

SECTION 4 RESOURCE SUMMARY AND CONSERVATION STRATEGIES



Photograph by George M. Aronson

“There are no easy solutions to the challenges of sustaining America’s forests and communities. The job is too big for any one group or agency... in partnership we can ensure their future.”

Dale Bosworth, Chief, USDA Forest Service



SECTION 4 RESOURCE SUMMARY AND CONSERVATION STRATEGIES

This section presents resource information from Section 2, conservation focal areas and priorities from Section 3, the land management framework and stewardship goals for the Highlands, and strategies for increasing protection of resources.

RESOURCE CONDITION

The natural resources in the Highlands make it a region of national significance. Approximately 40 percent of the New York – New Jersey Highlands—540,000 acres—are considered to have significant overall conservation values. But less than half of that land is currently protected. Moreover, other lands that may not be highly ranked on an overall basis are still critical to the sustainability of the specific resource values that people currently enjoy. For example, about half the large interior forests—approximately 200,000 acres—that both define the Highlands landscape and protect many of its highest quality watersheds and rare ecosystems are not protected and are vulnerable to further fragmentation and urbanization (Table 3-7, page 133).

The quality of ecosystem services and benefits directly affect human health and well-being. When ecosystems are degraded, the services and benefits also are degraded. Benefits affected are water quality and quantity; habitat viability; resilience of the ecosystem to withstand native pests and invasive exotic species; recreational opportunities; and the productivity and management opportunities of forest and agricultural lands.

Through the use of a Conservation Value Assessment model in this study, significant habitats and ecosystems were identified for conservation and protection. This assessment also identified the following existing conditions, projected changes, and environmental risks that would occur without additional conservation measures:

**Water:**

About 64 percent of the highest value water resource lands were identified as unprotected areas deserving further protection.

Projected changes: Increased dependence on Highlands water; increased storm runoff, decreased infiltration, and decreased stream baseflow and ground water availability.

Potential risks: Less water for a growing population; additional water treatment costs.

Productive Forests:

About 44 percent of the most productive forest lands were identified as unprotected areas deserving further protection.

Projected changes: Conversion of forest land to nonforestry uses, decreased parcel size, changed landowner objectives, lost productive forest land.

Potential risks: Loss of timber resources, greater restrictions on forest management operations.

Biodiversity:

Exactly 55 percent of the lands ranked highest for biodiversity were identified as unprotected areas deserving further protection.

Projected changes: Increased habitat loss, increased habitat fragmentation, increased number of exotic species.

Potential risks: Local extirpation of threatened and endangered species; loss of regional biodiversity.

Farms:

About 10 percent of the highest value productive farmlands were identified as unprotected areas deserving further protection.

Projected changes: Conversion of farm land to nonfarm uses, decreased parcel size, changed landowner objectives, lost productive farmland.

Potential risks: Loss of prime farm soils, greater restrictions on farm management operations.

Recreation:

About 17 percent of the highest value recreation lands are identified as unprotected areas deserving further protection.

Projected changes: Decreased recreational opportunities.

Potential risks: Fewer recreational areas, fewer recreational access points, decreased recreational opportunities, and diminished scenic beauty.



RESOURCE CONDITION; LAND STEWARDSHIP

While the significance of Highlands natural and cultural resources are perhaps most evident when viewed from a regional perspective, stewardship of these resources is more likely to be the result of decisions made at the local level. Whether management considerations are made by public or private landowners or through local government's land-use planning and regulatory powers, the thousands of individual decisions made every day across the Highlands are the largest determinant of the future of this landscape.

Traditionally, these decisions first reflect local and site-specific concerns. But, as shown by the Conservation Values Assessment in Section 2 and future change analyses in Section 3, cumulatively, these decisions have a regional effect on water, biodiversity, and recreational resources. Reconciling the gap between local decisions and regional effects is a critical challenge if the resources of the Highlands are to be sustained for future generations.

The analysis of current trends underscores the potential situation faced by the residents of the Highlands and others who also care about the future of its natural resources. About 100,000 acres (out of 285,000 acres) of these highest value areas have a high likelihood of being changed; 340,000 additional acres have high conservation value but a lower likelihood of being changed. Using current and projected population growth, the Highlands population could increase from 1.7 million to 2 million people in the next several decades, a growth rate of 26 to 48 percent from 2000 census figures. Based on the changes since 1990, more than 5,000 acres of forests, wetlands, and grasslands in the Highlands are affected each year—a rate that has accelerated since 1997.

