

Chapter 5

Natural Resources Stewardship



Stewardship is an essential concept that helps to define appropriate human interaction with the natural world. An ethic of stewardship builds on collaborative approaches; ecosystem integrity; and incentives in such areas as agricultural resources management, sustainable forestry, fisheries, restoration, and biodiversity conservation.

AMERICA IS BLESSED with an abundance of natural resources which provide both the foundation for its powerful and vibrant economy and serve as the source of aesthetic inspiration and spiritual sustenance for many. Continued prosperity depends on the country's ability to protect this natural heritage and learn to use it in ways that do not diminish it.

Stewardship is at the core of this obligation. It calls upon everyone in society to assume responsibility for protecting the integrity of natural resources and their underlying ecosystems and, in so doing, safeguarding the interests of future generations. Without personal and collective commitment, without an ethic based on the acceptance of responsibility, efforts to sustain natural resources protection and environmental quality cannot succeed. With them, the bountiful yet fragile foundation of natural resources can be

protected and replenished to sustain the needs of today and tomorrow.

Stewardship will become more challenging, however, as the human population grows and its needs and expectations put greater pressure on the environment. As the population increases, so too will demands for fertile soil, clean and abundant water, healthy air, diverse wildlife, food, fuel, and fiber. And as the stresses on society intensify, so too will the need felt by individuals and families to turn to the natural landscape for beauty, solitude, and personal renewal. But if present trends continue and stewardship is not widely embraced, more people will face the results of having less available for them.

Recent years have presented Americans with examples of the apparent conflicts between human needs and the ability of natural resources to meet them. Some stem from use of or harm to resources once perceived as inexhaustible. Other conflicts stem from development decisions made when information was too sketchy to anticipate their full consequences. The depletion of once-abundant ocean fish stocks, the decline of Pacific salmon runs, the loss of old-growth

forests, and struggles over the uses of freshwater supplies are clear reminders of the need today for greater stewardship of natural resources for the future.

Renewable resources - together with such nonrenewable resources as oil and gas, metals, industrial minerals, and building materials - contribute to the foundation of the economic and social development of the country. Conversion of these resources for human benefit has sometimes resulted in costly and unforeseen environmental consequences, many of which are only recently being fully recognized.

Public lands, including national forests and grasslands, national parks, national wildlife refuges, and rangelands, comprise a significant portion of the landscape. By statute, federal agencies are to administer these lands for the benefit of all Americans, including those who live near public lands or whose economic well-being depends on the goods and services these lands produce. Public lands are managed for multiple purposes; at times these purposes can conflict. Consider, for example, the many uses of public land resources. They offer extensive recreational opportunities, support millions of acres of cattle and sheep grazing, produce billions of board feet of timber, are the source of extensive energy and mineral resources, supply water to many metropolitan areas, and often represent the last remaining reserve for unique ecosystems and biological resources. Studies by the U.S. Department of the Interior's Bureau of Land Management have shown that the cumulative effects of past activities on public lands have led to serious environmental problems, including degraded aquatic and riparian systems; less productive rangeland conditions; fragmented plant, animal, and fish habitats; and decline in forest health.^[1] Future stewardship of these public lands is critical to the economic and environmental well-being of many regions of the United States, and has important implications for the country as a whole as well.

Nonfederal lands comprise 71 percent of the acreage in the United States. Private landowners and state and local governments are responsible for the natural resources on nearly 1.6 billion acres of land. The majority of these nonfederal lands, almost 1.4 billion acres, are privately owned.^[2] Thus, the commitment Americans have to conserving the natural heritage for future generations is best demonstrated through the stewardship of their own lands. Many owners of private lands have pursued ideals of stewardship, enhancing the economic and aesthetic values of the land, and giving both landowners and the community a sense of place. Private decisions on managing these lands have long determined the quality, vitality, and fate of natural resources and will continue to do so. Ecological integrity of the nation's natural systems will continue to depend on private choices.

Privately owned lands, however, are most often delineated by boundaries that differ from the geographic boundaries of the natural system of which they are a part. In some cases, therefore, individual or private decisions can have negative ramifications. For example, private decisions are often



driven by strong economic incentives that result in severe ecological or aesthetic consequences to both the natural system and to communities outside landowner boundaries. The Council has recognized this barrier to achieving sustainable development. The key to overcoming it is to strengthen stewardship commitments through public policies and individual actions that reflect the principles of sustainable development and support for collaborative processes to enable landowners to enhance the value, productivity, and ecological integrity of their lands.

Although much remains to be done, the United States has made major strides in achieving a healthier environment and better protection of its natural resources. For example, by 1994, 14 million acres across the United States were protected through regional, state, and local land trusts. These private and voluntary efforts have produced a 49-percent increase in conservation acreage since 1990.^[3] Citizens, environmental organizations, and government at all levels are working together to save precious natural resources while safeguarding jobs and local traditions. Actions to protect the bayous of southern Louisiana, Mono Lake in the Sierra Nevada Mountains, and striped bass in the Chesapeake Bay are but a few examples of collaborative approaches to natural resources stewardship. Soil conservation is another case in point. Faced with increasing soil losses due to erosion, Congress enacted the Conservation Reserve Program in 1985, which authorizes contracts with farmers to convert highly erodible cropland to less intense forms of production such as trees and permanent grasses.^[4] Since then, 36.4 million acres, or 9 percent of cropland has been retired from crop production; on this land, soil erosion has dropped by 93 percent.^[5]

Stewardship of the ocean's resources is also critical to the nation's public trust responsibility. Oceans provide jobs, recreation, and transportation to coastal communities, where more than three-fourths of the country's population are expected to reside by the year 2000.^[6] The sustainable use of these marine ecosystems, as well as the species that inhabit them, is crucial to the future of these regions and the nation.

Ensuring that an environmental stewardship ethic is a guiding principle of natural resources management requires a lifelong commitment from individuals, communities, corporations, and the nation--today and for generations to come. How can society best develop and maintain a commitment to stewardship? The answer is multifaceted, but it starts with understanding the dynamics at work in the environment and the connection among environmental protection, economic prosperity, and social equity and well-being. It depends on the processes by which individuals, institutions, and government at all levels can work together toward protecting and restoring the country's inherited natural resource base. Education, information, and communication are all important for developing a stewardship ethic. Also important is the widespread understanding that people, bonded by a shared purpose, can work together to make sustainable development a reality. The following policy recommendations and actions offer ways in which stewardship can help move the nation toward sustainable development.

Using Collaborative Approaches to Manage Natural Resources

The collaborative decision-making processes described in chapter 4, "Strengthening Communities," can be particularly useful in the responsible stewardship of natural resources.

Collaborative approaches can apply both to public and private resources when the decisions made on their use have broad implications for the whole community. What has become clear is that the conflicts over natural resources increasingly are exceeding the capacity of institutions, processes, and mechanisms to resolve them. Adversarial administrative, legal, and political processes are common venues for challenges to the many interests in natural resources. These processes typically stress points of conflict, dividing communities and neighbors. Litigation tends to be acrimonious and costly, often resulting in solutions that do not adequately address the interests of one or more key stakeholders. What is usually missing from the process is a mechanism to enable the many stakeholders to work together to identify common goals, values, and areas of interest through vigorous and open public discussion within the constraints of antitrust laws. The Council endorses the concept of collaborative approaches to resolving conflicts.

