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Status of the States:

Innovative State Strategies *for* Biodiversity Conservation

Environmental Law Institute®
Research Report
First State Biodiversity Symposium
January 17-18, 2001

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A Report on the First State Biodiversity Symposium

Environmental Law Institute
State Biodiversity Program
January 17 – 18, 2001

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TABLE OF CONTENTS

STATUS OF THE STATES:
INNOVATIVE STATE STRATEGIES FOR BIODIVERSITY CONSERVATION
Executive Summary

The United States now faces a biodiversity crisis of historic proportions. It is estimated that "one-third of the native U.S. flora and fauna is considered to be of conservation concern." States are currently facing unprecedented habitat loss, degradation, and fragmentation due to sprawl development, agriculture, and other land modifications. Many states are also being confronted with contentious Endangered Species Act battles. However, few, if any, federal laws or programs address protection of the broader array of plants, animals, and ecosystems *before* they become imperiled.

In response, states and state-based groups across the nation have stepped forward to address the issue of biodiversity loss. From California and Oregon, to Florida and Maine, state efforts have sought to develop strategies for addressing the erosion of their natural heritage through the development of comprehensive, collaborative, and *proactive* strategies for biodiversity conservation and restoration.

A state biodiversity initiative typically consists of (1) a strategy for convening multiple interest groups and institutions to achieve consensus on methods to conserve biodiversity; (2) a strategy to identify and assess areas of biodiversity concern for conservation; (3) an effort to review state policy and legal mechanisms that may affect biodiversity; and (4) a strategy for educating the public about biodiversity in the context of the state in which they live.

Successful Elements of a State Biodiversity Effort: Structure and Process

State biodiversity efforts should:

- Secure support from high-level officials from the outset
- Include a broad range of stakeholders early in the process, including locally elected officials
- Appoint or hire a full- or part-time coordinator or facilitator to organize meetings
- Establish clear, measurable goals to guide the initiative
- Develop a method for monitoring on-the-ground progress
- Develop an education and outreach campaign
    - Develop a strategy for reaching private landowners
    - Consider a citizen science component
- Develop a strategy for communicating to the press
- Focus on tangible results early and throughout the project
- Establish a mechanism for delivering biodiversity information to target audiences

State Biodiversity Assessment Methodologies

Biodiversity assessment methodologies, or GIS-based efforts designed to prioritize conservation efforts in a state or region, take many different forms. There are several issues to consider when developing such a program:

- Before developing information products, survey the array of potential users to determine their information needs
- Secure support from state agencies to ensure that results will be incorporated into state initiatives, such as land acquisition programs, grant programs, and public land management decision-making
- Adopt a singular map for each state. Where multiple assessments are developed to serve different goals, develop one map that will be presented to the public.

Sufficient data for analyzing status, trends, and opportunities for conserving biodiversity are currently lacking in the following areas:

- Data sets of aquatic biodiversity
- Data sets of socio-economic information
- Mechanisms for making information on at-risk species more accessible to statewide and regional biodiversity efforts (i.e., Natural Heritage data)
- Information on the distribution and dispersal pathways of non-native invasive species, areas vulnerable to future invasions, and detection and control strategies
- Data that are usable at the county level but that are compatible/consistent statewide

Biodiversity Information Delivery Mechanisms

Federal agencies, state agencies, and/or private organizations should conduct additional research on effective mechanisms for delivering biodiversity information to key decision-makers. The following audiences should be considered and interviewed before delivery mechanisms are developed:

- Local governments
- State agencies, for a variety of purposes, including land acquisition, land management, grant programs, regulatory decision-making, transportation planning, and facility siting
- Private conservation organizations, including land trusts
- Federal agencies
- Private sector companies, including those who have large landholdings, such as utility and timber companies
- Private citizens for educational purposes

State agencies or state-based private organizations should establish permanent clearinghouses for biodiversity information. These entities should be equipped to provide technical support and outreach to local governments and other potential users of biodiversity information in the state.

Creating Demand for Biodiversity Information

Federal agencies, state agencies, and private organizations should conduct additional research on how to stimulate sustained demand for biodiversity information from a variety of audiences. Biodiversity information must be marketed both externally and within state agencies. To create demand, state biodiversity initiatives should take the following actions:

- Create new or interpret existing regulatory authorities to require the use of biodiversity information

- Develop incentives for agencies, organizations, and individuals to utilize biodiversity information
- Market the benefits of using biodiversity information, such as saving time, funds, or minimizing the potential for legal conflict
- Create incentives to encourage municipalities to do more regional planning

Actions for Congress and State Legislatures

There are several actions that state legislatures and Congress can take to help support efforts to protect and restore biodiversity at the state level:

- Secure permanent, stable sources of funding for land acquisition, conservation of non-game wildlife species and plants, and management of public lands
- Develop new incentive programs or tailor existing programs that promote habitat conservation on private lands
- Provide legal standing for state biodiversity efforts
- Institute biodiversity mandates to commit states to biodiversity conservation
- Provide funding for the establishment of biodiversity clearinghouses in each state

Actions for State Agencies

There are several actions that state agencies can take to help support efforts to protect and restore biodiversity:

- Establish a central clearinghouse for biodiversity information
- Create state biological survey programs
- Allow greater access to biodiversity information
- Provide technical support to private landowners and local governments
- Market biodiversity within the state agencies
- Secure permanent, stable sources of funding for land acquisition, conservation of non-game wildlife species and plants, and management of public lands
- Adopt new policies or utilize existing policies to address invasive species
- Incorporate biodiversity considerations into state open space acquisition programs (i.e., use data from biodiversity assessments or statewide conservation plans)
- Develop new incentive programs that promote habitat and species conservation on private lands
- Tailor existing incentive programs, such as Farm Bill programs, to conserve priority areas identified by a statewide conservation plan
- Work with partner agencies and the governor's office to establish a memorandum of understanding or executive order that creates a state biodiversity effort

Actions for Philanthropic Institutions

There are several actions that private philanthropic institutions can take to help support efforts to protect and restore biodiversity at the state level:

- Support collaborative statewide and regional biodiversity conservation efforts
- Provide multi-year grants to allow for absorption of new programs over time
- Support efforts to develop new biodiversity information, disseminate that information, and create demand for the information

- Foster exchange of information and networking opportunities for groups working on biodiversity conservation efforts across the country

List of Symposium Participants
State Participants

California Biodiversity Council
Carl Rountree, Bureau of Land Management

Chicago Wilderness
Tim Sullivan, Brookfield Zoo

Delaware Biodiversity Conservation Partnership
Nicholas DiPasquale, Secretary, Department of Natural Resources and Environmental Control
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Randy Kautz, Florida Fish and Wildlife Conservation Commission

Florida's Ecological Network Project
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INTRODUCTION

ELI Convenes Leaders from State Biodiversity Initiatives

In approximately half of the states, broad coalitions of individuals from state, federal, and local government, conservation organizations, and the private sector have initiated efforts to develop and implement comprehensive statewide or regional strategies for biodiversity conservation. On January 17 – 18, 2001, the Environmental Law Institute (ELI) convened key leaders from all of the known state efforts and other interested parties to participate in a symposium exploring the lessons and experiences of these initiatives. The *goals* of the symposium were to identify successful strategies and approaches that can improve the effectiveness of statewide biodiversity conservation efforts.

This report is based on the discussions that took place at the symposium.[1] It draws on both the presentations and the discussions to summarize common themes, highlight important issues, and suggest actions to help improve the effectiveness of state biodiversity efforts.[2]

Three questions were posed throughout the symposium. The answers to these questions are critical if substantial progress is to be made in protecting and conserving the nation's biological diversity. They are based on the premise that decisions about how public and private lands are used and managed affect the factors that cause biodiversity loss – primarily habitat loss and fragmentation, habitat degradation, and the introduction of non-native invasive species.

- How can natural resource professionals better develop biodiversity information for those whose decisions affect how land is used and managed?

- How can natural resource professionals ensure that this information is provided to key decision-makers in a format that is useful to them?

- How can policymakers create requirements or incentives for decision-makers to ensure that biodiversity concerns are incorporated into decisions about how public *and* private lands are used and managed?

Background: ELI's State Biodiversity Program

Conservation of biological diversity in the United States has often been the subject of national discussions that focus on federal management of public lands and protection of threatened and endangered species under the federal Endangered Species Act. However, many of the threats to biodiversity, and many of the opportunities to conserve it relate to activities on both public and private land conducted under state laws and policies. Indeed, most of the human activities that affect biodiversity – from land development, utility siting, highway planning, and water quantity and quality management, to fish and game management, farming, forestry, and recreational uses – are addressed in some manner by state laws and programs. Some of these laws and programs present significant opportunities to conserve and restore biodiversity, while others have adverse effects.

Examining policies and planning to protect and restore biological communities at the state level makes a great deal of sense. First, states are generally large enough to encompass significant portions of several ecoregions, presenting opportunities to plan and take action at an appropriate scale. Second, the laws, policies, and decisions that affect biodiversity are uniform across an entire state, such as state enabling laws for land use planning and zoning, environmental regulation, transportation planning, public land acquisition, and public land management. And third, state resources often provide useful information and ways to think about biodiversity including information from natural heritage programs, state universities and museums, conservation organizations, and industry groups and associations. Recognition of these factors has resulted in the emergence of a new national trend – the development of state biodiversity conservation strategies.