The analyses in Section 3 described the likely effects caused by land use change. Perhaps most important are the expected effects on water resources. The number of watersheds in the Highlands likely to have high quality surface waters (less than 15 percent impervious cover) could be reduced by half in the next several decades. The number of watersheds with the exceptional water quality needed to sustain wild trout populations (less than 10 percent impervious cover) could be reduced by more than 75 percent. Expected ground water withdrawals are likely to exceed local supply in a number of the Highlands watersheds, including the Ramapo, Whippany, Pequest, Upper Delaware, and Lopatcong. The Rockaways and Upper Musconetcong basins could also show similar shortages.

LAND STEWARDSHIP IN THE HIGHLANDS

The Highlands region is a complex mix of private and public ownerships. Within each ownership group, a range of objectives, interests, and concerns exists, which poses considerable challenges and opportunities to conserve and protect critical resources.



LAND MANAGEMENT CHALLENGES

Even in a static ownership environment, the diversity of private ownership in the Highlands would be a complex picture. In fact, we expect private landownership will become increasingly complicated, posing additional challenges to the stewardship of natural resources. In the future, an increasing percentage of the Highlands will probably be owned and managed by more people, which would further parcelize existing ownerships and fragment existing forest cover. Based on the most recent land ownership survey, 84 percent of the forest land in the greater Highlands was privately owned. The number of acres owned has steadily declined over the past decades to less than 12 acres per owner. Likewise, more than 50 percent of the Highlands forest tracts are smaller than 10 acres. At this tract size, forest management becomes economically prohibitive, and there is insufficient contiguous forest to sustain native species that inhabit the forest interior.

For farmland, ownership patterns are similar. In addition, with an increase of residential and recreation/vacation homes adjacent to agricultural lands, farming activities become increasingly difficult as new neighbors complain about the smells and sounds of an operating farm.

Another problem is that landowners have little or no incentive to provide public benefits, such as clean water and wildlife and fish habitat. In many cases, tax laws and local ordinances actually serve as a disincentive for continued stewardship or even continued ownership of large contiguous blocks of land. For example, minimum lot size for residential housing has increased; however, local laws and zoning ordinances still encourage land subdivision and fragmentation of large tracts of forest cover.

Many of the same concerns, challenges, and constraints associated with multiple owners of private land occur with public land. Many public entities are involved, with diverse management objectives, different levels of funding for management and maintenance, and a mix of missions and authorities that may have competing objectives.

Three significant challenges have slowed progress towards regional and coordinated open space planning in the Highlands:

- Inadequate coordination among States, counties, and municipalities;
- The lack of a consistent regional view of environmental issues among Highlands decisionmakers; and
- Insufficient financial and technical resources available to natural resources agencies and private landowners to manage lands and pursue conservation strategies, including acquisition of lands.



LAND STEWARDSHIP OPPORTUNITIES

The parcelization of the landscape highlights the importance of those unfragmented, high value areas, including forests, that still remain. The analyses in Section 3 identified 11 such areas, comprising about 86,000 acres of the Highlands region, as Conservation Focal Areas (Figure 3-19, page 131):

- A. Depot Hill/Pawling/West Mountain;
- B. East Hudson Highlands;
- C. Ft. Defiance Hill and Canopus Valley;
- D. West end of New Croton Reservoir;
- E. Tuxedo and Arden Farms area;
- F. Ramapo Mountains and Torne Valley;
- G. Wyanokie and Farny Highlands;
- H. Pequannock Watershed;
- I. Sparta Mountain/Lubber's Run;
- J. Upper Pohatcong/Pequest area; and
- K. Scott Mountain/Musconetcong Ridge area.

Another means of identifying conservation priorities was to use the results of the econometric model of land use change (Section 3) to highlight those areas with the highest probability of change in the future and then to cross-tabulate those areas with the results of the Conservation Values Assessment in Section 2. Approximately 15 percent, or 100,000 acres of the New York – New Jersey Highlands region, had a high conservation value and a high likelihood of change. This analysis is useful as a tool for open-space purchase and land-use planning. Assumptions made during the analysis may change over time.