In its meetings and task force groups, the Council found that communities, citizens, and other stakeholders across the country are inventing and using their own collaborative processes. For example, stakeholders within the Feather River Watershed in northeastern California, an area containing portions of three national forests--Plumas, Lassen, and Tahoe--created a forum for people living there to use "common sense to achieve obvious goals: healthy forests and healthy small-town economies through time." Known as the Quincy Library Group (named for the library in Quincy, California, where it holds its meetings), the community-based group began by developing a management plan for the 2.5 million acres of prime federal timber land and is now working on steps to carry it out.

These types of groups are discovering and demonstrating that collaborative approaches, based on a framework of natural systems or defining land forms such as watersheds, offer useful tools for identifying common visions and goals for advancing stewardship and resolving conflicts. Experience is showing that they can serve as reliable means for addressing different interests; putting near-term problems in the context of long-term needs; integrating economic, environmental, and social considerations; building from but moving beyond the limits of narrow jurisdictions and authorities to adopt innovative solutions; and reflecting community interests as well as the interests of citizens elsewhere. Collaborative approaches envisioned here can give impetus to stakeholders and communities to make use of best available science in their decision-making processes, meet and exceed legal requirements for protecting the environment, monitor natural resources status and trends, and exercise collective responsibility for practicing and passing on a stewardship ethic.



Basing collaborative approaches on natural systems encourages people to identify with a particular place and take responsibility for it. Frequently, people do not feel connected to a place or locale and so do not feel responsible for taking care of it. Decisions typically get made in fragmented ways, and the connection between individual lives and the health of an ecosystem can seem remote. Yet human activities are very much connected to the ecological integrity of a natural system, such as a watershed, and considering their effects within a framework based on a

defining natural system can highlight cause-and-effect relationships; identify long-term implications; and lead to solutions that integrate economic, environmental, and equity goals. Construction practices that keep harmful sediments from accumulating in rivers and lakes help protect water quality for drinking and swimming, for example. Careful planning of a community's development along a lake or river can enhance property values, increase merchants' sales, add to people's appreciation of the natural environment, and protect wildlife habitat. The possibilities for recognizing and responding to these kinds of interrelationships abound.

Government plays a critical role in conserving, protecting, and restoring natural resources by setting and maintaining a foundation of strong environmental laws and regulations. Enforcement is an important component, particularly for pollution control. No single government agency or collection of unconnected agencies is sufficient. No set of statutes or regulations--however comprehensive and detailed--can take the place of the commitment by individuals and communities to protect natural resources and ecological integrity. Individuals, communities, and institutions need to work individually and collaboratively to ensure stewardship of natural systems.

Finding an acceptable integration of local, regional, and national interests is not without difficulty. Issues involving public lands and marine resources, for instance, require that a broad, national perspective be maintained. However, local stakeholders for the various interests involved in a particular natural resources issue may be able to contribute to more informed and reasoned choices--collectively--for resolving issues. At the same time, many people who live at a distance from a particular natural resource system can have strong and legitimate interests in the broad, national perspective be maintained. However, local stakeholders for the various interests involved in a particular natural resources issue may be able to contribute to more informed and reasoned choices -- collectively -- for resolving issues. At the same time, many people who live at a distance from a particular natural resource system can have strong and legitimate interests in the outcome of its multiple uses. To ensure that all interests are represented, all stakeholders need to be involved in the decision process. Who are stakeholders? The definition needs to be broad. Stakeholders include those who live, work, recreate in, or are committed to the well-being of the watershed or other defining land form and the natural resources issues of concern. They include federal, state, and local governments; community members and institutions; businesses; national and other nongovernmental organizations; and private citizens.

Characteristics of successful collaborative approaches are emerging. Among them are use of a framework based on a natural system such as a watershed or bioregion, voluntary multistakeholder discussions, a transparent process open to the public, incorporation of existing law, and use of the best available science.

Government agencies at all levels have a pivotal role to play in encouraging stakeholders to search for common goals, resolve conflicts, apply the best available science, inventory and monitor natural resources status and trends, and exercise collective responsibility for overall natural resources conditions.

POLICY RECOMMENDATION 1

COLLABORATIVE APPROACHES

Use voluntary, multistakeholder, collaborative approaches to protect, restore, and monitor natural resources and to resolve natural resources conflicts.

ACTION 1. The President should issue an executive order directing federal agencies under the Government Performance and Results Act to promote voluntary, multistakeholder, collaborative approaches toward managing and restoring natural resources.[\[7\]](#)

ACTION 2. Governors can issue similar directives to encourage state agencies to participate in and promote voluntary, multistakeholder, collaborative approaches.

ACTION 3. Public and private leaders (within the constraints of antitrust concerns), community institutions, nongovernmental organizations, and individual citizens can take collective responsibility for practicing environmental stewardship through voluntary, multistakeholder, collaborative approaches.

ACTION 4. The federal government should play a more active role in building consensus on difficult issues and identifying actions that would allow stakeholders to work together toward common goals. Both Congress and the executive branch should evaluate the extent to which the Federal Advisory Committee Act poses a barrier to successful multistakeholder processes, and they should amend regulations to help accomplish this.[\[8\]](#)

MONO LAKE AND "DROUGHT-PROOFING" LOS ANGELES

In 1990, Mono Lake was on the verge of ecological collapse. Located high in a remote part of the Sierra Nevada Mountains of California, the lake's diverted tributaries supplied Los Angeles with about 14 percent of its water. After almost 50 years of diversions, Mono Lake's shoreline had dropped 42 feet, exposing it to a host of environmental risks. Toxic dust storms arose from the recently exposed banks. The natural salinity of the water doubled, dramatically reducing its productivity. Of the 1 million ducks and geese that had once migrated to the lake, fewer than 1 percent returned.

Meanwhile, southern California faced its seventh year of below-normal rainfall -- a dire situation for this fast-growing, high-population area. Imported water, diverted from Mono Lake and other sources located throughout the Sierra and Rocky Mountains, is lifeblood for the and metropolis of greater Los Angeles, home to more than 14.5 million people. As the prolonged drought continued, city officials and area business leaders worried that the water shortage would threaten the region's economic stability. Local and national environmentalists were equally worried that the growing

thirst of the growing city would destroy treasured wilderness areas like Mono Lake.

The Mono Lake Committee, a citizens' group with more than 17,000 members, was organized to save Mono Lake. From the outset, the committee recognized that this could only be done by reducing the diversion pressures. "Yet it's not enough to find a Mono Lake-only protection plan," says Martha Davis, executive director of the committee. "It was also important to understand Los Angeles' needs and the needs of the state. We refused to promote solutions that would transfer environmental problems from Mono Lake to another ecosystem or watershed." Working with Los Angeles, California, and area businesses, the Mono Lake Committee set out to "drought-proof" Los Angeles.

Water conservation was the first priority. The city pledged to reduce water use by 20 percent. Ultra low-flush toilets were installed in most homes. Higher water prices discouraged unnecessary use. By 1994, the city had exceeded its goal, and water use was identical to 1975 levels -- even with 800,000 more residents. But conservation was not enough.

"We've reached a point in water management where if it's not water reuse, it's water abuse," comments Bureau of Reclamation Commissioner Don Beard. Imported water is still needed for households, but recycled water can be used for many industrial purposes. The collaboration of government and private organizations developed a plan to reclaim and conserve more than 135,000 acre-feet of water annually -- twice the amount of water needed to protect Mono Lake. State and federal agencies pledged \$86 million to build two water reclamation projects. Businesses liked the estimates showing that reclaimed water was \$347 per acre-foot, \$64 less than imported water

The plan allowed the state to issue an order in September 1994 restricting water diversions from Mono Lake. With its rewatered streams, Mono Lake will ultimately rise about 16 feet -- a level that most ecologists believe will preserve the integrity of the lake and its ecosystem. Waterfowl will return to its shores. Aquatic life will be restored. "We are," explains Los Angeles City Council member Ruth Golonter, "preserving one of America's most significant ecological treasures."