In 1994, ELI launched its State Biodiversity Program with a grant from The Moriah Fund to examine the effects of Indiana's laws, policies, and institutions on biological diversity. The Institute's research culminated in the publication of *Indiana's Biological Diversity: Strategies and Tools for Conservation*. The main objective of the project was to catalyze interest by a broad coalition to develop a statewide strategy for protecting and restoring biodiversity in Indiana. In 1996, a diverse group of resource professionals from the public, private, and nonprofit sectors adopted a mission statement, goals, and an organizational structure for what became the Indiana Biodiversity Initiative. ELI worked closely with the Initiative to provide coordination, facilitation, and technical support.

Following ELI's initial work in Indiana, the Institute was invited by partner organizations and agencies to help develop statewide strategies for protecting biodiversity in Ohio, New Mexico, Delaware, New York, and New Hampshire. In the course of the Institute's work at the state level, ELI became familiar with similar biodiversity efforts underway in other states.

It became clear to ELI that the key leaders from these numerous independent initiatives needed the opportunity to sit down with one another to discuss successful strategies, obstacles overcome, and lessons learned. In January 2001, representatives of 23 biodiversity conservation initiatives gathered in Washington, DC to share these lessons and to make plans for future progress. More than 35 additional stakeholders from federal agencies, philanthropic foundations, conservation organizations, and publishers joined them to learn about and advance the agenda of state-based biodiversity conservation.

Biodiversity Conservation Planning: States Step Up

The United States now faces a biodiversity crisis of historic proportions. It is estimated that "one-third of the native U.S. flora and fauna is considered to be of conservation concern."[3] An alarming 69 percent of freshwater mussels are considered at-risk, while 14 percent of all bird species in the country are likewise imperiled.[4] Habitat loss, ecosystem degradation, and non-native invasive species introductions are the three most pervasive threats to biodiversity.[5]

States are currently facing unprecedented habitat loss, degradation, and fragmentation due to sprawl development, agriculture, and other land modifications. Many states are also being confronted with contentious Endangered Species Act battles. However, few, if any, federal laws or programs address protection of the broader array of plants, animals, and ecosystems in the U.S. *before* they become imperiled. In response, states and state-based groups across the nation have stepped forward to address the issue of biodiversity loss. From California and Oregon, to Florida and Maine, state efforts have sought to develop strategies for addressing the erosion of their natural heritage through the development of comprehensive, collaborative, and *proactive* strategic plans for biodiversity conservation and restoration.

A state biodiversity initiative typically consists of (1) a strategy for convening multiple interest groups and institutions to achieve consensus on methods to conserve biodiversity; (2) a science-based strategy to identify and assess areas of biodiversity concern for conservation; (3) an effort to review state policy and legal mechanisms that may affect biodiversity; and (4) a strategy for educating the public about biodiversity in the context of the state in which they live.[6] Although each of these components is essential to the development of an effective statewide strategic plan, they are often approached in various ways by different state biodiversity initiatives.

The origins of state biodiversity strategies also differ. Some state efforts, such as those in Massachusetts, Wisconsin, and Kentucky, were launched as state governmental initiatives to improve land management, engage the conservation-oriented public, or reorient management of ongoing state programs. Others, such as the Indiana Biodiversity Initiative or the Oregon Biodiversity Project, led by the Defenders of Wildlife, were organized by nonprofit organizations to engage state and federal agencies and the private sector. Although most of the state biodiversity efforts have become broad-based coalitions working in partnership to develop a strategy, several, such as those in Ohio and Wisconsin, principally remain efforts by state agencies to integrate biodiversity conservation principles across divisions within an agency (see Appendix A for summaries of these state efforts).

STRATEGIES FOR IMPLEMENTING A SUCCESSFUL STATE BIODIVERSITY INITIATIVE

Successful biodiversity initiatives share several common features. Several of the symposium discussions sought to identify the components of an effective state biodiversity initiative and potential obstacles.

Regardless of the *outcome* of developing a state biodiversity plan, the *process* of developing a strategy and the relationships built in doing so were recognized as valuable in themselves (Docherty, Holtz, Rountree). Other tangential benefits included better coordination among and between state agencies, federal agencies, and the private sector, and a renewed focus on public education and outreach.

Elements of Success: Structuring a Biodiversity Initiative

Symposium participants identified several strategic, structural, and process-oriented actions that they believed helped ensure a successful state biodiversity effort.

Sufficient Participation and Support

Securing support for biodiversity initiatives from high-level officials early in the process was a central element to success in a substantial number of states (Fleming, Nigh, Rountree). In Massachusetts and Delaware, the clear support of the states' natural resource agency and cabinet-level officials helped solidify commitment and improved chances of on-the-ground success. Similarly, Massachusetts found that identifying "local heroes" within the state legislature was an effective strategy (Durand). When representatives are developing a strategy for securing support from key decision-makers, they should seek the support of individuals that have the authority to commit resources and change the established structure. Having buy-in from these individuals can be the key to transforming a collaborative effort "on paper" into a concrete program with tangible results.[7]

Several state efforts represented at the symposium also maintained that success hinged on involving a broad range of stakeholders as early in the process as possible (Docherty, Fleming, Thompson). Participation and some level of buy-in and commitment should be sought from both public and private institutions (DiPasquale) and the involvement of locally elected officials should be aggressively pursued early and throughout the process (Rountree). Additionally, building a broad coalition, rather than having a focused agency-directed effort, can help improve both the chances for success and the ability of the project to produce tangible results. With diverse membership, partner organizations and agencies can bring the biodiversity message to a broader audience. Engaging all key stakeholders and allowing for representation of all relevant positions can increase the quality, strength, and implementation of ensuring recommendations.[8]

In an effort to avoid opposition from certain constituencies (e.g., Farm Bureau, development interests) several states worked hard to include representatives from potential opponents as significant participants in their initiatives (Indiana, Kentucky, Maine). Maine found that enlisting the participation of an individual who could represent both sides – conservation as well as industry – helped secure greater buy-in from divergent interests (Docherty).

Symposium participants suggested that because decision-making becomes more challenging as a group increases in number, a steering committee or executive body of a state biodiversity initiative should have a manageable number of participants (Docherty). One suggested method for determining representation is to evaluate whether each potential participant is meaningfully affected by the issues under consideration and also has the capacity to participate.[9]

Attitude and process

Success is also often dependent upon the commitment and innovation of the individual participants. California found that success was dependent upon those involved being willing to accept risk and to be creative (Rountree). Attention to the personal characteristics and commitments of those engaging in a collaborative process is important. It is not simply a matter of identifying the right constituencies to have represented.

At the outset, participants in state biodiversity strategy efforts should agree on whether decisions for the group will be made by consensus or majority. Consensus-based decision-making, in which any partner can object to and veto a proposal, has been shown to produce more long-lasting agreements in environmental negotiations.[10] However, a consensus-based process often consumes more time and resources, requiring more effort in bringing participants to a common understanding of the issues, especially when a greater scope of issues and positions are at hand.

Defining group membership and deciding whether to open meetings to interested observers are also key issues to consider. Maine found that holding private meetings was essential since this approach facilitated open exchange among the interested parties that made up the formal group (Docherty), while other states, such as Pennsylvania, have allowed all interested persons to attend meetings (Thompson). In determining the extent of openness during the collaboration process, the executive body should evaluate whether decisions being made affect only the parties around the decision-making table or whether they have ramifications beyond the participating organizations (e.g., private landowners). A transparent process might build broader support for the state conservation effort, which is always essential. Conversely, it could also initiate public or political opposition where none existed before.

In Delaware, Indiana, and Maine, participants expressed the necessity of hiring a full- or part-time coordinator to make the effort run smoothly (Docherty, Fleming, Wilkinson). Maine credited much of its success to the use of professional facilitators (Docherty). In Indiana, having a designated coordinator has proved crucial to holding together a diverse coalition without one agency or organization taking the lead. When the effort experienced a hiatus in the coordinator position, regular meetings halted and progress stalled (Hosler).

In structuring a biodiversity effort and identifying goals and objectives, it is critical that there be concrete products and tangible results (Docherty). Collaborative efforts can degenerate into discussion groups without a clear set of goals and results to achieve. It is important that on-the-ground success be demonstrated early and throughout the effort. Tangible successes improve the likelihood of securing funding, maintaining the involvement and commitment of participants, and drawing widespread positive attention to the effort.

Structural and financial issues

The sources and amounts of funding available to state natural resource agencies for conservation activities can profoundly affect the level of commitment to biodiversity considerations. However, agency funding for conservation is not the only important factor. Funding for the development and implementation of biodiversity initiatives also matters. In each case, stability and continuity of funding are essential.

State biodiversity strategy efforts have acquired funding from a variety of sources. Oklahoma obtained a substantial grant from Weyerhaeuser, which launched the effort and supported it through its initial stages. Several state efforts patched together small grants from philanthropic foundations and then attracted state funding (Delaware, Indiana), while others relied on larger grants from federal agencies (Oregon). Missouri has benefited from having an ongoing, reliable state funding mechanism for land acquisition, which could accommodate some planning and assure implementation (Nigh). Other states have had difficulty where funding was not provided and linked to implementation of the planning effort. In Ohio, for example, the state agency-led biodiversity strategy was not supported by internal funding allocations and has had difficulty sustaining itself after a change in agency leadership.

