., fuel, fodder, water shortages, soil erosion, and air and water pollution.”⁶⁵

Ecological battles in Asia and Africa involve a conflict between the rural communities and powerful corporate interests. In India those most affected by environmental degradation—poor and landless peasants, women, and tribals—are mainly concerned with survival. They only support environmental policies that lead to a more equitable distribution of economic and political power and protection for their human rights.⁶⁶

Third world critics of the American preservationist movement see the distinction between the use and preservation of nature as not only abstract, but also reflecting a lack of awareness among Americans about their “use” of the wilderness areas that they are preserving. Historian Samuel Hays notes that interest in wilderness is “not a throwback to the primitive, but an integral part of the modern standard of living as people . . . add new ‘amenity’ and ‘aesthetic’ goals and desires to their earlier preoccupation with necessities and conveniences.”⁶⁷

Most Americans, Guha points out, fail to see that driving a thousand miles to spend a few days in a national park contradicts their desire to protect the natural environment.⁶⁸ Moreover, he finds support for a critical view of the American preservationist movement among German environmentalists, who argue that economic growth in the West historically has relied on exploiting the natural resources and cheap labor in other countries.⁶⁹ In this critical analysis, the ecological crisis is a result of disproportionate consumption by industrialized societies as well as the urban elite in less-developed societies.⁷⁰

Because adaptive management emphasizes *local involvement* in environmental decision-making, it directly addresses this problem. Adaptive management does not identify the ethical issue as a choice between conservation and preservation, but as a process—involving local communities with specialists—that preserves wildlife habitats and also enables humans to use the natural resources in these habitats.

Africa

To consider environmental issues in Africa we must appreciate that the population was once small in comparison to the wildlife, but now the reverse is true.⁷¹ This means that: “[T]he hard choice in southern Africa is not so much between people and wildlife as between a pragmatic humanism that benefits both and an idealistic environmentalism that benefits neither.”⁷²

In the 1970s international environmentalists tried to prevent the loss of endangered animal populations by demanding bans on hunting and the sale of wildlife products. Kenya adopted these policies, but the results were unexpected. Ranchers, who had sold licenses for hunting zebra, began to raise more cattle to make up for the loss of income due to the ban on hunting. They also began killing more zebras to keep the population down in order to have more land available for grazing cattle.

Another negative consequence of banning hunting was an increase in poaching. Countries that authorized rangers to kill poachers soon discovered that despite many human deaths the number of animals lost to poaching increased—because many rangers were involved in poaching.⁷³ Tanzania banned hunting in 1973, but rescinded the ban in 1985 because so many more wild animals were being killed. Licensed hunters, it seems, are needed to keep poaching down.

Because poachers hunt with snares, they kill or maim many more animals. Animals that poachers do not want are caught, and animals in snares may be eaten by vultures or hyenas before a poacher returns. After 1985 hunters began to pay local people to pick up snares and turn them in, and this incentive strategy has generally proved effective.

In 1990 Kenya began to distribute a quarter of the tourist fees for visiting wildlife reserves to local Masai tribes, so the Masai would have an incentive to help protect migratory wildlife. In Zambia, companies involved in tourism now distribute a percentage of their profits in equal shares among their entire staff, including janitors and maids. In Botswana, tribal chiefs administer a game reserve and limit licenses for doing business in the reserve to five years. Young people employed now in the tourism industry are being educated abroad, so they will be able to run it.⁷⁴

In Zimbabwe, the Communal Areas Management Programme for Indigenous Resources (CAMPFIRE), which was established in 1989 in the northwestern area of Zimbabwe known as Nyaminyami, has involved more than a quarter of a million people in managing wildlife. Local communities benefit by selling photographic or hunting concessions to wildlife tour operators in consultation with the wildlife department, or by culling animal populations.

CAMPFIRE is a community empowerment initiative, not an environmental project. Nonetheless, as communal lands surround wildlife preserves established by the national government, the care and management of wildlife by CAMPFIRE also protects the animals in the preserves.⁷⁵ In 1989 twelve rangers were hired to oversee the reserves, using the funds gained by culling impala. On their patrols these rangers remove snares from animal trails, and their presence has reduced the poaching of elephants and rhinos.⁷⁶

Most preservation efforts in Africa have failed because the benefits have largely gone to national governments. The CAMPFIRE ethical presumption is: “He who bears the costs gets the benefits.”⁷⁷ Because local communities bear the major cost, they should receive the main benefits. CAMPFIRE puts this ethical presumption into practice by selling culled impala meat to local people below market price, distributing profits from hunting and

tourism to ward councils, and providing compensation to households for any loss due to wild animals (lions killing goats or elephants entering the fields of the villagers).