Using Ecosystem Approaches to Natural Resources Management

America's history of natural resources management started just before the turn of the last century. Since then, a complex array of state and federal natural resources management laws and implementing agencies has been created, each attempting to balance new tensions over the use and conservation of a particular resource. Around each resource - whether forests, water, fisheries, wildlife, or recreation areas - distinct policies, institutions, constituents, and professions have evolved. Because the health and productivity of these resources and the communities that depend on them are often linked, policies and practices in one resource area have frequently had negative and unintended consequences for other resources. For example, irrigation and flood

control projects have sharply diminished salmon populations in California and the Pacific Northwest, creating divisive and protracted conflicts among resource users.[\[9\]](#)

In addition, science and experience have shown the variety of resources, importance of ecological processes such as nutrient cycling, fire, and hydrologic cycles - some of which operate over broad geographic areas - in determining the condition of a natural resource in a particular place. For example, forest management policies and practices in the Rocky Mountain region were developed before the importance of fire as a factor in forest health was recognized. Because the role of ecosystem processes was not considered, today there are difficult and costly management decisions to be made to restore the vitality of the region's forest ecosystems and the local economies that depend on them.

The shift from managing a single resource or a single species to managing an ecosystem for a variety of resources, including the maintenance of its biodiversity, makes sense. And there are numerous advantages to using the best scientific, social, and economic information and fostering collaboration among landowners and other stakeholders -- actions that characterize this new generation of natural resources management. Scientific information is essential in identifying which ecosystem processes are vital to the productivity of a wide array of natural resources, while social and economic information can identify which strategies will best meet public demands and landowner objectives. Ecosystem management cooperative efforts can often be accomplished through voluntary participation, carefully accounting for landowner objectives. For example, properly planned forest management activities, including various types of harvesting, can be compatible with ecosystem processes and can be used effectively to simulate natural events.

Concerned about the cumulative impact of numerous local management actions, many scientists and resource managers now believe that biodiversity, water quality, and other natural resources can only be protected through cooperative efforts across large landscapes -- landscapes that often cross ownership boundaries. At the same time, conflicting demands for all resources are forcing public agencies to explore new planning and policy mechanisms that would involve broader public participation to minimize conflicts. Since 1992, federal agencies, including the U.S. Forest Service, the U.S. Bureau of Land Management, the U.S. Fish and Wildlife Service, the U.S. National Park Service, and the U.S. Environmental Protection Agency, have established ecosystem management policies to guide their decisions for achieving various goals, including those set by law.

Independently, a number of efforts have been undertaken to combine the use of ecosystem approaches with greater public participation. They have used such mechanisms as regional planning or advisory groups to integrate natural resources management decisions. Conservation groups; local governments; private landowners; and forest products, energy, and utility firms -- among others -- are now involved in dozens of cooperative efforts to use ecosystem approaches for natural resources management around the country. More open communication and closer collaboration can enable ecosystem approaches to anticipate potential problems and conflicts, and identify potential solutions. Also, using adaptive management techniques to monitor results and incorporate lessons learned can ensure that shared goals are met and costly mistakes avoided.

Still, the effective and widespread application of collaborative ecosystem approaches faces a number of challenges. First, the approaches are new and experimental. Of the nearly 150 examples of ecosystem approaches to natural resources management in the United States identified by The Keystone Center's national policy dialogue on ecosystem management, nearly all have been initiated since 1990. Because the lessons of these early initiatives are just beginning to emerge, public agencies, landowners, and various interest groups can learn from these efforts. Second, ecosystem approaches offer the most promise for public and private lands that are managed for multiple uses such as forestry, fisheries, grazing, and recreation. It is in these areas that cooperative efforts to maintain important ecosystem processes will offer the greatest benefits for long-term resource productivity and biodiversity conservation.

Ecosystem approaches have been recognized by stakeholders with differing perspectives as a means to move forward in a new era in which scientific information, stakeholder communication, and management cooperation will be essential in making widely accepted decisions that perpetuate America's natural resources. The following recommendations provide a basis for making ecosystem approaches to natural resources management more effective.



POLICY RECOMMENDATION 2

ECOSYSTEM INTEGRITY

Enhance, restore, and sustain the health, productivity, and biodiversity of terrestrial and aquatic ecosystems through cooperative efforts to use the best ecological, social, and economic information to manage natural resources.

ACTION 1. Federal and state agencies should identify and address areas in which interagency cooperation is needed for sustaining ecosystems, natural resources productivity, and biodiversity; and they should allocate funds to ensure successful cooperation. Since many agencies operate under laws passed decades ago, they should help revise policy frameworks to address the needs of maintaining ecosystem processes and the resources that depend on them.

ACTION 2. Conservation groups, private landowners, and local governments should identify actions and conditions that will advance their objectives and so are most important for their participation in ecosystem approaches to natural resources management.

ACTION 3. Government agencies at all levels should help cooperative local efforts use ecosystem approaches to natural resources management by providing access to information, technical assistance, and funding and by removing policy and administrative obstacles to successful ecosystem approaches.

ACTION 4. Federal and state agencies, in collaboration with localities,

should develop indicators which can be used to monitor the status of ecosystems and natural resources productivity. They should encourage consensus goals and shared responsibilities for restoring damaged ecosystems.

ACTION 5. Government agencies, conservation groups, and the private sector should expand the use of ecosystem approaches by using collaborative partnerships, developing compatible information databases, and carrying out appropriate incentives for responsible stewardship.

PROTECTING LOUISIANA WETLANDS

Each year, a total of about 35 square miles of coastal Louisiana wetlands, or a football field worth of land every IS minutes, washes into the sea. The rapid erosion is threatening natural ecosystems and hundreds of communities that located on the delta where the Mississippi River meets the Gulf of Mexico. But the outlook is changing -- thanks in part to the Louisiana Coastal Wetlands Interfaith Stewardship Plan, formed in 1986 to help congregations across Louisiana understand the magnitude of the problem and look for possible solutions. Since then, churches and synagogues throughout coastal Louisiana have sponsored 20 forums attracting more than 2,000 people interested in learning why and how to protect and restore wetlands.

At first, the presence of churches and synagogues in a resource conflict puzzled some. "Among my earliest experiences was a meeting at the Department of Natural Resources in Baton Rouge," remembers Rob Gorman, a social worker for Catholic Social Services for the region. "On one side of the room were executives from the Louisiana Chemical Association, Mid-Continent Oil and Gas, and the Louisiana Landowners Association, On the other side were activists from the Environmental Defense Fund, Louisiana Wildlife Federation, and Sierra Club. I was introduced as from Catholic Social Services and virtually all heads turned and someone asked the question: "What is the church doing here?"

"I explained that religious congregations had to be present because of our understanding of stewardship and our social justice commitment to preserving the jobs of family fishermen and all others dependent upon the resources of the wetlands," Gorman continues. "Let's call it a moral obligation. Environmental degradation and poverty go hand in hand."

The presence of the religious community helped break open the debate In ways that might otherwise not have been possible. People act differently when they meet in a church instead of a corporate boardroom or state hearing room," says Mark Davis,

executive director of the Coalition to Restore Coastal Louisiana. It also helped to build stronger grassroots support for coastal protection, which spurred a series of important measures. In 1989, the voters in the state approved by a three-to-one margin the Louisiana Wetlands Conservation and Restoration Trust Fund. The following year, Congress approved the Coastal Wetlands Planning, Protection, and Restoration Act, which included \$ 1.5 billion in funds to help restore Louisiana's wetlands.