It is important also to recognize the dynamics that can affect funding from state wildlife agencies. State wildlife departments are primarily funded by revenue from hunting and fishing licenses and a federal excise tax placed on hunting- and fishing-related equipment. Unfortunately, no such permanent source of funding exists for non-game efforts (see www.teaming.com for more information). This funding situation often leaves state resource agencies with limited budgets to use in protecting and restoring non-game wildlife, plants, and natural areas, and can skew wildlife conservation efforts toward single-species management. In contrast, states with well-funded acquisition programs, including permanent sources of conservation funding for land acquisition *and* non-game protection activities, can help ensure a successful state biodiversity conservation effort (Nigh). When the disparity between funding for game species and non-game wildlife and plant conservation is removed or partially equalized, state agencies are often in a better position to provide leadership on biodiversity conservation.

Communicating the message: education and outreach

Participants found that having a targeted education and outreach effort was an essential component of success. In Massachusetts, the Executive Office of Environmental Affairs is working to build a broad-based constituency for biodiversity issues through education and outreach to the general public through events and materials (McGregor).

Biodiversity must be marketed inside natural resource agencies as well as outside. In Missouri, the Department of Conservation's Natural History Division focuses on the survey, monitoring, and reporting on biodiversity in the state and acts as a catalyst for "selling" biodiversity inside and outside the agency (Figg). A central goal of the Ohio Department of Natural Resources' biodiversity effort was to educate natural resource professionals within the agency about the values and threats to biodiversity. Several state and regional efforts, including Chicago Wilderness, Hawaii, and Missouri, found that focusing part of the effort on increasing public awareness about the importance of imperiled ecosystems and threats to associated biodiversity was essential (Kaneshiro, Nigh, Sullivan).

One very effective strategy several states have used to educate and build support for a biodiversity effort is to engage citizens in biodiversity monitoring. By utilizing experts to train citizens and by encouraging non-professional naturalists to conduct inventories, the general public can gain hands-on experience and learn about biodiversity in their own backyards. In addition, citizen science efforts can add value to scientific monitoring (Durand, Holtz, Hosler, Hubbell, Kaneshiro, Sedam, Sullivan). For example, in June 2000, the Massachusetts Executive Office of Environmental Affairs sponsored "Biodiversity Days" in over 100 cities and towns across the state. This three-day event brought together 15,000 citizens, assisted by experts, to inventory animals and plants in their communities. Because of the overwhelming success of the program in 2000, Biodiversity Days will be launched statewide in 2001.

To better market biodiversity, one participant noted that conservation efforts should be folded into a "livable communities" initiative to approach the issue in a broader social context. When determining how to communicate the message, focus on values and emotional attachments to places and natural communities to build a constituency, rather than just scientific data (Sedam).

Obstacles

Symposium participants identified several obstacles that can slow or derail biodiversity efforts.

Lack of education and understanding

One major obstacle to biodiversity initiatives is the lack of broad public education and outreach. The importance of a coordinated education and outreach effort cannot be overstated. The public often does not perceive there to be a biodiversity crisis, which in turn allows elected officials to neglect conservation issues (Sedam).

Defining "biodiversity"

Coming to agreement on a definition of biodiversity has consumed inordinate amounts of time and has, therefore, slowed biodiversity efforts. One participant suggested that state biodiversity efforts might benefit from working together to develop a consistent definition of biodiversity that is easily conveyed to the general public (Frithsen). There may be value and educational merit in the process of different constituencies reaching agreement on a common definition.

Organizational issues

Symposium participants identified several issues that should be considered when organizing a biodiversity conservation initiative. Defining the membership of the effort can be a difficult and often time-consuming exercise (Thompson). Several collaborative efforts found that when new partners joined mid-way a significant amount of time was spent getting them caught up. In addition, previously decided issues became subject to re-evaluation (Nigh, Thompson). Unless the parameters for membership, attendance, and participation are clear, opposition groups can begin attending meetings late in the process in a calculated move to derail the biodiversity conservation effort.

In a broad-based effort, the various interest groups bring to the table different operational paradigms and assumptions regarding the positions and intentions of the other members (Thompson). Although this can make progress difficult and slow, it is often assuaged once one-on-one relationships are established. The Maine Forest Biodiversity Project benefited from informal gatherings and out-of-office outings, since they facilitated increased communication, understanding, and consensus among participants (Docherty). Once partners begin to disclose their interests, biases, and policy objectives, trust and respect among stakeholders develop, increasing the legitimacy and longevity of the collaboration.[11]

Several state or regional biodiversity efforts have grappled with whether to remain a loose coalition of diverse interests without one single agency or organization taking a lead, or to have one agency or organization play a central convening role. There is no clear answer. Some state initiatives have had difficulty in governance issues when the effort is not specifically "housed" within a non-profit organization, governmental agency, or other institution (Hosler). In both Indiana and Maine, biodiversity initiatives were not housed in one of the partner organizations. However, in Maine, a professional mediator was hired to hold the effort together and move it along (Docherty). The Indiana Biodiversity Initiative found that not having a non-profit status presented an obstacle to soliciting foundation grants. Without a secure source of funding, the Initiative also had difficulty hiring and maintaining part- or full-time staff to coordinate the project and achieve its goals. The Initiative did eventually become a project of the Tides Foundation in order to deal with this financial issue. The Initiative hopes that remaining a broad-based and active coalition unaffiliated with one particular agency or organization may ultimately help the effort's credibility at the local level and with the legislature (Hosler, Wilkinson).

One benefit of housing an effort within a state agency is that it solidifies the state's commitment. Symposium participants noted that if the initiative produces data that will be used for regulatory purposes, the data must be legally defensible. State agencies are often more comfortable defending data in a regulatory setting than are non-governmental organizations or academic institutions. However, some outside parties may distrust a government-led initiative. Efforts led by non-governmental organizations may be able to secure state buy-in at a later date.

Uncertain state and local governmental commitment

Several states have found that overcoming government ambivalence, attitudes, and culture are obstacles (Cook, Thompson). In addition, lack of leadership from the state resource agency or high-level state officials has been a roadblock in some instances (Sedam). In some cases, inadequate public funding for environmental programs can limit government involvement and options for a statewide effort (Cook).

In several states, biodiversity efforts have had difficulty attracting and maintaining local government involvement (DiPasquale, Rountree).

Private property rights issues

In many states across the nation, the majority of the land base is privately owned. If significant progress in conservation is to be made, the focus of biodiversity initiatives must reach beyond public lands to address how private land is used and managed.

In several states, private property rights activists have generated negative publicity about the state biodiversity initiative. In Missouri, private land rights groups waged a media campaign against the state's inter-agency effort to coordinate resource planning (Nigh). Concerns over such opposition have forced biodiversity efforts to lower the bar of their goals or objectives in other regions.

Participants identified several issues to remain aware of when making goals and products of a biodiversity effort publicly visible. It is important to frame the issue appropriately, define the goals early, and restate the goals often. Misunderstandings and intentional misinformation about the goals of state biodiversity initiatives can inflame concerns over private property rights.

Several state efforts addressed private property rights concerns early and head-on. Maine and Massachusetts brought potential opponents into the discussion up-front (Docherty, Durand). Several states fostered a grassroots movement to support the effort and counter possible opposition. For example, Wisconsin successfully involved local people to build support. The state agency was interested in launching a project to protect a large parcel of land that had the potential of being opposed by private property rights interest groups. Prior to initiating the project, a staff person who was raised in the area spent six months engaging local people, which helped build support from the local Farm Bureau districts and local citizens (Holtz).

Substantive Issues to Consider

Participants raised several issues throughout the symposium that should be considered when developing a statewide or regional biodiversity effort.

Focusing conservation on at-risk or pristine areas

Symposium participants paid considerable attention to the question of whether protection efforts should focus on sites that are at-risk of development or those that are pristine and ecologically significant (Sullivan). For example, Maryland's Green Infrastructure Assessment project prioritized areas for protection not only by its ecological ranking (based on natural features such as proportion of natural cover and interior forest) but also by its threat from development (using land stewardship and county zoning information) (Wolf).[12]

Conservation opportunities vary between states, as well as among different regions within the same state. In New Hampshire, there are many opportunities in the northern portion of the state to purchase, manage, or preserve large tracts of land, and development is not yet a severe threat. In southern New Hampshire, however, development pressures are great and only limited opportunities exist to conserve remaining habitats (Cook).

One participant noted the importance of giving attention to enduring or permanent features of the land (e.g., elevation, slope, aspect, soils, geology) and not just to the current status of natural resources. For example, south-facing slopes, even if logged, have ecological value. Such features should not be neglected when weighing whether to protect at-risk land versus fully functioning or pristine landscapes (Docherty).

Reaching out to private landowners

If we are to make a significant contribution to biodiversity conservation and restoration, efforts must focus on reducing the conversion, fragmentation, degradation, and introduction of non-native invasive species on private lands. As a result, most conservation will have to be accomplished through voluntary efforts on private lands (Docherty). Currently, many states do not have adequate conservation incentive programs for private landowners and communities (Cook, Docherty, Kaneshiro, Vickerman). Agricultural incentive programs should add a biodiversity component and new private land incentive programs should be developed (Hubbell).

Watershed vs. ecosystem: the unit of planning

Several states have organized their biodiversity efforts along ecosystem boundaries, while others have done so according to watersheds. Ecosystem-based planning has been widely adopted by many state agencies, federal agencies (USDA Forest Service), as well as national organizations, such as The Nature Conservancy and World Wildlife Fund. In general, ecosystem-based planning classifies regions according to climate, landscape attributes (such as elevation, geology, soils), and their unique assemblages of plant and animal communities.