Hunting also creates local jobs. By 1993 more than a third of the households in the village of Masoka in Zimbabwe were receiving their primary income from work related to the safari camps, and this increase in income from hunting has meant that villages are turning their land over to wildlife rather than cattle grazing.⁷⁸

Of course political turmoil in Zimbabwe has impacted the success of the CAMPFIRE strategy. In the past twelve years the wildlife population within the country has declined by about 80 percent, as revenue from tourism has been very low. To replace this loss of income, the national government has increased the number of licenses that allow hunting in the national parks.⁷⁹

In some places hunting may be the best strategy to prevent an animal population from outgrowing the environment available to it. In the Lowveld areas of South Africa where the Kruger National Park is located, elephants share the environment with other keystone species, including baobab trees and knob-thorn trees, both of which shelter small animals and provide them with food. These trees, however, are eaten by elephants, and when there are too many elephants they destroy these trees trying to satisfy their hunger.

To preserve both elephants and biodiversity, the park is now divided into high elephant-impact zones (where there is no management of elephants) and low elephant-impact zones (where the elephant population is limited by translocations or culling). When the damage to the environment in the high elephant-impact zones reaches a “threshold of potential concern,” the management of the zones is switched so the highly impacted zone can recover.⁸⁰

The long-term management of this elephant reserve will almost certainly involve culling by shooting elephants, because only a few elephants can be relocated, and the cost of practicing contraception on elephants is prohibitive. Using drugs to kill an elephant contaminates the meat, making it unsafe for animal or human consumption and causes suffering, because when elephants are paralyzed they suffocate to death while fully conscious.

An elephant population grows by about 6 percent annually, so the number of elephants to be culled will depend on the size of the herd. Therefore, to minimize culling in a wildlife reserve, which is committed to preserving both elephants and the biodiversity of the ecosystem, it would seem best to keep the elephant population smaller rather than allowing elephant herds to grow to the maximum size that a habitat can support.

None of these environmental decisions, however, can be made ethically without adaptive management systems, which take into account the ecosystems and also the livelihoods and human rights of those living in these ecosystems. This is as true in Asia and Africa for managing wildlife reserves as it is in the United States for managing forests, deserts, and wetlands.

Ethical and Legal Presumptions

Policy in the United States for forests and wildlife has shifted from a best-use approach to an adaptive management policy emphasizing environmental sustainability and local involvement in decision-making. The best-use position puts the burden of proof on those who argue against a utilitarian calculation. Adaptive management affirms ethical and legal

presumptions, such as the ESA, that support the precautionary principle and shift the burden of proof to potential users of an environment.

Under the Clinton administration pragmatic decisions were made to restore and preserve diverse ecosystems while allowing various uses of public land. The Bush administration tried to return to the moral and legal presumptions of a best-use policy, which would mean setting aside the precautionary principle and shifting the burden of proof back to advocates of preserving public land. The Obama administration has reasserted the ecological principles that were put in place by the Clinton administration.

In Asia and Africa, those committed to preserving wildlife in nature reserves also support social justice for local communities living beside these reserves. On these continents adaptive management means preserving ecosystems and endangered species by ensuring that local people are involved in the decision-making process and are fairly compensated for sharing the responsibilities of preserving wildlife.

Hunting and tourism are generally allowed in nature reserves, but are constrained by ethical and legal presumptions. The burden of proof is on those proposing to intervene in a wildlife habitat for economic gain. They must ensure protection for endangered species and also protect the rights of local people to participate in making decisions and to benefit equitably from the use of habitats they share with wildlife.