The President's Council on Sustainable Development heard from religious leaders on April 26, 1995, during a roundtable held in conjunction with a Council meeting in San Francisco. "God made the Earth, made it beautiful, and made us to cherish and protect it," observed Paul Gorman, executive director of the National Religious Partnership for the Environment. "With its breadth of outreach, moral witness, capacity to motivate, firm foundation in mainstream values, and ability to bring diverse groups together, the American religious community can make a profound contribution to the search for sustainability."

Emphasizing Incentives and Eliminating Disincentives for Natural Resources Stewardship

Another important step for encouraging natural resources stewardship of public and private lands and waters is to review and, where necessary, overhaul the wide range of incentives and disincentives affecting such stewardship. The need for review is particularly important in light of funding cuts in government natural resources programs. The challenge is to identify new, market-based approaches to promoting stewardship and participatory planning and to eliminate subsidized programs that promote or encourage unsustainable activities, rather than only reacting to problems after they have become intractable. Examples of the latter include controversies associated with federally owned resources such as minerals, forage, and timber.

While public lands play an important role in achieving a national goal of sustainability, private lands are also critical to achieving sustainability and natural resources conservation because 64 percent of the lands in the continental United States are privately owned.^[10] Moreover, of the 728 species listed as endangered or threatened under the Endangered Species Act, 50 percent are found on federal lands at least once, while the other 50 percent are found on a combination of nonfederal lands, including state and locally owned lands and private lands." To date, existing laws and regulations by themselves have not been entirely satisfactory in achieving positive results.

In the case of timber lands, encouraging improved stewardship of private industrial and nonindustrial forest lands offers an opportunity to enhance profitability and accrue long-term ecological benefits. Encouragement could come in the form of increased technical or financial assistance, or both. Nonindustrial private forest landowners own 287.6 million acres or 59 percent of the nation's 490 million acres. The forest industry owns another 70 million acres or 14 percent.¹² Although most forest lands are managed for multiple use, private forest lands are often managed with a stronger emphasis on fiber production than are public forest lands. Private

lands are also capable of producing more wood at a lower cost per unit than public timber lands. Because of these factors, private forest land figures significantly in market-based approaches to promoting natural resources stewardship. A review of potential incentives for timber production on private forest lands might lead to opportunities to meet society's demand for forest products and provide jobs, a sound tax base, and high environmental quality in a more economically efficient way.

As discussed in chapter 2, "Building a New Framework for a New Century," correctly designed market incentives used within an appropriate regulatory framework can provide the most efficient set of tools to relieve and redirect pressures that are leading to degradation or depletion of the natural resource base on which the country's social, economic, and environmental vitality depends.

Public policies that undermine stewardship and encourage excessive exploitation of resources include public expenditures that lead to ecologically or economically harmful projects and tax policies that promote resource degradation. Public policies and private activities aimed at conservation can create a combination of economic self-interest, voluntary action, and, when necessary, regulatory controls to promote sustainability. By integrating public policy with market-driven economic incentives, including least-cost methods, appropriate regulations can encourage private property interests and users of public lands to make socially desirable and beneficial decisions that promote resource conservation. The challenge is to remove disincentives and establish incentives in three distinct areas.

- **Subsidies.** Many subsidies encourage consumption-based rather than conservation-based behavior by obscuring the true costs of decisions. Examples of subsidies in direct conflict with other laws and policies include subsidized overgrazing of public lands, leading to the destruction of habitat and reduced productivity. Similarly, cheap hydropower and subsidized diversion of water for irrigation jeopardize the continued existence of Columbia River salmon and other endangered species, and price supports for sugar production lead to habitat loss and increasing pollution of Florida waterways.
- **Expenditures.** Public expenditures on economic infrastructures such as roads, dams, schools, and industrial parks can "encourage investment and induce development in areas that might not otherwise be attractive to development; such developments are often environmentally dubious, too. This would be the case, for instance, when they encourage sprawl that requires new costly infrastructure or agriculture that requires costly subsidized electricity.
- **Taxation.** Tax codes and policies, if properly designed, can promote sustainability and resource conservation by creating incentives and disincentives to promote sustainability and can transfer value among various segments of society. These tools do not eliminate costs of sustainability and conservation, but rather transfer costs from the private to the public sector. Tax incentives include property tax reductions for those who commit to managing property for species of concern, tax credits for expenses incurred in improving degraded habitat or creating new habitat for target species, transferrable development rights and land swaps, or capital gains treatment of returns from sustainable managed timber operations to encourage this continued land use. Other incentives are tax deductions for income derived from economic activity on lands managed fully and

perpetually for species of concern; inheritance tax reform to promote conservation by ensuring that large tracts of habitat do not have to be liquidated, broken apart, or devoted to more economically intensive use as a consequence of inheritance taxes (or their avoidance); capital gains tax deferral on land transfers that facilitate or continue to provide for conservation; and exploration of the use of conservation credits as a mechanism to create a market for environmentally protective actions.

In sum, executive and legislative bodies at the federal, state, local, and tribal levels responsible for tax, economic, and other policies that influence natural resources should remove disincentives that undermine stewardship and establish incentives for sustainable resources management and protection.

POLICY RECOMMENDATION 3

INCENTIVES FOR STEWARDSHIP

Create and promote incentives to stimulate and support the appropriate involvement of corporations, property owners, resource users, and government at all levels in the individual and collective pursuit of stewardship of natural resources

ACTION 1. Commercial users of public resources should pay the full cost associated with the depletion or use of those resources - reflecting both market and nonmarket values. For example, decisions on providing access for timber and grazing uses should take into account not only financial costs but net impacts on ecological systems (positive as well as negative), including effects on water quality and biological diversity.

ACTION 2. Federal, state, local, and tribal officials, in making decisions on public infrastructure projects, should weigh the economic benefits of the project against the full costs - incorporating both market and nonmarket costs, such as the net impacts on the ecological system. Existing projects should be reengineered to the extent possible to restore ecological functions and habitat using cost-benefit analyses, including both market and nonmarket values.

ACTION 3. Legislative bodies at the federal, state, local, and tribal levels should extend tax credits and deductions to promote actions taken by property owners to enhance the long-term conservation value of their property beyond compliance with existing regulations.

ACTION 4. Landowners who take conservation action beyond compliance with regulations, such as establishing habitat for endangered species, should not face penalties for returning to the regulated standard.

ACTION 5. State, local, and tribal governments should identify habitats of particular ecological concern and establish impact fees or mitigation requirements to shift effects to regions of lower concern.

ACTION 6. State and federal governments should establish, through general taxes or user fees on public resources, a trust fund to be used in purchasing particularly ecologically sensitive or valuable habitats.

ACTION 7. The federal government should develop a matching fund program to encourage federal, state, local, and tribal investment in sustainable programs and projects.

ACTION 8. The federal government should establish a revolving fund to enable local communities to undertake the planning required to develop incentive-based resource conservation programs.

Securing Sustainable Agriculture

Fundamental to the conservation and stewardship of natural resources is the role of sustainable agriculture. There are at least four levels at which agricultural sustainability is important to sustainable development in the United States. These are the field, the farm, the ecosystem, and the nation.

At the field level, sustainable use of technology and natural resources is essential to the maintenance of agricultural productivity. Appropriate use of soil and water helps to conserve these vital resources for future generations and promotes economic efficiency.