The areas identified in these analyses offer the best opportunity to sustain the Highlands resources and to ensure the quality of life for people who depend on benefits and services provided by those resources. The identification of these areas will help to inform decisionmakers of the resources that need to be protected, managed, or restored.

In addition, conservation opportunities need to include concerted complementary action throughout the region. One example is creating and maintaining forested riparian buffers. Riparian buffer areas play a crucial role in protecting aquatic systems and water quality. Development in these sensitive areas increased dramatically between 1984 and 2000. The future of remaining riparian buffers in the Highlands is uncertain. Establishing a minimum forested riparian buffer width of 150 feet (Section 3, Criteria for the High-Constraint Scenario) will reduce development in this sensitive area despite a large increase in population. Protection and creation of buffers throughout the region can have a ripple effect—both in terms of additional on-the-ground improvement, and in terms of broader education and awareness of natural resource issues and solutions.



LAND MANAGEMENT FRAMEWORK: EXISTING PARTNER ROLES

The stewardship capability of all landowners will determine the amount and condition of natural resources found in the Highlands. Landowners' awareness, commitment, and ability to protect and manage resources are critical to sustaining the derived ecosystem benefits. One program that serves forest landowners is the Forest Stewardship Program of the USDA Forest Service. The program provides technical expertise to nonindustrial private forest landowners to ensure that environmental and economic resource management principles are applied on their forest lands. Only a relatively small percent of private forest land (16,000 acres) is enrolled in the program. Similarly, the USDA Natural Resources Conservation Service has two programs: the Conservation Reserve Program (CRP) and the Environmental Quality Incentives Program (EQIP) to serve farmers and help protect natural resources.

The 2002 Farm Bill and the associated Conservation and Forestry Title programs, including a new Forest Land Enhancement Program, will provide funding to land owners for stewardship activities, and offers the opportunity for increased protection and conservation of natural resources in the region.

For more information on assistance programs for various resources, see Appendix I.

LAND MANAGEMENT FRAMEWORK

Because land in the Highlands is owned by many private and public interests, land and resource management and planning involves a complex network of heterogeneous private, local, county, State, and Federal organizations. In New York, there is less focus on the Highlands as an entity, and more attention on the area of the Highlands in the Hudson River Valley, also known as the Hudson Highlands. In New Jersey, the Highlands physiographic province has been recognized as an area of national significance by Federal, State, county, and nonprofit organizations.

The following section briefly summarizes ways that several public and private organizations have protected the natural resources of the Highlands and outlines potential future roles for these organizations. Appendix J provides a list of conservation activities and successes in the Highlands region.

EXISTING PARTNER ROLES

The Palisades Interstate Park Commission (PIPC) was established by bi-State compact and approved by the U.S. Congress more than 60 years ago. This bi-State agency could participate in land acquisition and land management within the New York – New Jersey Highlands region. In 1995, the New



LAND MANAGEMENT FRAMEWORK: EXISTING PARTNER ROLES

Jersey State legislature expanded the jurisdiction of PIPC. In 1997, PIPC was directly involved in purchase of portions of Sterling Forest in New York, and is responsible for management of the Sterling Forest State Park.

The need to protect critical open space parcels in the Highlands has also been documented in a number of important Federal and State studies including the New Jersey Development and Redevelopment Plan, the New York State Open Space Plan, and the U.S. Fish and Wildlife Service's New York Bight Restoration Study. (*Note: "Bight" in this context refers to the ocean area extending approximately 100 miles offshore from the Sandy Hook-Rockaway Point Transect to the Continental Slope.*)

Specifically, the New Jersey State Development and Redevelopment Plan recognizes the Highlands region as the first Special Resource Area in New Jersey. According to the State Plan, a Special Resource Area is a region with unique characteristics or resources of Statewide importance that are essential to the sustained well-being and function of its own region and other regions or systems—environmental, economic, and social—and to the quality of life for future generations. The State Plan recommends some planning and implementation strategies in the Highlands.