NOTES

1. Edward O. Wilson, *The Future of Life*, 58. A summary of Wilson's recommendations appears on pages 160–164.
2. Samuel Hays, *Conservation and the Gospel of Efficiency*, 41–42, quoted in Joseph R. DesJardins, *Environmental Ethics*, 48.
3. Gifford Pinchot, *The Training of a Forester*, 13, quoted in DesJardins, *Environmental Ethics*, 48.
4. *Ibid.*, 50.
5. DesJardins, *Environmental Ethics*, 49.
6. Solange Nadeau, Bruce A. Shinkler, and Christina Kakoyannis, "Beyond the Economic Model: Assessing Sustainability in Forest Communities," in Bruce A. Shindler, Thomas M. Beckley, and Mary Carmel Finley, eds., *Two Paths towards Sustainable Forests: Public Values in Canada and the United States*, 62.
7. An economic criticism of the Forest Service is that it "subsidizes logging by selling timber at prices way below its timber marketing costs and by providing other subsidies, such as the \$811 million in tax breaks that the forest industry was given in 1991." Norman Myers and Jennifer Kent, *Perverse Subsidies*, 170.
8. Jack W. Thomas, "Are There Lessons for Canadian Foresters Lurking South of the Border?" *Forestry Chronicle* 78, no. 3 (2002): 382–387, in Peter N. Duinker, Gary Z. Bull, and Bruce Shindler, "Sustainable Forestry in Canada and the United States: Developments and Prospects," in Shindler, Beckley, and Finley, *Two Paths towards Sustainable Forests*, 38.
9. Brent S. Steel and Edward Weber, "Ecosystem Management and Public Opinion in the United States," in Shindler, Beckley, and Finley, *Two Paths towards Sustainable Forests*, 78.
10. *Ibid.*, 80. "The ecosystem approach is a strategy for the integrated management of land, water, and living resources that promotes conservation and sustainable use in an equitable way. Application of the ecosystem approach will help to reach a balance of the three objectives of the Convention. It is based on the application of appropriate scientific methodologies focused on levels of biological organization which encompass the essential processes, functions, and interactions among organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of ecosystems." At <http://www.cbd.int/ecosystem>. The Clinton administration expected that the Senate would ratify this treaty,

but the opposition was so strong that the convention was never brought to a vote. See “How the Convention on Biodiversity Was Defeated,” <http://sovereignty.net/p/land/biotreatystop.htm>.