Watersheds have also emerged as a unit for planning and management in some state agencies. Symposium participants stated that watershed planning can force traditionally isolated political jurisdictions to coordinate, possibly leading to cross-boundary municipal agreements. In addition, watersheds are easily recognized and communicated. In Hawaii, utilizing watersheds as the basis for action has increased the success of reaching local people and private landowners (Kaneshiro). Massachusetts has planned by watersheds, assigning leaders on the ground to help communicate with local governments (Durand).

Wisconsin initiated a model for ecosystem management decision-making, but converted to watershed boundaries when the program was implemented in the field. The state natural resource agency not only conducted biodiversity planning according to watershed units but also restructured the entire agency according to this method. This strategy had substantial advantages, but also created some resistance and confusion because managers' responsibilities are often aligned with jurisdictional or legal boundaries (Holtz).

Despite the benefits, watershed planning may fail to capture certain biological and landscape patterns (e.g., patterns of disturbance regimes and vegetational structure). One solution might be to include ecological classification systems within the watershed analysis (Nigh) or to conduct the analysis on the most compatible unit or scale (i.e., ecosystems) and then subdivide it by watershed, municipality, or any other category to facilitate implementation (Niles).

Measuring success

State biodiversity efforts currently seem ill equipped to assess on-the-ground effectiveness, such as the protection of species and ecosystems, or policy successes. Long-term indicators of success and measures to track progress are needed. State biodiversity conservation efforts must be able to assess not only if state biodiversity programs are protecting rare, threatened, and representative species and natural communities, but also if they are effectively mitigating potential future threats (Sullivan) and protecting assemblages of species not currently at risk. Biodiversity efforts must also have the capacity to determine whether successes are commensurate with the costs of protection (Klemens). For example, Massachusetts has found that the use of conservation restrictions/easements is a very cost-effective conservation tool relative to fee-simple acquisition (Durand).

A first step in measuring success is to clearly define the goals that the partnership is trying to achieve in a way that is operational or easily measured. States should then implement strategic monitoring to measure on-the-ground outcomes against the goals or timelines set forth by the coalition.[13]

One possibility for tracking the success of protecting plants, animals, and ecosystems is to utilize citizen-led monitoring efforts to track long-term trends (Hubbell). Not only can citizen-based monitoring efforts produce useful scientific data, but they can also help to build political support for the overall biodiversity conservation initiative (Sullivan).

BIODIVERSITY ASSESSMENT METHODOLOGIES

Many biodiversity initiatives have developed region- or statewide assessments to help guide conservation efforts (see Appendix B). The methodologies developed by state-based programs reflect different goals (e.g., protection of endangered and threatened species, community representation, biological hot spots, or linking habitat blocks). However, they all utilize geographic information systems (GIS) to analyze physical, biological, and socio-economic factors. The maps produced by these assessments are used to guide statewide conservation and education activities. GIS-based assessments allow for the development of a large-scale, long-term view that can help partners plan proactively to protect important habitat and ecosystems (Durand, Niles).

Benefits of Developing a Statewide Assessment

Participants identified several benefits of developing a statewide biodiversity assessment. Although all states have natural heritage programs, which are valuable sources of information on at-risk plants, animals, and communities, their data are rigorously protected and distribution to the public is limited in some states. By including this information in a GIS-based program that extrapolates point data into polygons or habitat patches, otherwise location-specific information can be released to the public (Niles). Finally, maps that identify conservation priorities can be used to guide state initiatives, such as land acquisition programs and public land management decision-making, and are effective tools for communication (Niles).

Uses for Statewide Assessments

The assessment methodologies designed by the state biodiversity efforts were developed to serve many different purposes. Biodiversity projects have been designed to:

- Prioritize public land acquisition (Durand, Hoctor, Holtz, Niles)
- Prioritize funding for public grant programs (Hoctor)
- Provide local governments with biodiversity information to guide land use planning and zoning (Durand, Niles)
- Guide state agency regulatory programs (Niles)
- Provide citizens and non-profit organizations with conservation tools (Niles)
- Guide stewardship of public and private conservation areas (Niles)
- Design projects that will lead to the protection of connected habitats (corridors or greenways connecting bioreserves, ecological reserves, or interconnected “hubs” of habitat) (Cook, Docherty, Durand, Wolf)
- Guide mitigation planning (Hoctor)
- Guide facilities location planning (Hoctor)

Unmet information needs

The natural resource professionals who designed these different methodologies utilized existing data sets and developed new data sets. In the process, they have identified several information gaps.

Aquatic biodiversity information was cited as most lacking by symposium participants. The Florida "Closing the Gaps" project did not have adequate information on aquatic biodiversity (Hoctor). In Oregon, project leaders found that aquatic information was often incompatible with other terrestrial biodiversity information and was of lower quality (Vickerman). However, Maine and Maryland did have adequate aquatic information through Maine's aquatic biodiversity project (Docherty) and Maryland's biological streams survey (Wolf).

Participants also found that socio-economic data was often difficult to obtain or use. This included information on land ownership and stewardship (especially down to the plat) (Docherty, Nigh); voter or conservation organization membership patterns by zip code (Nigh); and specific infrastructure information (e.g., location of facilities such as saw mills) (Nigh).

Some states, such as New Hampshire, still lack general data on wildlife species and habitat and lack systematic inventories or long-term monitoring of biodiversity (Cook). Oregon experienced difficulty in obtaining data on at-risk species (species not yet listed on state or federal endangered/threatened lists) and historic vegetation patterns (Vickerman). Although information on areas that are critical to protect often exists, information on areas that are not at-risk but regionally significant or valuable is less available (Nigh).

There currently is inadequate information on non-native invasive species, including information on dispersal routes and pathways by which these species move, areas vulnerable to future invasions, and detection and control strategies (Holtz).

The Executive Director of the Secretariat for Conservation Biology in Hawaii emphasized the overall need for more scientific information. In particular, there is a need for better information to help understand the role of evolution in the diversification and adaptation of plants and animals. This is especially important in island ecosystems and increasingly more relevant to fragmented islands of habitats found throughout the U.S. (Kaneshiro).

Issues to Consider

When developing a statewide or regional biodiversity assessment, there are obvious benefits to prioritizing areas for conservation. However, simply identifying key habitats for conservation may be sufficient. Oregon chose not to prioritize areas for protection to encourage conservation partners (i.e., U.S. Fish and Wildlife Service, state DNR, The Nature Conservancy) to identify their own conservation priorities (Vickerman).

In several states, more than one assessment of biodiversity has been conducted. Although these assessments may have different goals (e.g., greenway planning, evaluating landscape connectivity, guiding land acquisition and management), having one consolidated effort and one map may prove beneficial. Having a single plan, rather than multiple competing plans, would help build trust in its scientific validity and would facilitate efforts to communicate conservation messages to the public (Klemens).

STRATEGIES FOR PROVIDING BIODIVERSITY INFORMATION TO DECISION-MAKERS

Developing biodiversity information that is accessible to and usable by decision-makers is a critical step in improving the likelihood that biodiversity concerns will be factored into state decision-making that affects plants, animals, and ecosystems (e.g., local land use planning and zoning, transportation planning). However, unless an effective strategy for disseminating this information is developed, the data will fail to influence the decision-making process. Merely sending out a report or providing people with maps often fails to have the desired impact. An effective outreach strategy must take into consideration the target audience, the format in which the information is provided, and whether the target audience is equipped to use and interpret the information.

Effective Strategies

Symposium participants discussed several different strategies they have developed and obstacles they have faced in providing biodiversity data to decision-makers.

Identifying the audience

The first step in determining a dissemination strategy is to identify the target audience. The Metropolitan Conservation Alliance has defined as its target audience individuals who are catalysts for change. Attempts to reach "communities" usually require reaching out to local officials and decision-makers (Klemens). Massachusetts has focused on educating and engaging public policy-makers (Durand).

Designing the products

Biodiversity information must be tailored to meet the needs of the target audience. The Oregon Biodiversity Project found that making biodiversity information understandable and visually compelling is essential to enticing decision-makers to take the first step in utilizing it (Vickerman).

In New York State, the Environmental Law Institute conducted a "needs assessment" to determine what biodiversity information is currently being used by state decision-makers, its perceived adequacies, and whether additional information is needed. The interviewees expressed the need for several different types of information, including:

- Site-specific information
- Information on multiple scales
- Socio-economic information combined with biodiversity information
- Aquatic biodiversity information

- Information on landscape-level processes
- Trend data
- Training on how to use and interpret biodiversity information (Johnson)

Defending the data

Biodiversity information must be scientifically valid and undergo peer review (Kautz, Niles). This is particularly vital if the data could be used in a regulatory context or could be subject to legal challenge.

Obstacles to Delivering Biodiversity Information

Symposium participants identified several obstacles to getting biodiversity information into the hands of decision-makers. In Illinois, the Department of Natural Resources found that existing "delivery systems," including systems for disseminating biodiversity information and providing technical assistance, need to be improved (Hubbell).

One clear goal of several biodiversity efforts is to provide biodiversity information to local governments in an effort to influence decisions about land use planning and zoning. However, biodiversity initiatives that have attempted to work with local governments have found it to be labor and personnel intensive (Docherty, Klemens, Niles, Vickerman). Wisconsin provides smart growth planning grants to local governments but has had difficulty developing a system for providing biodiversity information to local governments (Holtz). In Delaware, engaging local governments has been a challenge because they often lack resources and staff at this level (DiPasquale). For biodiversity initiatives to interact successfully with local governments, natural resource professionals must make a sustained commitment to establish long-term, one-on-one relationships with local decision-makers (Klemens, Vickerman). Local governments not only need access to appropriate biodiversity information, but also technical assistance to help guide their use of the information (DiPasquale).