The New York State Department of Environmental Conservation's Draft Open Space Plan (New York State Department of Environmental Conservation 2001) identifies the Highlands as a unique physiographic region. This "unique area" category provides for the inclusion of several types of conservation of natural resources that do not fit neatly under the "significant ecological area" category. These areas do, however, meet the definition of significant ecological area, notably lands of natural beauty, of geological significance, and some wilderness character lands. The plan recommends developing a greenway corridor comprised of State parks, Department of Environmental Conservation forests, and other lands that span the length of the New York Highlands. In addition, the biodiversity assessment manual for the Hudson River estuary corridor (Kiviat and Stevens 2001) cites the need for additional inventory work to prevent continued conversion and fragmentation of Highlands area forests and wetlands. In addition, State watershed level assessment and planning at the county level in both New York and New Jersey provide a more regional perspective and foster cooperative action.

Demonstration of these approaches and others through Land Conservation Projects and pilot programs offer opportunities to showcase the potential for collaborative land-use decisionmaking and natural resource management (Appendix K).



LAND MANAGEMENT FRAMEWORK: POTENTIAL PARTNER ROLES

POTENTIAL PARTNER ROLES

Because the Highlands and their resources are nationally significant, the Federal government has an important responsibility to protect this landscape. One way to meet these challenges is through a partnership approach that involves Federal, State, and local governments, nongovernmental organizations, and individual citizens. Appendix I provides detailed information on Federal and State assistance programs for private landowners and organizations and how they might be effective in the Highlands region. As previously stated, often these programs work independently of each other. By acting in a coordinated manner, however, these agencies could provide complementary and shared approaches and avoid duplication of efforts in protecting and conserving the valuable resources of the Highlands.

USDA FOREST SERVICE

The USDA Forest Service envisions its role in the Highlands as one of convener, catalyst, and coordinator in supporting and implementing resource protection and management.

The Forest Service can act as a convener by bringing together various interests from across the Highlands region for purposes of education, stewardship, research, and coordination of conservation actions. The 1992 Highlands regional study and this 2002 update are part of the process of increasing the shared knowledge of natural resources, providing better and more consistent information across the entire Highlands region, and creating public forums to discuss and use these data. The Forest Service can continue to serve a Highlands-wide role in the future by establishing an on-going Highlands resource assessment process to initiate and coordinate studies in the Highlands and to create forums, including local compacts and bi-State roundtables, to help coordinate the use of natural resources information in land-use decisionmaking.

The Forest Service can also be a catalyst for specific conservation actions through its Cooperative Forestry Programs and by providing technical assistance to land use planners and natural resource managers in cooperation with the New York State Department of Environmental Conservation and New Jersey's Department of Environmental Protection. Existing Federal programs such as Urban and Community Forestry, Forest Legacy, and Forest Stewardship are ways in which the Forest Service already provides financial and technical assistance through the State agencies. The local Land Conservation Projects (Appendix K) funded as part of this study update serve as additional examples of support for local conservation actions.

The Forest Service can further help to implement these conservation strategies by acting as a coordinator among Federal agencies in protecting priority open space parcels, while providing tools for effective stewardship of existing lands.



LAND MANAGEMENT FRAMEWORK: POTENTIAL PARTNER ROLES

OTHER FEDERAL PARTNERS

Several other Federal agencies have natural resource protection and conservation programs that can make significant contributions to the management of the Highlands.

Federal partners, such as USDA Natural Resources Conservation Service; the Department of the Interior's Fish and Wildlife Service; U.S. Geological Survey; National Park Service; the USDA Cooperative State Research, Education, and Extension Service; and the U.S. Environmental Protection Agency have programs that can be implemented or expanded in the Highlands region to protect priority open space areas, work with public and private landowners on the proper stewardship of their lands, identify lands for open space acquisition, improve local land-use planning practices, and encourage regional planning for data management and open space protection.

STATE PARTNERS

State partners, such as the New Jersey Department of Environmental Protection and New York State Department of Environmental Conservation, have several programs that can be implemented or expanded in the Highlands region. State partner agencies work closely with regional, county, and watershed-level entities in natural resource protection and planning. In New Jersey, the Department of Environmental Protection funds planning activities for watershed management areas. Planning activities in several Highlands watersheds include education and outreach, watershed characterization and assessment, and open space and farmland preservation. In New York, the Department of Environmental Conservation has assisted in numerous land acquisitions in the Highlands region, funded by the Clean Water/Clean Air Bond Act and the Environmental Protection Fund.