At the farm level, financial viability is important for the economic health of the agricultural sector and the development and quality of life of rural communities.

At the ecosystem level, health and sustainability depend heavily on agricultural activities. Because agriculture uses such a large amount of the land base and water supply, it inevitably has significant effects on wildlife habitat, recreation, marine and freshwater fisheries, municipal and industrial water treatment, shipping, and water storage.

At the national level, agricultural sustainability has many facets. Agricultural productivity determines food prices in the domestic market and influences the nation's ability to compete in export markets. The direction of agricultural research and development, coupled with economic incentives, plays a large role in farmers' production practices and therefore affects food costs and quality as well as the environment. Finally, agricultural markets and products account for 16 percent of U.S. employment.[\[13\]](#)

Consideration of sustainability at these various levels is woven throughout the following discussion and recommendations on sustainable agriculture.

Stewardship of prime farmlands is a fundamental component of sustainable agriculture. Prime farmlands are highly productive, versatile, or otherwise unique and are of strategic importance to the nation as a whole as well as to individual regions. A number of pressures, both internal to agriculture and external to it, threaten the quality of the natural resources base upon which domestic production of food, feed, fuel, and fiber depend. Although total cropland in the United States has stayed nearly constant since 1945 at 460 million acres, the loss of farmland to urban

and other nonfarm uses can be a major local or state issue. Much of the best farmland is adjacent to major metropolitan areas and is being converted to nonagricultural uses.[\[14\]](#)

Management of farms and rangeland is a key part of sustainable agriculture. Mismanagement can result in negative environmental consequences and create a loss of productivity through such processes as erosion, salinization, overfertilization, and misuse or accidental releases of pesticides and fertilizers. Agricultural land use is a significant contributor to impaired water quality of rivers, lakes, and estuaries. Other consequences of agricultural land use include risks to human health, loss of wildlife habitat, and declining biodiversity.[\[15\]](#) Because of these factors, stewardship of productive cropland and grazing land as a natural resources base is critical to the nation's future.

Farmers and ranchers control a significant portion of the land area of the United States. Of the 1.9 billion acres of land in the United States (excluding Alaska), approximately 907 million are dedicated to agriculturally related purposes, including cropland, pasture, and rangeland.[\[16\]](#) Agricultural activities are central to both the national economy and rural economies and have significant effects on conservation of natural resources, governmental budgets, and international trade.

American agriculture is in transition. The number of farms declined by almost 31 percent, from 2.9 million in 1970 to 2 million in 1994, as the average size of farms increased about 28 percent in the same period. During the 1978-92 period, the number of families in farming decreased about 15 percent, and total farm employment dropped 19 percent.[\[17\]](#)

New strategies are needed to address the changing situation. In the past, federal and state governments have designed many resource conservation programs from the top down, with inadequate local involvement. Community priorities are often not heard or understood. To continue moving toward sustainable agriculture, local communities need to be empowered to participate.

Agricultural sustainability can be enhanced by the application of an integrated whole-farm/whole-ranch systems approach which addresses the social, economic, and environmental effects of agriculture and recognizes the interrelationships among management practices. The systems approach includes management of various factors, such as nutrients, pests, irrigation, and soil, on a site-specific basis. This approach involves steps to develop, demonstrate, and evaluate whole-farm and whole-ranch systems on a wider scale. The public and private sectors should encourage farmers to adopt this approach on a voluntary basis.

WHAT IS SUSTAINABLE AGRICULTURE?

Sustainable agriculture is an integrated system of plant and animal production practices having a site-specific application that will, over the long term, satisfy human food and fiber needs; enhance environmental quality and the natural resources base upon which the agricultural economy depends; make the most efficient use of both nonrenewable resources and on-farm/ranch resources and integrate, where appropriate, natural

biological cycles and controls; sustain the economic viability of farm/ranch operations; and enhance the quality of life for farmers/ranchers and society as a whole.

CONSERVING THE SOIL

Controlling erosion not only sustains long-term productivity of the land, but also reduces the amount of soil, pesticides, fertilizers, and other substances that can move into the nation's waters. By 1992, American farmers had reduced soil erosion on cropland by almost 1 billion tons per year from 1982 levels, according to the U.S. Department of Agriculture's 1992 National Resources Inventory. This is enough topsoil saved in one year to fill a convoy of dump trucks 95 abreast stretching from Los Angeles to New York. Soil erosion savings have come about through the Conservation Reserve Program (700 million tons), conservation technical assistance (300 million tons), and conservation compliance (1 00 million tons).[\[18\]](#)

Federal and state actions related to integrated farming systems should be consistent, with a view toward:

- Renewing and refining targeted land retirement programs to improve cost-effectiveness and enhance pollution prevention, wildlife, and conservation benefits;
- Building on conservation requirements of the 1985 and 1990 farm bills and the Farmland Protection Policy Act;"
- Giving greater protection to prime farmland from conversion to nonagricultural uses;
- Supporting initiatives for environmentally friendly pest management techniques with the goal of encouraging agricultural producers - with assistance from public and private partners - to implement integrated pest management;
- Managing animal waste to avoid pollution of ground and surface water;

Reducing agricultural damage to local air and water quality and the global environment;
and

- Reducing consumption of nonrenewable energy.

Successful promotion and adoption of sustainable agriculture practices depend on technological innovation and dissemination. Agricultural research should be refocused toward integrated farming systems that jointly address productivity, profitability, improved efficiency, and environmental protection. This will require more interdisciplinary research. Educational programs to transfer knowledge of existing and developing technologies can be improved. Effective transfer systems include mechanisms to teach and demonstrate these technologies at the local level. Institutions can provide incentives to reward those who develop such research

and educational programs. In addition, it is important to recognize the efforts of U.S. agencies and international institutions that are promoting sustainable agriculture in developing countries.

Federal agricultural commodity programs should be made more flexible to encourage farmers to respond to market signals, improve crop rotations, and diversify the mix of agricultural goods produced, all to enhance profitability and environmental quality. Granting greater flexibility to farmers can result in environmental improvements when farmers adopt resource-conserving practices; this can also lead to gains in profitability as farmers become better equipped to manage in ways that reduce the amount of resources used. The historic lack of flexibility in base-acreage requirements, for example, has created barriers to diversification of operations, good stewardship practices and systems, and improved efficiency and profitability.

In practice, sustainable agriculture can:

- Ensure a readily available, affordable, and continuing supply of high-quality food and fiber to all sectors of American society;
- Provide commodities to fulfill a range of national objectives, including international trade and commitments for humanitarian food aid;
- Contribute to increasing efficiency and profitability on farms and to making rural communities vital and economically prosperous;
- Protect human health and the environment, with an increasing emphasis on pollution prevention; and
- Promote conservation of biodiversity through integrated farming systems.

POLICY RECOMMENDATION 4

AGRICULTURAL RESOURCES

Manage and protect agricultural resources to maintain and enhance long-term productivity, profitability, human health, and environmental quality.

ACTION 1. Government at all levels should seek to reduce the compounding and threatening effects of urban sprawl on prime farmland. States and localities can identify and take strategic measures to protect their prime farmland, including such policies as easements, zoning, taxation, financial incentives, and transportation.

ACTION 2. Government should clarify and revise policies and programs in potential conflict with each other and with the objectives of sustainable agriculture and should closely coordinate and consolidate related programs. For example, this could include consolidating certain conservation programs under the U.S. Department of Agriculture's (USDA:s) Natural Resources Conservation Service, integrating USDA technical and financial resources with natural resources objectives, and strengthening soil and wetlands conservation programs.