11. Garry Peterson, “Using Ecological Dynamics to Move toward an Adaptive Architecture,” in Charles J. Kibert, Jan Sendzimir, and G. Bradley Guy, eds., *Construction Ecology*, 139.
12. James Gustave Speth, *Red Sky at Morning*, 39. Forests in Brazil are being logged to plant sugar cane that will be used to produce ethanol. See Sabrina Vale, “Losing Forests to Fuel Cars,” *Washington Post*, July 31, 2007, D01, <http://www.washingtonpost.com/wp-dyn/content/article/2007/07/30/AR2007073001484.html>. In Niger, however, trees are being planted. See Lydia Polygren, “In Niger, Trees and Crops Turn Back the Desert,” *New York Times*, February 11, 2007, <http://www.nytimes.com/2007/02/11/world/africa/11niger.html>.
13. William McDonough and Michael Braungart, *Cradle to Cradle*, 88.
14. For example, “Except for a few isolated patches, the 31 million acres of California forests, indeed all the forests in the Western United States, have been changed in some way by humans.” Peter Fimrite, “Bringing Forests Up to Date,” *San Francisco Chronicle*, February 29, 2008, W-2, <http://sfgate.com/cgi-bin/article.cgi?f=/c/a/2008/02/29/BAJ5UNM1N.DTL>.
15. Haider Rizvi, “Local Control Saves Forests—Report,” *OneWorld.net*, March 27, 2008, <http://us.oneworld.net/article/view/159182/1>. The largest private landowner in California, Sierra Pacific Industries, relies on the active forest management guidelines of the Sustainable Forest Initiative (SFI), which represents timber and paper interests. Jonathon Curiel, “Getting Clear with Sierra Pacific Industries,” *San Francisco Chronicle*, February 29, 2008, W-8, <http://sfgate.com/cgi-bin/article.cgi?f=/c/a/2008/02/29/BAE7UTPD6.DTL>.
16. Forestry Stewardship Council, “FSC’s Case Studies,” http://www.fsc.org/en/about/case_studies. The European version of the FSC is the Programme for the Endorsement of Forest Certification (PEFC) in the UK, <http://www.pefc.org/internet/html>.
17. Haider Rizvi, “Local Control Saves Forests—Report,” *OneWorld.net*, March 27, 2008, <http://us.oneworld.net/article/view/159182/1>.
18. “Northern Spotted Owl,” *Endangered* (1996), <http://www.amnh.org/nationalcenter/Endangered/owl/owl.html>.
19. Bruce Babbitt, *Cities in the Wilderness: A New Vision of Land Use in America*, 61.
20. Clare M. Ryan, “The Ecosystem Experiment in British Columbia and Washington State,” in Shindler, Beckley, and Finley, *Two Paths towards Sustainable Forests*, 196.
21. “AMA Strategies—Executive Summary,” <http://www.fs.fed.us/gpnf/forest-research/ama/strategy/frmain.shtml>.
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24. “Final National Forest Regulations Take Step Backwards,” The Wilderness Society, <http://www.wilderness.org/OurIssues/Forests/nfma.cfm>.
25. Dan Berman, “Judge Forbids Forest Service from Using 2005 Planning Regs,” *E&E News*, March 30, 2007, <http://www.klamathbasin-crisis.org/forestsandlogging/judgeforbidsFS033007.htm>.
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31. US Endowment for Forestry and Communities, "News Release (February 3, 2010)," http://www.usendowment.org/images/HWHF_Press_Release_draft1_12_10.pdf. The Endowment for Forestry & Communities, Inc. (Endowment) is a not-for-profit corporation established September 21, 2006, at the request of the governments of the United States and Canada in accordance with the terms of the Softwood Lumber Agreement (SLA) between the two countries. The Endowment is one of three entities designated to share in a one-time infusion of funds to support "meritorious initiatives" in the United States. See <http://www.usendowment.org/>.
32. "Healthy Watershed through a Healthy Forest Initiative," Virginia Department of Forestry (February 19, 2010), http://www.dof.virginia.gov/press/nr/2010/2010-02-19_forests-faucets.htm.
33. News Release No. 1136, USDA, Forest Service (October 14, 2011), <http://www.fs.fed.us/news/2011/releases/10/community.shtml>.
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35. Andrew Light, "Ecological Restoration and the Culture of Nature: A Pragmatic Perspective," in Light and Rolston, *Environmental Ethics*, 399–400.
36. *Ibid.*, 406–409. Restoration, Light concludes, "is an obligation exercised in the interests of forming a positive community with nature and thus is well within the boundaries of a positive, pragmatic environmental philosophy."
37. Bruce Babbitt, *Cities in the Wilderness*, 72.
38. *Ibid.*, 73–74.
39. *Ibid.*, 82.
40. *Ibid.*, 24.
41. Marjorie Stoneman Douglas was one of the first to warn about the threats to the Everglades in her 1947 book, *The Everglades: Rivers of Grass*.
42. Babbitt, *Cities in the Wilderness*, 34.
43. Environmentalists also had to resort to the courts over several years to force compliance. "The Everglades: A National Gem Worth Protecting," EarthJustice, <http://earthjustice.org/features/ourwork/the-everglades-a-national-gem-worth-protecting>.
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45. "CERP: The Plan in Depth," Everglades Restoration, http://www.evergladesplan.org/about/rest_plan_pt_01.aspx.
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63. APRIL is the acronym for Asia Pacific Resources International Holdings, Ltd.
64. Ministry of Environment & Forests (Government of India), The Official Website of Project Tiger, <http://projecttiger.nic.in>.
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66. An Indian activist writes: "[E]nvironmental protection per se is of least concern to most of these groups. Their main concern is about the use of the environment and who should benefit from it." Anil Agarwal, "Human-Nature Interactions in a Third World Country," *The Environmentalist* 6, no. 3 (1986): 167, quoted in Ramachandra Guha, "Radical American Environmentalism and Wilderness Preservation: A Third World Critique," *Environmental Ethics* 11 (1989): 71–83, in Schmidtz and Willott, *Environmental Ethics*, 291.

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68. Guha, "Radical American Environmentalism and Wilderness Preservation," in Schmitz and Willott, *Environmental Ethics*, 290.
69. *Ibid.*, 291.
70. "Both German and Indian environmental traditions allow for a greater integration of ecological concerns with livelihood and work. They also place a greater emphasis on equity and social justice. . . . [And] they have escaped the preoccupation with wilderness preservation so characteristic of American cultural and environmental history." *Ibid.*, 292.
71. Raymond Bonner, *At the Hand of Man: Peril and Hope for Africa's Wildlife*, 8, in David Schmitz, "When Preservationism Doesn't Preserve," *Environmental Values* 6 (1997): 327–339, in Schmitz and Willott, *Environmental Ethics*, 322.
72. Schmitz, "When Preservationism Doesn't Preserve," 323.
73. *Ibid.*, 322.
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