LOCAL GOVERNMENT PARTNERS

While the significance of Highlands natural and cultural resources are perhaps most evident when viewed from a regional perspective, stewardship of these resources is more likely to be the result of decisions made at the local level. Land use planning and zoning are local governments' primary activities for protecting important natural resources and lands. Effective open space protection usually involves an appropriate mix of planning, regulation, and acquisition. Planning identifies important natural resources, protected lands, and linkages between those spaces. Regulation uses local ordinances and State laws to protect important areas, such as steep slopes, stream corridors, and wetlands. Finally, land acquisition involves obtaining important lands through purchase or donation, either through acquisition of full fee title, or purchase of development rights through a conservation easement.



LAND MANAGEMENT FRAMEWORK: POTENTIAL PARTNER ROLES

Land acquisition activities at the local level have been successful in almost 200 municipalities across New Jersey through the establishment of local open space taxes. Local open space committees work with land trusts, environmental organizations, elected officials, planning boards, and citizens to protect open space. In Morris County, the Open Space Farmland Preservation Trust Fund has helped in the acquisition of approximately 7,000 acres in the Highlands since 1993. In Sussex County, the Farmland Preservation program protected the first farm—121 acres in Green and Andover Townships—in 1990. To date, New Jersey's Farmland Preservation Program has permanently preserved 625 farms totaling over 85,000 acres.

The master planning process is another way for local governments to identify and protect important natural resources. The residents of Philipstown (Putnam County), New York are in the midst of a 2-year comprehensive planning process, and the town has focused attention on protecting important open space parcels. A grant from the USDA Forest Service has helped to ensure that the comprehensive resource information presented in the New York – New Jersey Highlands Regional Study: 2002 Update as well as other data from a variety of partners will be used to inform Philipstown's comprehensive plan and zoning ordinance update (Appendix K).

ORGANIZATIONS AND CITIZENS

Private, nongovernmental, and citizen organizations can play an important role in the protection of open space lands. Private organizations such as corporations and foundations can provide financial support to aid in land acquisition and planning activities. Nongovernmental organizations such as housing, economic development, and environmental groups can provide information to citizens on important natural resource issues that might not be fully addressed by Federal, State, or local government agencies. Also, land trusts and river basin organizations are important nonprofit groups that help acquire forests and farmlands by working with public officials to develop applications for State and county open space acquisition programs. Organizations such as the Trust for Public Land, Passaic River Coalition, New Jersey Conservation Foundation, Orange County Land Trust, and Scenic Hudson have been instrumental in fostering the relationships between property owners and public officials in several Highlands communities for land protection.

The individual citizen role can also be powerful in protecting natural resources. Citizens can work on a grassroots level to garner support for an issue and can be active in neighborhood associations and community boards, as well as gathering support for an issue at the local, county, State, or Federal level. Other examples include grassroots groups such as environmental commissions and homeowners associations; organizations such as watershed associations and soil and water districts; and regional entities such as river basin commissions and environmental



CONSERVATION GOALS AND STRATEGIES

coalitions. Whether management considerations are made by public or private landowners or through local governments' land-use planning and regulatory powers, the thousands of individual decisions made every day across the Highlands significantly influence the future of this landscape.

The growth of public and private partnerships has significantly led to the protection of many areas in the Highlands; however, many challenges still exist. To address these challenges, strategies to conserve and protect areas essential to maintaining the quality of life of millions who use and depend on the Highlands' natural resources are outlined below.

CONSERVATION GOALS AND STRATEGIES

STEWARDSHIP GOALS

The 1992 Highlands Study report set out five goals that are still considered vital for the long-term stewardship of the Highlands:

1. Manage future growth that is compatible with the region's ecological constraints;
2. Maintain an adequate surface and ground water supply that meets the needs of local and downstream users;
3. Conserve contiguous forests using management practices that are consistent with private property rights and regional resources;
4. Provide appropriate recreational opportunities; and
5. Promote economic prosperity that is compatible with goals 1-4.

Success in meeting the goals for the Highlands and implementing conservation strategies is a shared responsibility. All levels of government, landowners, businesses, citizens, and conservation organizations must be involved to ensure the goals are achieved.