Due to fear of litigation, local officials often display resistance to changing the status quo or venturing away from common practices. Local officials generally opt to stick to the tried and true rather than testing more innovative approaches, such as planning on a regional scale or developing biodiversity-sensitive comprehensive plans and zoning ordinances. Localities need encouragement and support to try novel approaches (Klemens). The Oregon Biodiversity Project found that convincing decision-makers that using biodiversity information will help avoid lawsuits encouraged them to use the information. The project found that it was essential to work with decision-makers to minimize the penalties and maximize the benefits of using biological information (Vickerman).

Creating the Demand for Biodiversity Information

Developing the right types of biodiversity information and establishing appropriate delivery mechanisms are half the battle. An effective biodiversity strategy must also create a demand for ecological information.

Decision-makers need requirements or incentives to use biodiversity information. If they perceive that they have a legal mandate to analyze the effects of their decisions on biodiversity, they are more likely to use biodiversity information. The New York state needs assessment found that decision-makers' interpretation of legal mandates is often narrow but can be broadened to require the use of biodiversity information (Johnson).

To institutionalize the use of biodiversity information, each state should adopt a policy statement that commits it to biodiversity conservation (Vickerman). Short of adopting new legal tools, there may be ample legal mandates in a variety of existing state and local laws (e.g., little NEPAs, ditch laws, lake protection acts, state planning statutes) that, if interpreted creatively, create such a mandate (McElfish, Wilkinson).

However, the regulatory process can only drive demand for biodiversity data so far. The value of using biodiversity data increases when decision-makers perceive tangible benefits. A reward may come in the form of saving time and money (Stein), averting legal challenges (Klemens, Stein, Vickerman), or providing public benefits (Durand, McGregor).

Encouraging the Use of Information and Providing Support

Interest in biodiversity information must be marketed and demand for the information must be institutionalized (Vickerman). It should not be assumed that if biodiversity information is available and even tailored to local and state decision-makers (e.g., land use planners) that it will be utilized. Fostering an educated constituency (through outreach, education, and publicity) will lead citizens to demand that their locally elected officials and agency representatives factor biodiversity into their decision-making (Durand, Klemens). In New Jersey, the Landscape Project has developed a network of volunteers to reach out to communities. That effort has found that to influence planners, local citizens need to be involved in dissemination and support (Niles). In Massachusetts, the biodiversity initiative is using circuit riders to assist conservation commissions in protecting biodiversity (McGregor).

If demand for biodiversity information is established, it is important that users are able to turn to one permanent source. This entity should be able to provide technical support and outreach to local governments (Johnson, Vickerman, Wilkinson).

Issues to Consider

Several issues related to the demand for biodiversity information were identified during the symposium. Many of these issues have direct consequences for the on-the-ground success of state and regional biodiversity efforts.

Influencing local land use decisions

To best conserve biodiversity, the role of state and regional government in land use planning must increase (Cook). Because the scale at which most local governments conduct planning is too small to have a significant effect on conservation, states must find opportunities to encourage greater regional planning. At the same time, it is important to provide information to local governments that enables them to take actions consistent with adjacent communities to protect biologically significant areas.

Using public land acquisition programs

Nationwide, public land acquisition programs are growing in number and size. Over the past decade, each election has brought land acquisition programs to new states and funding to existing state programs. However, these public land acquisition programs often do not take biodiversity into account when prioritizing lands. For example, Florida's acquisition program is changing to give greater weight to purchasing land for recreational purposes (Kautz). Too often, these programs are opportunistic in making their land acquisition decisions and fail to identify priority sites for biodiversity protection (Cook). Ohio has recently authorized a $200 million bond for the acquisition of land and conservation easements, but under current law there is no basis to administer this program in a way that conserves biodiversity (Sedam).

A related issue is securing permanent, stable sources of funding for land protection and conservation of non-game wildlife species and plants. To the extent possible, state biodiversity efforts should seek support for securing an adequate and permanent source of federal and state funding for land protection programs, such as the Conservation and Reinvestment Act (Cook).[14] With permanent, stable funding sources, demand for reliable biodiversity information will likely follow – particularly if a state conservation strategy is in place (Figg).

Working with the media

State and regional biodiversity efforts have a lot to gain from building successful media outreach strategies. The use of biodiversity information by the media helps drive public education and fosters interest by decision-makers. However, these efforts must develop a coordinated approach and message when dealing with the press (Durand). In addition, media efforts must be designed to complement grassroots education efforts (Sullivan).

Several states noted that the media often release news pieces that are limited in their accuracy and level of detail. In contrast, media outreach by Chicago Wilderness has successfully garnered significant media attention that is both technical and positive (Sullivan). In Missouri, the Grasslands Coalition held a walk across the state to draw attention to the need to protect and restore threatened grassland ecosystems. A targeted media campaign was built into the effort (Nigh).

The Biodiversity Project, a non-profit organization, is an excellent source of information for state and regional biodiversity efforts. The organization develops strategies and practices for communication and public education (see Appendix G).

Conclusion and Recommendations

Federal agencies, state agencies, local and national conservation organizations, philanthropic institutions and others can do a great deal to promote the development of state biodiversity efforts and to support and build upon the successes of existing ones. The recommendations could be tackled by individual agencies or organizations, or could be analyzed by a consortium of groups interested in advancing this innovative approach to conservation.

Successful Elements of a State Biodiversity Effort: Structure and Process

Symposium participants identified several components of a successful statewide biodiversity effort that should be considered. There was general consensus among participants that these efforts should:

- Secure support from high-level officials from the outset
- Include a broad range of stakeholders early in the process, including locally elected officials
- Appoint or hire a full- or part-time coordinator or facilitator to organize meetings
- Establish clear, measurable goals to guide the initiative
- Develop a method for monitoring on-the-ground progress
- Develop an education and outreach campaign
    - Develop a strategy for reaching private landowners
    - Consider a citizen science component
- Develop a strategy for communicating to the press
- Focus on tangible results early and throughout the project
- Develop a strategy for deflecting private property rights concerns
    - Consider using local people to build support
- Establish a mechanism for delivering biodiversity information to target audiences (e.g., land use planners, local governments)

State Biodiversity Assessment Methodologies

Biodiversity assessment methodologies, or GIS-based efforts designed to prioritize conservation efforts in a state or region, take many different forms (see Appendix B). Aside from the technical aspects of designing such a program (i.e., what data sets to utilize, criteria for selecting priority areas), there are several issues that participants identified as important:

- Before developing information products, survey the array of potential users to determine their information needs
- Secure support from state agencies to ensure that results will be incorporated into state initiatives, such as land acquisition programs, grant programs, and public land management decision-making
- Adopt a singular map for each state. Where multiple assessments are developed to serve different goals, develop a singular map that will be presented to the public.

Biodiversity Information Needs

Individuals who participated in developing biodiversity assessment tools identified the following key areas where sufficient data for analyzing status, trends, and opportunities for conserving biodiversity are lacking:

- Data sets of aquatic biodiversity
- Data sets of socio-economic information
- Mechanisms for making information on at-risk species more accessible to statewide and regional biodiversity efforts (i.e., Natural Heritage data)
- Information on the distribution and dispersal pathways of non-native invasive species, areas vulnerable to future invasions, and detection and control strategies
- Data that are usable at the county level but that are compatible/consistent statewide

Federal agencies, state agencies, or private organizations should explore ways to address these biodiversity data needs.

Biodiversity Information Delivery Mechanisms

Federal agencies, state agencies, and/or private organizations should conduct additional research on effective mechanisms for delivering biodiversity information to key decision-makers. The following audiences should be considered and interviewed before delivery mechanisms are developed:

- Local governments
- State agencies, for a variety of purposes, including land acquisition, land management, grant programs, regulatory decision-making, transportation planning, and facility siting
- Private conservation organizations, including land trusts
- Federal agencies

- Private sector companies, including those who have large landholdings, such as utility and timber companies
- Private citizens for educational purposes

State agencies or state-based private organizations should establish permanent clearinghouses for biodiversity information. These entities should be equipped to provide technical support and outreach to local governments and other potential users of biodiversity information in the state.