ACTION 3. Agricultural producers can broadly implement integrated farming systems (whole-farm and whole-ranch planning) to ensure that agricultural activities maintain and enhance natural resources; protect human health and environmental quality, including the quality of water, air, and soil; and protect and enhance wildlife populations,

habitat, and diversity.

ACTION 4. Partnerships involving USDA agencies, other federal and state agencies, conservation districts, private agricultural consultants, environmental organizations, commodity groups, and other interested organizations and individuals should be strengthened to implement natural resource, agricultural conservation, and water quality programs.

ACTION 5. The federal government should increase investment in sustainable agricultural research, technical support, and demonstrations of conservation techniques and sustainable farming systems.

ACTION 6. The federal government should continue to move toward market pricing for the use of public natural resources, including timber, water, oil and gas, minerals, and grazing, recognizing that there may be circumstances in which subsidies are warranted for the public good.

ACTION 7. The federal government should increase flexibility in farm commodity programs and improve access to capital to encourage farmers to respond to market signals, improve crop rotations, and diversify the mix of agricultural goods produced to enhance profitability and environmental quality.
Achieving Sustainable Management of Forests

Forests cover about one-third of the country - more than 737 million acres.^[20] They provide a great diversity of economic, ecological, recreational, cultural, and spiritual benefits. Important steps - including both public and private action - have been taken to put the United States on an effective course for achieving sustainable forestry management. There is a rich fabric of laws, institutions, and activities under way at the federal, state, local, and tribal levels to guide management of the nation's forests.

In 1992, during the United Nations Conference on Environment and Development in Rio de Janeiro, the United States announced its commitment to carry out ecosystem management on all federal forest lands. And, at the Second Ministerial Conference on the Protection of Forests in 1993 in Helsinki, the United States declared its commitment to the goal of achieving sustainable management of all U.S. forests by the year 2000.^[21]

A variety of international and domestic efforts are emerging that are intended to promote and expand sustainable forest management. These efforts include work by the U.S. Forest Service and other federal

agencies, the Forest Stewardship Council, the Canada-U.S. Association of Rainforest Alliances through the Smartwood Network, the Stewardship Incentive Program, and the Society of American Foresters through its Long-Term Health and Productivity Initiative. These efforts offer a variety of approaches, including technical assistance, education, financial incentives, monitoring, and certification. Also contributing to promoting and expanding sustainable forest management are U.S. efforts in international negotiations.

Private initiatives include the American Forest and Paper Association's adoption in 1994 of the Sustainable Forestry Initiative.^[22] This is a significant development. The association's membership is comprised of more than 400 forest and paper companies and related trade associations. Its members account for approximately 84 percent of the paper production, 50 percent of the solid wood production, and 90 percent of the industrial forest land in the United States. The initiative lays out principles and measures of performance for sustainable forestry management on industrial lands and nonindustrial private lands that supply timber to industry.

One of the key events in forestry is the Seventh American Forest Congress scheduled for February 1996 in Washington, D.C. It is being convened by a broad range of participant -- including environmental, industry, government, and academic leaders -- to develop a shared vision; set of principles; and recommendations for forest policy, research, and sustainable management of America's forests into the next century. Forest congresses have been held periodically since 1882 to provide a forum for rethinking the role of forests. The last one took place in 1975. The President's Council on Sustainable Development views the Seventh American Forest Congress as an opportunity to forge a nonpartisan, dynamic, and participatory course for the future. The Council's policy recommendation is intended to build on this and other initiatives already under way for sustainable management and protection of the nation's public and private forest lands.

POLICY RECOMMENDATION 5

ACHIEVEMENT OF YEAR 2000 SUSTAINABLE FOREST MANAGEMENT GOAL

Establish a structured

ACTION 1. The President should direct USDA, the U.S. Department of the Interior, and other relevant agencies to build upon, support, and promote ongoing efforts to achieve sustainable forest management. These efforts should address such areas as national and international initiatives, terms of reference, criteria for defining sustainable forest management and indicators to measure progress toward their achievement, and use of resulting information in policy formulation. The agencies should explore various means for accomplishing this; the

process involving a representative group of stakeholders to facilitate public and private efforts to define and achieve the national goal of sustainable management of forests by the year 2000. Seventh American Forest Congress offers one important avenue.

Replenishing and Protecting Fisheries

Stewardship offers a conceptual framework for integrating the use of resources with environmental safeguards. With stewardship, future generations can enjoy a rich diversity of freshwater and marine life. This need is evident. Entire communities and the nation as a whole have experienced significant economic and social damage due to the precipitous decline - and sometimes complete collapse - in freshwater, marine, and estuarine fisheries. Habitat degradation combined with overfishing can create what has been called commercial extinction in once-abundant fish stocks.

From Georges Bank off the New England Coast to the Gulf of Mexico to the Columbia River, the decline is evident. For example, on the West Coast, 214 salmon runs are considered at risk, two of which are endangered due to commercial exploitation and habitat degradation. Habitat degradation, hydropower generation (which hinders salmon migration and diminishes water quality), hatchery practices, and harvesting activities are the primary causes of decreases in stocks of salmon and other anadromous fish. Habitat degradation, hatchery operations, and overharvesting also harm many estuarine fish.^[23] The dramatic decline in freshwater, marine, and estuarine fisheries underscores the need for stewardship based on a system of effective laws, regulations, and programs.

Applying sound, comprehensive scientific information to the development of national fishery policy can reduce or eliminate much of the uncertainty that is impeding protection of freshwater and marine fisheries today. Implementation of science-based fishery management plans will help resolve the problems facing some fisheries, such as overfishing and the loss of spawning and nursery habitat, including fragile freshwater and coastal habitats. But improved management and correction of overfishing alone will not be enough to turn around the sharp decline in fish stocks. Protection and restoration of aquatic ecosystems and proper care of watersheds and riparian habitats are critically important. New policies need to be initiated and existing ones continued and enhanced to eliminate, mitigate, and prevent activities that degrade habitats.

POLICY RECOMMENDATION 6

RESTORATION OF ACTION 1. The U.S. Department of Commerce - in conjunction with

FISHERIES *Restore habitat and eliminate overfishing to rebuild and sustain depleted wild stocks of fish in U.S. waters.*

the National Marine Fisheries Service; the Regional Fisheries Management Councils; and other relevant federal agencies, state fisheries management agencies, and tribes - should develop fishery management plans that remove the human causes of fish population decline, including the elimination or mitigation of habitat degradation activities and incentives that encourage such activity. These plans should adopt the precautionary principle in decisionmaking that in the face of scientific uncertainty, err on the side of resource conservation.

These plans should address reduction in capitalization; improvement in the precision of science used for decisionmaking; quantitative assessments of social and economic effects associated with specific fisheries; public and private mitigating actions; reductions of bycatch, or sea life incidental to the catch of targeted species; improved cooperation and coordination among fisheries and land management agencies, private industry, hydropower agencies, and other stakeholders; and better programs to prevent accidental introduction of exotic species.

ACTION 2. The federal government, working with regional councils, states, and other stakeholders, should establish an allocation system for threatened U.S. fisheries as a possible fishing management tool. The system would set a limit on the number of fishermen eligible to work in threatened fisheries. In these cases, the stakeholders could explore a trading program that would enable fishermen to buy and sell the limited fishing rights. This action would create a cost-effective program for limiting fishing and thereby reduce pressure on endangered fish stocks. In determining whether to adopt a system of trading fishing rights, the economic impact on the industry must be considered.