PARTNERSHIP MODEL

The House Conference Report for Fiscal Year 2002 recommended that the approach that has been used to protect Sterling Forest be considered as a model for the rest of the Highlands (Appendix A). The Sterling Forest partnership is nurtured through existing authorities and programs at the Federal, State, and local levels, and leadership at each of these levels brings the partners together. Participation by nongovernmental organizations and private citizens is vital to this partnership.



CONSERVATION GOALS AND STRATEGIES

Through this partnership in Sterling Forest, nearly 20,000 acres have been protected since 1990:

- In 1990, 2,000 acres—all within New Jersey—were purchased from the Sterling Forest Corporation by Passaic County with \$9.2 million from the New Jersey Green Acres Program.
- In 1998, 15,280 acres were purchased from a Swiss investment group for \$55 million. Congress provided \$17.5 million (Federal Land and Water Conservation Fund); New York provided \$16 million; New Jersey provided \$10 million; and various foundations and the public donated \$11.5 million. Major private contributions included \$2.5 million from the Open Space Institute; \$2.5 million from Scenic Hudson; \$1 million from the Lila Acheson and DeWitt Wallace Fund for the Hudson Highlands and the Victoria Foundation Fund; and \$5 million from the Doris Duke Charitable Foundation.
- In 2000, 1,350 acres were purchased from Sterling Forest Corporation for \$7.89 million. The Federal government contributed \$2 million through the USDA Forest Service's Forest Legacy Program; New York contributed \$4 million; and New Jersey contributed \$1 million. The Palisades Interstate Park Commission, North Jersey District Water Supply Commission, foundations, and private individuals contributed \$890,000.
- Later in 2000, 659 acres were purchased from New York University for \$860,000. New York contributed \$360,000; the Trust for Public Land contributed \$250,000; and the Palisades Interstate Park Commission contributed \$250,000.
- Also in 2000, 209 acres were purchased from the B. Sears Hunter and Lawrence W. Copans Trust for \$610,000 using funds from New York.

As of September 2002, the total acreage in Sterling Forest was 17,988 acres in New York and 2,000 acres in New Jersey.

CONSERVATION STRATEGIES

Eight strategies have been identified to improve the stewardship of the Highlands' resources. Additional ideas were suggested during the public comment period and at the public listening sessions. These ideas were considered during the development of the conservation strategies, but some were not deemed practical or viable means for protecting the Highlands due to land ownership patterns and established policies for land-use decisionmaking. Such ideas included the establishment of a Highlands National Forest and the creation of a council or commission to guide natural resource decisionmaking in the Highlands. While these suggestions are not specifically included, the eight strategies do provide an array of choices and associated actions that should address most of the concerns raised through public comments.



CONSERVATION GOALS AND STRATEGIES

The following strategies are offered with the understanding that conservation of the rich and valuable landscape will be accomplished only through a broad partnership that brings together complementary strengths, information, and resources. (Numbers in parentheses tie each strategy to the five goals for the Highlands.)

- a. **Inform people about Highlands resource values.** A better understanding of the regional value of Highlands resources is essential to build a basis for protection and management. (Goals 1-5)
- b. **Provide consistent and updated information on Highlands resources for decisionmakers.** This study is a first step towards ensuring that decisionmakers are answering questions based on the best available data. (Goals 1-5)
- c. **Promote stewardship and protect landowner equity in private lands.** The majority of land in the Highlands is privately owned, and will probably continue to be so in the future. Incentives and technical assistance can help landowners ensure that forest and farmland continue to provide essential ecosystem benefits. (Goals 2-5)
- d. **Provide current and new information on management issues and practices on public and private lands.** The long-term stewardship of Highlands resources requires continued care of its land and water. The availability of science based resource management techniques, and most importantly, the dissemination of that knowledge to land managers is critical. (Goals 2-4)
- e. **Acquire easements and land for conservation purposes or compensate private landowners and local government for conservation of natural resources.** The use of public and private funds for acquisition is the most direct way of ensuring that Highlands resources identified in the study are protected for future generations. Such acquisitions are often a savings in community infrastructure costs but in some towns may result in a reduction of needed revenue for services. The effects of such acquisitions on local tax revenues need to be evaluated on a case-by-case basis. (Goals 2-4)
- f. **Improve State and local land use planning practices as a means of conserving Highlands resources.** The build-out and econometric analyses have indicated that the current patterns of growth will continue to change Highlands resources. Local decisionmaking, in particular, will influence form and substance of this change and the practices that are available to protect and manage Highlands resources. (Goals 1 and 5)
- g. **Improve and coordinate regional, interstate and intrastate conservation efforts.** Comprehensive conservation measures that span local and even State political boundaries may be needed for the long-term sustainability of regionally important resources. Such cooperation does not come naturally, so it must be encouraged and sustained. (Goals 1-4)