Creating Demand for Biodiversity Information

Federal agencies, state agencies, and private organizations should conduct additional research on how to stimulate sustained demand for biodiversity information from a variety of audiences. Biodiversity information must be marketed both externally and within state agencies. To create demand, state biodiversity initiatives, working with state agencies and others, should take the following actions:

- Create new or interpret existing regulatory authorities to require the use of biodiversity information
- Develop incentives for agencies, organizations, and individuals to utilize biodiversity information
- Market the benefits of using biodiversity information, such as saving time, funds, or minimizing the potential for legal conflict
- Create incentives to encourage municipalities to do more regional planning

Actions for Congress and State Legislatures

Symposium participants identified several actions that state legislatures and Congress can take to help support efforts to protect and restore biodiversity at the state level:

- Secure permanent, stable sources of funding for land acquisition, conservation of non-game wildlife species and plants, and management of public lands
- Develop new incentive programs or tailor existing programs that promote habitat conservation on private lands
- Provide legal standing for state biodiversity efforts
- Institute biodiversity mandates to commit states to biodiversity conservation
- Provide funding for the establishment of biodiversity clearinghouses in each state

Actions for State Agencies

Symposium participants identified several actions that state agencies can take to help support efforts to protect and restore biodiversity:

- Establish a central clearinghouse for biodiversity information
- Create state biological survey programs
- Allow greater access to biodiversity information
- Provide technical support to private landowners and local governments
- Market biodiversity within the state agencies

- Secure permanent, stable sources of funding for land acquisition, conservation of non-game wildlife species and plants, and management of public lands
- Adopt new policies or utilize existing policies to address invasive species
- Incorporate biodiversity considerations into state open space acquisition programs (i.e., use data from biodiversity assessments or statewide conservation plans)
- Develop new incentive programs that promote habitat and species conservation on private lands
- Tailor existing incentive programs, such as Farm Bill programs, to conserve priority areas identified by a statewide conservation plan
- Work with partner agencies and the governor's office to establish a memorandum of understanding or executive order that creates a state biodiversity effort

Actions for Philanthropic Institutions

Symposium participants identified several actions that private philanthropic institutions can take to help support efforts to protect and restore biodiversity at the state level:

- Support collaborative statewide and regional biodiversity conservation efforts
- Provide multi-year grants to allow for absorption of new programs over time
- Support efforts to develop new biodiversity information, disseminate that information, and create demand for the information
- Foster exchange of information and networking opportunities for groups working on biodiversity conservation efforts across the country

ENDNOTES

[1] An agenda from the symposium, recordings of the presentations, and much of the presentation materials, are available online at www.eli.org (click on "Seminars").
[2] Points made by speakers and participants are summarized and attributed where appropriate by a parenthetical citation of the person's surname.
[3] Stein, Bruce A., Lynn S. Kutner, and Jonathan S. Adams, Eds. 2000. *Precious Heritage: The Status of Biodiversity in the United States.* Oxford University Press. P. 101.
[4] Stein, Bruce A., Lynn S. Kutner, and Jonathan S. Adams, Eds. 2000. *Precious Heritage: The Status of Biodiversity in the United States.* Oxford University Press. P. 101.
[5] Stein, Bruce A., Lynn S. Kutner, and Jonathan S. Adams, Eds. 2000. *Precious Heritage: The Status of Biodiversity in the United States.* Oxford University Press. P. 242.

[6] Bennett, Jessica. July/August 1998. *State Biodiversity Planning*. The Environmental Forum. V.15, No. 4: 19-27. Environmental Law Institute: Washington, DC.

[7] Bardach, E. 1998. *Getting Agencies to Work Together: The Practice and Theory of Managerial Craftsmanship*. Washington D.C: The Brookings Institute.
[8] Gray, B. 1989. *Collaborating: Finding Common Ground for Multi-Party Problems*. San Francisco: Jossey-Bass.
[9] Gray, B. 1985. *Conditions facilitating interorganizational collaboration.* Human Relations. 38(10): 911-926.
[10] Fisher, R. and Ury, W. 1981. *Getting to Yes: Negotiating Agreement Without Giving In*. New York, New York: Penguin Books Ltd.
[11] Yosie, T. and T. Herbst. 1998. *Using Stakeholder Process in Environmental Decision-Making: An Evaluation of Lessons Learned, Key Issues, and Future Challenges.* Unpublished.
[12] Weber, T. and Wolf, J. 2000. *Maryland's green infrastructure – using landscape assessment tools to identify a regional conservation strategy*. Environmental Assessment. 63:265-277.
[13] Margerum, R. 1999. *Integrated environmental management: the foundations for successful practice*. Environmental Management. 24(2): 151-166.
[14] For additional information on CARA, please see http://www.teaming.com/

Appendix A
State Program Descriptions

California Biodiversity Council

http://www.ceres.ca.gov/biodiversity/

The California Biodiversity Council consists of federal and state agency representatives, county supervisors, and city council members within California who work cooperatively to promote better stewardship of the State's natural resources. The Council is an outgrowth of concern by natural resource managers and locally elected officials that existing conservation regulations and measures were not working – they were too expensive, often duplicative and were developed without local involvement, making them sometimes unrealistic, and simply inadequate to protect California's natural diversity.

The Council was created in September 1991 with the development and signing of the *California Agreement on Biological Diversity.* The Agreement is the most explicit recognition to date, in California as well as in the rest of the United States, of the need to coordinate natural resource and land use planning and management activities across jurisdictions to the watershed and regional level. It seeks to effectively involve landowners and users, government agencies, and locally elected leaders in the resolution of issues associated with economic development and resource conservation and to develop active partnerships among these interests for managing the State's natural resources. It also seeks to promote the development of conservation and management strategies that reflect the concerns and economic needs of local residents, tailoring conservation programs to these needs for maximum effectiveness.

As interest in dealing more comprehensively with issues of habitat loss, economic stability, and water quality has risen across the State, the Biodiversity Council has helped focus this interest through more effective cooperation between state and federal agencies and local government. This is accomplished at Council meetings that are held quarterly in different areas of the State. In conjunction with these meetings, the Council often sponsors Local Biodiversity Forums for community leaders, local residents, and special interest groups to describe, discuss, and begin to resolve issues of local and regional interest or concern. Several years ago, the Council, representatives of the Regional Council of Rural Counties, and the regional county supervisor associations in the Sierra Nevada region, initiated a series of Regional Leadership Forums designed to improve relations between state and federal agencies and local government.

The Council has been very active in promoting greater coordination among governmental agencies, academic institutes, and other entities for scientific research and data collection and in increasing public access to this information. *The California Environmental Resources Evaluation System* (CERES) is an example of one such effort. It is an information system designed to facilitate access to a variety of automated data describing California's rich and diverse environments. The Council has also worked with local residents in the Klamath Province, located in the northwestern portion of the State, and the Sierra Nevada to develop geographic information systems (GIS) to assist area residents collect, store, and analyze information for watershed restoration work and other planning and conservation efforts. More recently, the Council initiated the *California Continuing Resource Investment Strategy* (CCRISP). Based in part on the Oregon Biodiversity Project, this project will assess the State's natural resources and develop a comprehensive strategy to guide California's investments in resource protection in the 21st century.

Chicago Wilderness

http://www.chicagowilderness.org/

Chicago Wilderness is a "regional nature reserve," comprising hundreds of natural areas totaling more than 200,000 acres in the metropolitan region. It is a globally significant concentration of rare natural communities – the woodlands, forests, prairies, streams and wetlands – found throughout the region. The Chicago Wilderness region encompasses the crescent of land around southern Lake Michigan, including parts of southeastern Wisconsin, northeastern Illinois and northwest Indiana.

Chicago Wilderness is also an unprecedented partnership of 124 public and private organizations (including federal and state agencies, county and local governments, and non-governmental scientific and environmental organizations) that have pledged to work in concert to protect these rare natural communities and to restore them to long-term viability.

What does Chicago Wilderness want to accomplish?

The member organizations, and thousands of volunteers, pool their resources and expertise to most effectively protect, manage, and restore the natural heritage of the central midwestern region.

Key goals include:

- Producing of the region's first comprehensive *Biodiversity Recovery Plan* (1999);
- Documenting of the region's varied natural communities and species in *Chicago Wilderness: An Atlas of Biodiversity* (1997);
- Restoring of natural communities on public and private lands;
- Preventing of the ongoing loss of critical habitat and promoting careful development; and
- Offering opportunities for citizens to become involved in local biodiversity conservation.

How does Chicago Wilderness function?

Each member organization has been active in local conservation efforts and has signed a memorandum of understanding pledging its commitment to Chicago Wilderness goals. The members are organized under an umbrella group called the Chicago Region Biodiversity Council, which directs the initiative and its programs. The Council, with a steering committee of executives and four teams, provides the organizational structure for Chicago Wilderness. The teams are made up of staff from the member organizations in: 1) science, 2) land management, 3) education and communication, and 4) sustainable development.

Financial support for Chicago Wilderness is provided by the member organizations, as well as through additional private and local, state, and federal grants. Current funders include the U.S. Department of Agriculture Forest Service, U.S. Fish and Wildlife Service, Illinois Department of Natural Resource's C2000 program, the U.S. Environmental Protection Agency, and the Grand Victoria Foundation. Member organizations work together to develop and submit projects for review. In order to receive Council endorsement, each project must address a critical conservation need, addressed in the key goals of the initiative. Since its launch in April 1996, Chicago Wilderness has funded more than 140 collaborative projects.

Delaware Biodiversity Initiative

http://www.dnrec.state.de.us/DNREC2000/Admin/Biodiversity/index.htm

Delaware's living resources are facing multiple threats from habitat alteration, loss, and destruction from development and poor land use planning; the introduction and proliferation of exotic and invasive species; and pollution and contamination. Delaware has lost a higher percentage of plants species than any other state. Non-native species represent 25 percent of the State's known flora, and by the mid 1980's about 54 percent of the State's original wetland acreage had been lost. In recognition of these threats and trends, various environmental groups, along with the state, county, and federal governments, began to work cooperatively to protect Delaware's remaining natural heritage and to work toward restoring damaged and altered ecosystems.

The Department of Natural Resources and Environmental Control, the Delaware Nature Society, and The Nature Conservancy's Delaware Field Office commissioned the Environmental Law Institute to conduct a study of the laws, regulations, policies, and programs in the State that either aid or hinder the conservation of biological diversity and to make recommendations. A group of 40 knowledgeable people from both private and public sectors were brought together in a workshop in June 1998 to launch the project.