THE RETURN OF THE ATLANTIC STRIPED BASS

In 1993, record numbers of striped bass, or rockfish, were hatched in the Chesapeake Bay, astounding scientists and creating a resurgence of one of the most important commercial and recreational fisheries on the East Coast. Striped bass migrate all along the Atlantic Coast, and most spawn in the tidal waters of the Chesapeake Bay, the nation's largest estuary.

Today's optimism stands in sharp contrast to the devastating conditions facing the Atlantic striped bass a decade ago. At that time, overharvesting and pollution led to a near collapse of the fishery and forced federal and state lawmakers to impose fishing restrictions. Notably, in 1984, Congress passed the Atlantic Striped Bass Conservation

Act which allowed the Atlantic States Marine Fisheries Commission to develop a coastwide management plan to restore the striped bass. The plan called for severely restricted harvesting of the fish all along the Atlantic Coast, from Maine to North Carolina. Maryland took action within its fishing waters, imposing a five-year moratorium on harvesting striped bass beginning in 1985. Virginia followed suit in 1989. By 1990, promising signs of rebounding hatches allowed both states to lift their moratoria and the commission to ease its restrictions. Three years later, the number of young striped bass was the largest ever recorded. By 1994, the striped bass was declared a recovered resource, although special regulations are still in effect to ensure the fishery's long-term health.

The plan's success rested on the cooperation among commercial and recreational fishermen along the Atlantic seaboard, states and the federal government, and agencies within the federal government. The interagency, interstate cooperative approach taken is now considered a model for other fishery management plans. Says Bill Matuszeski, director of the U.S. Environmental Protection Agency's Chesapeake Bay Program Office, "It is a great example of how coordinated fisheries management, increased habitat, and improved water quality can bring an important fish species back from the precipice to an economically and ecologically restored state."

Strengthening National Natural Resources Information

Information on the current condition of natural resources and related trends is vital to measuring national and site-specific progress toward sustainability. There are already numerous sources of natural resources data collected by many different government agencies, communities, tribes, private landowners, and others. Much of the information, however, is not readily accessible to public and private policymakers, managers, or interested citizens because it exists in different formats at different locations. The situation impairs the ability to monitor and assess long-term effects of management actions and to evaluate sustainability. This problem is particularly acute in the case of baseline data.

As discussed in chapter 3, "Information and Education," it is essential to make data more accessible, to make better use of the data now available, and to move toward compatibility of data from numerous sources. While actions to protect and restore ecosystems need to occur as more complete data are gathered, comprehensive inventory and assessment of the nation's renewable and nonrenewable natural resources and bio-diversity are equally essential. These data can help provide a sound comprehensive basis for informing public and private natural resources decisions.

Many initiatives are aimed at improving compatibility and accessibility of natural resources data, including information that is comparable in terms of geographic and temporal scales in the computer-based analysis methods used. For example, interagency, regionwide ecosystem

assessments are being conducted in the Pacific Northwest, the upper Columbia River Basin, the Sierra Nevada region of California, and the southern Appalachians. These efforts should be continued and expanded to include other regions.

Federal and state agencies and tribes can play an important leadership role by collaborating in the development of methods and protocols for data collection, analysis, display, and access. It is useful to build on past experience, such as the national natural resources surveys conducted for the past 20 years by USDNs Natural Resources Conservation.

Service and Forest Service, and by the U.S. Fish and Wildlife Service. The national natural resources surveys and regionwide ecosystem assessments focus primarily on generic resource categories.[\[24\]](#)

In addition, there is the national network of Natural Heritage Programs which provides more detailed information on the distribution and abundance of plant and animal species and types of ecosystems. This network of state databases is the product of 20 years of partnership efforts involving state government agencies and The Nature Conservancy. The resulting Heritage Network offers a comprehensive source of data on biological diversity and is a useful complement to other resource databases.

The long-term goal for strengthening national natural resources information is to bring about better strategic and operational decisions at all levels of government and the private sector based on reliable, high-quality information that integrates economic, environmental, and equity considerations.

POLICY RECOMMENDATION 7

NATURAL RESOURCES

federal, state, and tribal natural resources and biodiversity inventories, assessments, and databases; and by developing and using compatible standards, methods, and protocols.

ACTION 1. Federal and state natural resources agencies should convene planning sessions among all stakeholders to agree on data and information uses, standards, and methodologies for collecting data and conducting assessments of the nation's biodiversity and natural resources stocks, and the formats for reporting such data and information.

ACTION 2. Federal and state natural resources agencies and private institutions can intensify efforts to collect inventory data, involving contractors, volunteers, and others in the process, and applying agreed-upon collection and reporting standards and methodologies.

ACTION 3. Federal and state natural resources agencies should establish accessible and useful data repositories.

ACTION 4. All those involved in collecting and reporting natural resources inventories can coordinate to develop indicators of sustainability and indices showing the status of efforts to achieve the

sustainable use of resources.

ACTION 5. Natural resources managers can monitor their management practices on a voluntary basis. Independent third-party verification of biodiversity assessments and sustainable practices may also prove valuable.

ACTION 6. The federal government should support data collection and analysis efforts for migrating species that breed in the United States but winter in other countries.

Creating Partnerships for Conservation

In areas that lie between densely populated urban land and protected wildlands, the interaction between people and their environment is critically linked to the protection of biological diversity and environmental quality for future generations. Owners of private property in these semi-natural areas are important participants in preserving biodiversity and creating sustainable economies. Future economic and ecological prosperity will depend to a significant degree on the ability to recognize and support the role that private landowners, in partnership with public and private conservation organizations, can play in promoting natural resources stewardship. Additionally, effective stewardship of biodiversity conservation can help prevent species declining to the point of endangerment and being listed under the Endangered Species Act.

Private voluntary partnerships can complement efforts under the existing system of laws that safeguard the environment and public and private protected lands, including conservation areas and preserves that provide an important measure of biodiversity protection across the country. The ability of future generations to make a living in these areas will be influenced by the extent to which private owners' efforts to conserve the landscape receive recognition and support.

Voluntary partnerships for conservation will benefit by drawing on three principles: sharing the lessons already learned about conservation on private lands, recognizing the successful efforts of those who have taken steps on their own property to demonstrate natural resources stewardship, and creating incentives that assist landowners in developing conservation strategies. Conservation easements, land exchanges, and transfer of development rights are types of mechanisms that can recognize the economic concerns of the landowner and the common goal of conservation. Use of these tools as a part of voluntary partnerships can help ensure that ecologically sensitive lands receive a measure of protection, complementing the nation's system of public and private protected areas, conservation areas, and preserves.

"THEY DIDN'T EXPECT APPLAUSE"

When Fred Annand and Al Hopkins made their presentation to a room filled with

senior managers from The Nature Conservancy and Georgia-Pacific Corporation, they expected a long day of negotiations ahead. They were prepared for tense moments and heated debates. They anticipated high-energy discussions. What they did not expect was applause.

Fred Annand is a conservation manager in the North Carolina office of The Nature Conservancy. Al Hopkins is a senior forest resource manager for Georgia-Pacific. Their proposal called for the two organizations to manage 21,000 acres along North Carolina's lower Roanoke River, one of two remaining large forested wetlands on the southern Atlantic Coast. The area teems with deer, wild turkey, black bear, bald eagles, and bobcats and provides a resting ground for migratory songbirds, herons, egrets, and some 210 other bird species.