CONSERVATION GOALS AND STRATEGIES

- h. Use indicators to measure and monitor Highlands resource change.** Indicators based on the Highlands study and other environmental work can enable people to track changes in the environment and inform decisionmakers on the impacts and results of actions implemented. (Goals 1-5)

Actions and challenges associated with each strategy, and potential measures of accomplishment or environmental change are summarized in Table 4-1. These strategies are offered to stimulate public discussion, improve decisionmaking, and ensure resource availability in the Highlands for generations to come.



CONSERVATION GOALS AND STRATEGIES

Table 4-1. Conservation strategies for the Highlands

| Actions may include: | Challenges may include: | Measures of accomplishment or environmental change: |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| a. Inform people about Highlands resource values. | | |
| <p>Provide public forums and educational materials for the Highlands.</p> <p>Tailor workshops for officials, planning boards, and conservation committees to promote the value of resources and the tools available to protect and manage these resources.</p> <p>Establish and maintain a set of descriptions that illustrate the ecological, social, and economic qualities of the Highlands.</p> | <p>Establishing an identity for the Highlands among named geographic areas.</p> <p>Reaching agreement on the relative importance of resources.</p> <p>Developing and defining meaningful descriptions.</p> <p>Conveying complex ecological information.</p> | <p>Ongoing public forums to identify changing issues are established.</p> <p>Environmental workshops are convened.</p> <p>Highlands specific descriptors are used by people in public discussion and publications.</p> |
| b. Provide consistent and updated information on Highlands resources for decisionmakers. | | |
| <p>Build and maintain a regional information system and, where needed, improve the Highlands Regional study.</p> <p>Make the study available to Federal, State, and local officials, and others; and facilitate its use.</p> <p>Prepare and distribute technical guides, carrying capacity studies, ecological unit maps and descriptions of unit capabilities, and other applied information.</p> | <p>Enabling agencies and organizations to share data.</p> <p>Achieving adequate distribution and utility (specificity) of data.</p> <p>Meeting the costs associated with information systems and outreach.</p> <p>Completing ecological mapping at a local scale in a timely manner.</p> | <p>A regional information system is established.</p> <p>Assessment data is available, and information systems are accessible.</p> <p>Landowners and decisionmakers use information in planning and setting resource objectives.</p> <p>Training in data access and data use is provided.</p> <p>Ecological unit maps and descriptions are used at county and municipal levels.</p> |
| c. Promote stewardship and protect landowner equity in private lands. | | |
| <p>Create a Highlands-specific approach for natural resource management on private forests and farmlands that focuses on the highest conservation value areas.</p> <p>Reduce the tax burden on private forests and farmlands by promoting existing programs and qualifying properties managed for water, wildlife, or recreation, in addition to commodity production.</p> <p>Promote consistent and appropriate timber harvest and resource protection ordinances.</p> | <p>Getting landowners to adopt management practices.</p> <p>Accommodating changes in ownership patterns and land tenure.</p> | <p>An approach to land management that addresses issues commonly faced by Highlands residents, especially forest and farmland owners, is established.</p> <p>Assistance programs for private lands are expanded and implemented in priority areas.</p> <p>Acreage of land with conservation and stewardship plans increases.</p> <p>Tax laws are revised to allow credit to landowners who provide water, wildlife, and recreation opportunities on their land.</p> <p>A Highlands-specific timber harvest ordinance is developed.</p> |
| d. Provide current and new information on management issues and practices on public and private lands. | | |
| <p>Develop or disseminate the latest information on management issues including invasive species, forest fragmentation, deer management, critical headwater areas, riparian corridors, drinking water supplies, nutrient pollution, and soil erosion.</p> <p>Establish demonstration areas and pilot projects to test and showcase management practices on public and private lands.</p> | <p>Gaining acceptance of research results and findings.</p> <p>Overcoming the uncertainty of land managers to adopt new techniques and practices.</p> <p>Gaining public acceptance of the need for land management to provide sustainable and healthy landscapes.</p> | <p>Local and regional plans adopt procedures to protect key Highland resource values.</p> <p>Plans are readily available to the public and are followed.</p> <p>Conservation demonstration areas are established.</p> <p>Management techniques and practices are adopted: (1) the deer herd is reduced to established carrying capacity to protect biological diversity, and (2) functioning riparian buffers are established and maintained.</p> |