In December 1999, ELI issued its report, "*Protecting Delaware's Natural Heritage: Tools for Biodiversity Conservation,"* which analyzes status and trends in Delaware's biological diversity, outlines recommendations for how the State's laws and policies could more effectively protect biodiversity, and gives direction for developing a comprehensive strategy. Many of the specific recommendations for improving species protection do not involve new laws or regulations. In most cases, the tools needed already exist, and administrative decisions to refocus or reprioritize programs, making full use of existing authorities or expanding private conservation efforts, will result in significant progress in protecting and restoring Delaware's biological diversity.

These recommendations were presented to the Cabinet Committee on State Planning Issues in May 2000. At the committee's request, a Biodiversity Implementation Strategy Workgroup (BISWG) was formed, consisting of leaders in Delaware's state and county government and the environmental community. BISWG was charged with defining overall goals for biodiversity conservation in the State and prioritizing the report's recommendations. Their goal is to develop an implementation strategy for advancing the State's efforts in biodiversity protection and restoration to be presented to the Executive Committee for consideration and endorsement.

The BISWG began meeting in August 2000. The group has developed statewide goals and objectives, drafted 19 key priority recommendations complete with rationale for implementation, and coordinated a statewide symposium, *Protecting Delaware's Living Resources: Building a Statewide Strategy*, which was held on February 20, 2001. The symposium was designed to inform and solicit feedback from key decision-makers across the State on the proposed recommendations to be implemented to protect Delaware's Natural Heritage.

The next steps in Delaware's initiative involve incorporating feedback from these decision-makers by convening focus groups after the symposium. From this feedback, the BISWG will develop a statewide Implementation Strategy to present to the Executive Committee in May 2001.

Florida's Closing the Gaps Project

In 1990, the Office of Environmental Services of the Florida Fish and Wildlife Conservation Commission initiated a project designed to identify Florida lands that should be protected to meet the minimum long-term conservation needs of most components of Florida's biodiversity. Geographic information systems technology was used to develop maps of potential habitats for 54 focal/indicator species of wildlife by combining information on known occurrences, range in Florida, and habitat requirements with a Landsat-based vegetation map of the State. Population viability modeling was used to estimate the minimum sizes of populations that should be protected, and they concluded that protecting 10 populations of 200 breeding individuals would be a reasonable population goal for providing long-term protection for most species. The Office evaluated the 54 focal species for current protection status on public lands by overlaying public land boundaries on potential habitat maps, tabulating the area of potential habitat on each parcel of public land, using density information to estimate population size on each parcel, and determining which species already have 10 populations of 200 breeding individuals on public land. Of the 54 focal species, 40 were not adequately protected using this criterion.

Strategic habitats were located for the 40 inadequately protected species by identifying privately owned lands that, in concert with public lands, would include enough habitat to meet the conservation planning goal. For some species (e.g., Florida panther, Florida black bear) there is not enough land remaining in Florida to support multiple viable populations. The office identified privately owned lands that would materially enhance survival potential if protected. Because their set of focal species did not completely protect all components of Florida's biological diversity, the Office also mapped known examples of four rare natural communities and 105 globally rare plants as strategic habitats. Strategic habitats were identified so as to protect as many species as possible, meet minimum conservation needs of rare and imperiled species, and include landscape linkages and wildlife corridors wherever feasible.

The results of these efforts were published in 1994 in an agency report titled, "Closing the Gaps in Florida's Wildlife Habitat Conservation System." Since 1994, this information has been used with varying degrees of success in five major types of conservation initiatives in Florida: public land acquisition, land use planning, development, regulation, private landowner incentives, and public land management. Because the data appearing in "Closing the Gaps" are now about 10 years old, the agency is currently in the process of updating the information. They are using 1996-97 Landsat imagery to perform a statewide change detection analysis that will be used to update the vegetation map. Then, they will revise their conservation priorities by: 1) re-running all of their species models to determine what habitats have been lost over the 10-year period; 2) determining what habitats have been protected by public ownership; 3) testing to see how species security has changed with respect to their planning goal of 10 populations of 200 individuals; and 4) identifying new strategic habitats as appropriate. The agency expects the update to be completed by the middle of 2002.

Florida's Ecological Network Project

http://www.geoplan.ufl.edu/projects/greenways/greenwayindex.html

The University of Florida recently completed an analysis of potential ecological connectivity to identify areas with priority conservation significance and landscape linkages as part of a State of Florida program called Greenways. The Florida Greenways Program started in1991 as a combined effort of 1000 Friends of Florida and the Conservation Fund. They convinced Governor Lawton Chiles to appoint the Florida Greenways Commission in 1992, which started an eight-year state government-sponsored process to identify ecological and recreational greenway opportunities across the State and to develop an implementation plan. The University of Florida worked with the Florida Department of Environmental Protection in these efforts with funding from the Florida Department of Transportation.

The identification of a statewide Ecological Greenways Network is the latest step in the State's design and protection of a reserve system obtained through aggressive land acquisition program. The goal of this effort was to use a regional landscape approach to design an ecologically functional Statewide Greenways System that:

1. Conserves critical elements of Florida's native ecosystems and landscapes;
2. Restores and maintains essential connectivity among diverse native ecological systems and processes;
3. Facilitates the ability of these ecosystems and landscapes to function as dynamic systems; and
4. Maintains the evolutionary potential of the biota of these ecosystems and landscapes to adapt to future environmental changes.

The Statewide Greenways System used GIS to develop a decision support model that utilized land use data and information on significant ecological areas, including habitats for target species, priority ecological communities, wetlands, roadless areas, floodplains, and important aquatic systems, to identify larger areas of ecological priority and potential ecological linkages.

The result of this process, the Ecological Network, includes approximately half the State's area, with over half of this network already in conservation lands or public domain water. This network could provide a linked statewide reserve system containing most of each major ecological community and most known rare species. Although the Ecological Network represents significant progress toward a more integrated approach to biodiversity conservation in Florida, further analysis is needed to 1) ensure that needs of wide-ranging species, such as the Florida panther and Florida black bear, are addressed; 2) identify other biodiversity elements not well represented; and 3) designate a system of cores and buffers that will address management issues. Reserve design is an iterative process, and future plans need to include results of the Florida GAP analysis project and ongoing habitat loss.

A prioritization study that identifies the most critical landscape linkages of the Ecological Network was recently finished. These priorities are currently being incorporated into the goals for Florida's new ten-year land acquisition program called Florida Forever. A similar analysis is also being conducted for EPA Region 4 to identify a region-wide Southeastern Ecological Framework and to provide the data and model results for planning efforts at the local, state, and regional scales.

Hawaii Conservation Biology Initiative

http://www2.hawaii.edu/scb/about.htm

In recognition of the importance of Hawaii's unique native species and ecosystems and the urgent need for their protection and management, the Hawaii Conservation Biology Initiative (HCBI) was established in 1988 "to encourage conservation-related research in Hawaii to guide preserve design and long-term stewardship, and to disseminate this conservation expertise world-wide." The goals of the HCBI were to: 1) create and maintain a prioritized agenda of conservation biology research questions to guide research efforts and funding in Hawaii; 2) increase private, state, and federal support for high-priority conservation research in Hawaii through a sustainable research grants program and effective interagency collaboration; 3) establish a system of biological field stations in Hawaii to support priority conservation research in currently protected natural areas, representing a broad range of native ecosystems and islands; 4) explore the opportunity to establish a conservation biology center in Hawaii; and 5) develop an organization capable of accomplishing the goals of HCBI and continuing this work into the future.

By 1993, many of the goals and objectives of the HCBI had been accomplished and the Secretariat for Conservation Biology (SCB) was established to continue the initiatives of the HCBI. State (Hawaii Division of Forestry and Wildlife; University of Hawaii-Center for Conservation Research and Training) and Federal (U.S. Fish and Wildlife Service; U.S. Forest Service; USGS Biological Resources Division; U.S. National Park Service; the East-West Center) agencies, and private non-profit organizations (The Nature Conservancy of Hawaii; Bishop Museum; the Peregrine Fund) have joined in partnership "to promote effective, long-term management of Hawaii's native ecosystems through a collaborative research and training effort among land managers, scientists and educators."

In addition to goals one and two of the HCBI, the SCB's goals are to communicate conservation science to natural resource managers and to increase public awareness as to the importance of conserving and managing Hawaii's biological diversity.

The activities of the SCB include:

- an annual Hawaii Conservation Conference, which draws more than 400 participants from the Pacific Region;
- the Hawaii Conservation Forum, which brings together more than 40 organizational participants to collectively identify top-priority conservation issues and establish multi-agency working groups to develop and implement near-term action plans;
- the Hawaii-New Zealand Conservation Biology Exchange Program, which encourages technical cooperation in addressing common issues faced by managers and researchers in both island ecosystems;
- support services to Natural Resource Managers by providing training workshops, such as in natural resource monitoring and alien plant control methods, and other publications in the form of pictorial guides of alien plant and insect species, etc.;
- grants program to support high-priority research related to management needs; and
- a public education/awareness program to increase public understanding and support for the conservation and management of Hawaii's unique biological diversity.

Illinois C2000 Ecosystems Program

http://dnr.state.il.us/orep/c2000/

The Illinois Ecosystems Program is funded through *Conservation 2000* (C2000), a comprehensive long-term approach to protecting and managing Illinois' natural resources. The Ecosystems Program is a voluntary, broad-based incentive program. It integrates the interests and participation of local communities and private, public, and corporate landowners to enhance and protect watersheds through ecosystem-based management. Program assistance is available to all those located within an Ecosystem Partnership Area. The Ecosystems Program provides four types of support to Ecosystem Partnerships: assessment and monitoring; integrated technical assistance; ecosystem project, planning, and support grants; and ecosystem interpretation and education.