Annand compares the venture to navigating through uncharted waters. "This is a new arrangement for us. Georgia-Pacific will own the land, but all of the management activities, including timber harvesting on the seven tracts along the river, will be agreed upon by a joint ecosystem management committee." Hopkins reflects on the warm reception their idea received from both organizations. "We asked the group what they thought. They responded with a round of applause. That was a first for me, and I could tell by Fred's look that he was just as surprised."

On November 14, 1994, The Nature Conservancy Chairman John Sawhill and Georgia-Pacific Chairman Pete Correll, both members of the President's Council on Sustainable Development, agreed to implement the plan. Sawhill thought it made good sense: "We are very excited about this partnership. We believe in cooperative conservation. The Roanoke agreement is a prime example of how industry, private groups, and the government can work together." Bruce Babbitt, secretary of the U.S. Department of the Interior and a Council member, also praised the agreement, calling it "unprecedented, setting a new course for forest management. The importance of this agreement is that it proves that a forest products company and conservation interests can develop hands-on management partnerships."

Representatives from the U.S. Fish and Wildlife Service and scientists from North Carolina State University are members of the management team. Some tracts of the 21,000 acres will be deemed high priority because of their special ecosystems. On these lands, Georgia-Pacific has agreed to relinquish its timber harvesting rights. On other tracts, timber harvesting will take place, following methods agreed to by the joint management team.

Correll sees the partnership as an important part of the company's corporate mission. "I view sustainable development not only as a mandate for wise environmental and resource stewardship, but also as a responsibility to sustain a way of life. The Roanoke project is a good example of this. It's definitely a step in the right direction."[\[25\]](#)

POLICY RECOMMENDATION 8

BIODIVERSITY CONSERVATION

Create voluntary partnerships among private landowners at the local and regional levels to foster environmentally responsible management and protection of biological diversity, with government agencies providing incentives, support, and information.

ACTION 1. The federal government should provide incentive grants to landowners who act to protect and manage habitat for native species.

ACTION 2. Federal, state, and local tax laws, including estate and inheritance tax laws, should encourage private landowners to protect biodiversity by managing lands for conservation, improving degraded habitat, or donating land into protected status.

ACTION 3. State, regional, and local authorities can provide incentives to private landowners by targeting the use of bonds to finance the purchase, or protection through easements, of lands with significant natural value that are most threatened by incompatible uses. These funds should be used to capitalize trusts for protected areas, quasi-governmental conservancies, or other land funds wherever possible.

ACTION 4. State and local land trusts and conservancies can develop covenants among cooperating owners to maintain the long-term health and integrity of ecosystems. State and local land trusts and conservancies can enlist the cooperation of landowners in sustainable management patterns.

ACTION 5. Voluntary regional or watershed landowner councils can be formed to promote information sharing and cooperation.

ACTION 6. The federal government should recognize and encourage these efforts by creating partnerships with nonprofit organizations.

[1] U.S. Department of the Interior, Bureau of Land Management, *Ecosystem Management in the BLM: From Concept to Commitment*, BLM/SCGI-94/005-1736 (Washington, D.C., 1994), p. 2.

[2] U.S. Department of Commerce, *Statistical Abstract of the United States 1994* (Washington, D.C.: Government Printing Office, 1994), p. 225, table 354.

[3] U.S. Department of Agriculture, Natural Resources and Environmental Division, Economic Research Service, *AREI Updates: Land Trusts, No. 13* (Washington, D.C., 1995).

[4] The Conservation Reserve Program was established by the Food Security Act of 1985, Title XII, Pub. L. 99-198, 99 Stat. 1354.

[5] Interagency ecosystem Management Task Force, *The Ecosystem Approach: Healthy Ecosystems and Sustainable Economies -- Volume II -- Implementation Issues* (Washington, D.C.: U.S. Department of Commerce, 1995), pp. 110-11; and U.S. Department of Agriculture, Natural Resources Conservation Service, *Summary Report, 1992 National Resources Inventory Graphic Highlights* (Washington, D.C., 1995), p. 1.

[6] U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service, *Fifty Years of Population Change Along the Nation's Coasts, 1960-2010* (Washington, D.C., 1990), p. 41.

[7] Government Performance and Results Act of 1993, 31 U.S.C. 1115-19 (1995).

[8] Federal Advisory Committee Act, 5 U.S.C. Ap.2 (1994).

[9] See U.S. Department of Commerce, National Oceanic and Atmospheric Administration, *Habitat Protection Activity Report 1991-1993* (Silver Spring, Md., 1994); and *Proposed Recovery Plan for Snake River Salmon* (Seattle, 1995).

[10] See *Statistical Abstract of the United States 1994*, p. 225, table 354.

[11] Endangered Species Act, 16 U.S.C. 1531 et seq. (1982); and Bruce A. Stein et al., "Status of U.S. Species: Setting Conservation Priorities," in U.S. Department of the Interior, National Biological Service, *Our Living Resources -- A Report to the Nation on Distribution, Abundance, and Health of U.S. Plants, Animals, and Ecological Systems* (Washington, D.C., 1995), pp. 399-400.

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[13] T. Alexander Majchrowicz and Jacqueline Salsgiver, "U.S. Farm and Farm-Related Employment in 1991," *Agriculture Information Bulletin*, no. 714 (Washington, D.C.: U.S. Department of Agriculture, Economic Research Service, April 1995), p. 1.

[14] U.S. Department of Agriculture, Economic Research Service, *Agricultural Resources and Environmental Indicators*, no. 705 (Washington, D.C., 1994), pp. 1-16.

[15] U.S. Environmental Protection Agency, Office of Water, *National Water Quality Inventory, 1992 Report to Congress* 841-R-94-001 (Washington, D.C., 1994).

[16] U.S. Department of Agriculture, Natural Resources Conservation Service, *Summary Report, 1992 -- National Resources Inventory* (Washington, D.C., 1994), p. 5.

[17] U.S. Department of Agriculture, National Agricultural Statistical Survey, *U.S. Number of Farms 1910-1993* (Washington, D.C.).

[18] U.S. Department of Agriculture, Natural Resources Conservation Service, *National Resources Inventory: Graphic Highlights of Natural Resources Trends in the United States Between 1982 and 1992* (Washington, D.C., 1995), p.3.

[19] Food Security Act of 1985; Agricultural Reconciliation Act of 1990, Pub. L. 101-508, 104 Stat. 1388; and Farmland Protection Policy Act, 7 U.S.C. 4201 et seq. (1982).

[20] *Forest Resources of the United States*, 1992.

[21] Information presented by Eldon Ross, associate deputy chief for research for the U.S. Forest Service, to the Second Ministerial Conference on the Protection of Forests in Europe, Helsinki, Finland, 16-17 June 1993, p. 4.

[22] Scott Wallinger, "A Commitment to the Future American Forest and Paper Association Sustainable Forestry Initiative," *Journal of Forestry* 93, no. 1 (January 1995): 16-19.

[23] See W. Nehlsen, J.E. Williams, and J.A. Lichatowich, "Pacific Salmon at the Crossroads: Stocks at Risk From California, Oregon, Idaho, and Washington," *Fisheries* 16, no. 2 (1991): 4-21; *Habitat Protection Activity Report 1991-1993*; and *Proposed Recovery Plan for Snake River Salmon*.

[24] U.S. Department of Agriculture, Natural Resources Conservation Service, 1992 *National Resources Inventory Background* (Washington, D.C., 1995).

[25] For more information, see The Nature Conservancy, "The Nature Conservancy, Georgia-Pacific Corporation Form Pact to Protect Significant Watershed in Eastern U.S.," press release (Arlington, Va., 14 November 1994).