CONSERVATION GOALS AND STRATEGIES

Table 4-1. Conservation strategies for the Highlands (*continued*)

| Actions may include: | Challenges may include: | Measures of accomplishment or environmental change: |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| e. Acquire easements and land for conservation purposes / compensate private landowners and local government for conservation of natural resources. | | |
| <p>Prioritize lands for acquisition through an interstate forum of public and private partners, based on the information in this report.</p> <p>Provide funding to acquire prioritized lands through a partnership of Federal, State, and local sources.</p> <p>Utilize fee simple and conservation easement acquisitions to protect land, as appropriate.</p> <p>Create opportunities for public and private partners to review acquisitions and priorities for use of Federal and non-Federal funding.</p> | <p>Reaching agreement on priorities for land acquisition.</p> <p>Funding acquisitions estimated to cost from \$500 million to \$1.5 billion.</p> <p>Providing appropriate compensation to communities for additional public landownership.</p> <p>Increase Federal funding for the purchase of land and easements.</p> <p>Evaluate the cost or savings of land acquisition and provide consistent mechanisms for compensating localities for documented losses of revenue.</p> | <p>Lands for conservation and protection on a regional scale are prioritized.</p> <p>Funding sources for purchasing land, easements, and development rights are secured.</p> |
| f. Improve State and local land use planning practices as a means of conserving Highlands resources. | | |
| <p>Work with State and local agencies and officials to incorporate Highlands assessment data into capital improvement, master planning, and environmental constraints.</p> <p>Focus technical and financial assistance in high priority areas.</p> <p>Use performance-based practices to protect resources and address issues related to sewage treatment, drinking water availability, large-lot zoning, and compact development.</p> | <p>Ensuring that decisions are made in a regional context.</p> <p>Changing traditional land management or zoning and land-use planning practices.</p> | <p>Highlands-specific issues are addressed in State and local land use practices and master plans.</p> <p>New developments are designed to protect open space and water quality.</p> |
| g. Improve and coordinate regional, interstate and intrastate conservation efforts. | | |
| <p>Foster ways and means to coordinate and share decisionmaking among States and municipalities.</p> <p>Establish a public and private roundtable on protection, conservation, and management of the Highlands region.</p> <p>Continue the Forest Service leadership role in land management in the Highlands and in implementing these strategies.</p> | <p>Working within the complexity of the existing management framework in the region.</p> <p>Reconciling the diversity of missions and mandates for public and private organizations.</p> <p>Modifying or creating authority and processes necessary for governance and decisionmaking.</p> | <p>Agreements among public and private entities are developed to protect Highlands resources.</p> <p>Projects that involve local, State, Federal, and private partnerships are created to implement these strategies.</p> |
| h. Use indicators to measure and monitor Highlands resource change. | | |
| <p>Establish and measure indicators to monitor change using existing collection methods and networks.</p> <p>Prepare a periodic report on the status of the Highland's resources.</p> <p>Provide access to monitoring data and reports.</p> <p>Use watershed and ecological units to help assess environmental risks and cumulative effects.</p> | <p>Getting agreement on indicators to be measured and commitment to monitor them.</p> <p>Meeting costs associated with data collection, processing, display, and distribution.</p> | <p>Indicators of landscape change are identified, and a monitoring system to document change is implemented.</p> <p>Monitoring information is distributed in a timely manner among land use planners and natural resource managers.</p> <p>Monitoring information is used by people and decisionmakers.</p> |



SECTION 4 REFERENCES

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- New York State Department of Environmental Conservation. 2001. Draft New York State Open Space Conservation Plan. Albany; 360 p.
- Kiviat, E.; Stevens, G. 2001. Biodiversity assessment manual for the Hudson River estuary corridor. New Paltz: New York State Department of Environmental Conservation; 508 p.