Ecosystem Partnerships are coalitions of local stakeholders – private landowners, businesses, scientists, environmental organizations, recreational enthusiasts, and policy makers. They are united by a common interest in the natural resources of their area's watershed. Partnership designation brings financial and technical support, which is integral in addressing watershed concerns.

Ecosystem Administrators, regional program staff, strengthen Ecosystem Partnerships by participating in meetings, and serving as a liaison between the Partnerships and IDNR staff. They maintain the focus of Partnership goals, and encourage the group to utilize all of the available support the Department offers. The Ecosystems Program provides detailed natural, economic, and cultural resource assessments to designated partnerships. The assessments include pre-settlement ecology and regional geology. Monitoring is also provided for the Ecosystem Partnership area on a five-year basis.

Ecosystem Administrators assist Ecosystem Partnerships in promotion, as well as offer several different types of watershed education programs. They also provide guidance in developing and coordinating educational events. Presentations about the Ecosystems Program and watershed education are readily available for all individuals, from small children to retired citizens.

Ecosystem Project Grants are submitted and ranked by Ecosystem Partnerships to enhance their watershed. These annual grants are competitively awarded in the fall. Project categories include: Habitat – projects restore or enhance the existing landscape, such as reforestation, prairie establishment, or riparian restoration; Capital – projects provide funding to purchase conservation easements or acquire land for the purpose of habitat protection and restoration; Outreach – projects provide the public with resource management assistance, technical advice, or educational support; Research – projects are scientifically oriented to the collection and analysis of data for the purpose of expanding environmental knowledge; and Resource economics – projects use the natural resources of an area to create an economic benefit to the surrounding community.

Each designated Ecosystem Partnership is eligible for a Phase I Planning Grant up to $10,000 for initial watershed planning. Further Phase II planning assistance may also be available. Support Grants for Ecosystem Partnerships are available biennially. Funds are used for administrative, contractual, operational, and equipment expenses.

Indiana Biodiversity Initiative

http://www.indianabiodiversity.org

The goal of the Indiana Biodiversity Initiative (IBI), organized in 1996, is to provide the communities of Indiana with educational opportunities and up-to-date information to coordinate local biodiversity conservation efforts. IBI is comprised of a Steering Committee, a Conservation and Restoration Team, an Education Team, a Coordination Team, and an Administrative Team. The Steering Committee provides leadership and guidance. Members include representatives from state and federal agencies, non-profit organizations, university faculty, and the business and agricultural communities.

In coordination with ELI, a biodiversity workshop was held in Indianapolis in 1997. It brought together national, state, and local leaders from the public and private sectors. The workshop was organized to engage leaders at various levels in Indiana in order to advance their understanding of biodiversity threats, opportunities, and tools. More than 200 individuals attended the conference.

The Conservation and Restoration Team (CRT) has undertaken a biodiversity assessment of the entire State, based on the State's natural regions. These regional assessments seek to assess the status of biodiversity, identify factors affecting biodiversity, and prioritize opportunities for restoration and protection. The CRT is currently completing the first regional assessment for the Grand Prairie Region and anticipates completing all assessments by January of 2002. The findings of each regional assessment will be published on the Internet and compiled into a statewide conservation strategy to be published in 2002. The CRT is also working with the Education Team to develop a web site for the Initiative.

The Education Team is charged with raising the awareness and understanding of Indiana's biodiversity among its citizens. The Education Team is currently working on three major projects: a public relations campaign, a school education program, and NatureMapping. As part of the public relations campaign, a press kit was released in 1999 and a brochure and traveling exhibit were designed in 2000. The Education Team is beginning a cooperative venture with World Wildlife Fund (WWF) to offer biodiversity training workshops for middle school teachers and to adapt WWF's *Biodiversity Basics* curriculum for Indiana's habitats and species. NatureMapping is an interactive program designed to offer Indiana citizens an opportunity to collect scientific information and to report the results of wildlife inventories. This information is stored in a central database. In 2000, IBI hired a part-time NatureMapping coordinator who has facilitated 13 workshops around the State. Spring workshops are currently being scheduled.

IBI has been able to pursue and achieve many of its goals through funding from a variety of sources, including private foundations, conservation organizations, corporations, and state government. Funding in 1996 and 1997 from the Moriah Fund, Eli Lilly Corporation, Indiana Department of Natural Resources, The Nature Conservancy/Indiana Field Office, Indianapolis Power and Light Company, Cinergy Corporation, National Fish and Wildlife Foundation, and Legacy Fund enabled IBI to initiate several projects. Funding in 1999 from Nina Mason Pulliam Charitable Trust and Central Indiana Community Foundation have enabled IBI to progress on these projects, including adding staff. Additional donations of GIS hardware and software came from Indiana University School of Public and Environmental Affairs and ESRI.

Kentucky Biodiversity Council

http://www.nr.state.ky.us/nrepc/dnr/biodiverse/links.htm

In 1994, Kentucky Governor Brereton Jones established the Kentucky Biodiversity Task Force through Executive Order. He appointed a diverse group of 34 Kentuckians to serve on the Task Force. The group was directed to study the status of biodiversity in Kentucky and to develop recommendations for future action. In its final report, *Kentucky Alive*, the Task Force recommended that the Governor establish a Biodiversity Council to continue to conserve and sustain biological diversity through the following methods:

- Develop a statewide biodiversity policy;
- Develop a coordinated inventory of all levels of biodiversity and database of information;
- Develop biodiversity management plans and demonstration areas for State lands;
- Develop and coordinate formal and informal educational programs;
- Create one official State list of rare, threatened, and endangered species;
- Identify and establish partnerships among government agencies, universities, non-governmental organizations, and individuals; and
- Identify, develop, and promote incentives, awards, and technical assistance programs for private landowners.

In December 1995, Governor Jones established the Kentucky Biodiversity Council through another Executive Order and appointed to it representatives of the state agencies that manage lands (forestry, nature preserves, fish and wildlife, parks, highway department). Other members of the Council represent educational and science interests. The Governor appointed Jeff Hohman as the first Chair of the Council, a position to be filled by a person "knowledgeable of and committed to conserving Kentucky's biodiversity," but not an employee of state government.

The Council meets several times each year to discuss biodiversity protection efforts and issues. Members share their experiences and have formed several partnerships to address common issues. The Council has no dedicated funding, but has managed to attract contributions that have been distributed as grants to support efforts such as exotics control research, a herbarium, and a science teacher's guide to biodiversity in Kentucky.

The Council has worked with the Kentucky Academy of Science to establish an agency to coordinate inventory efforts and to preserve natural history collections. The effort has been incorporated into a planned Kentucky Natural History Museum. Legislation establishing a museum board and planning committee easily passed in the last legislative session.

The Council has supported efforts by other groups to preserve and protect biodiversity. These important efforts include the purchase of mining and logging rights; a master plan for environmental education in Kentucky; private lands conservation incentives in the Green River basin; and an innovative management plan to protect the copperbelly water snake.

The Council has been supported by Brereton Jones' successor, Governor Paul Patton, who has extended all members' appointments through 2003. In the future, the Council plans to lobby for funding of the Kentucky Natural History Museum, coordinate inventory efforts, promote conservation on private lands, improve outreach/communications through newsletters and web site and promote educational efforts.

Maine Forest Biodiversity Project

http://www.publicconversations.org/Pages/forest.html

In May of 1994, nearly 100 people came together to discuss the issue of biodiversity in Maine's forests. Representing forestland owners and managers (large and small, public and private, non-profit and commercial), advocates (environmental, sporting, property-rights, land conservation, and others), the scientific community, state and federal agencies, and educators, the group learned from outside experts and from each other. At the end of this two-day meeting, the group agreed to constitute itself as the Maine Forest Biodiversity Project (MFBP) and to meet again to further educate themselves about biodiversity.

The conference grew in response to an incomplete State initiative to examine the potential for establishing ecological reserves, a desire to address biodiversity issues in the matrix of Maine's forests, and interest to implement recommendations from the Northern Forests Lands Council report. To ensure a range of perspectives and a broad base of support, a steering committee oversaw the work of the Maine Forest Biodiversity Project.

Objectives

The mission of the MFBP was to explore and develop strategies that help maintain viable populations of existing native species and viable representatives of existing native ecosystems in Maine. MFBP participants believed that the maintenance of biodiversity can be achieved through a combination of reserved lands and managed forests. In order to achieve the mission MFBP participants identified three tasks that needed to be completed including:

1. Assessment of the status and trends of biodiversity in Maine Natural Areas Program;
2. Recommendations for forest practices that help to maintain biodiversity; and
3. Completion of an effort begun by the Maine State Planning Office to define and assess the potential for an ecological reserve system on public and private conservation lands.

Process

Between 1994 and 1999, twelve MFBP full-group meetings or conferences were held. Conferences occurred two-three times per year and involved discussions, review of ongoing projects or new project proposals, or presentations and field trips. A number of sub-committees were formed, including Scientific Advisory, Biodiversity in the Working Forest, Strategic Planning, Forest Inventory and Analysis, Public Outreach, and Public Conference. The steering committee and the Project Director carefully plan conferences with the assistance of professional facilitators. The group process, designed and employed, was intended to encourage productive dialogue among people that normally had little contact with each other and, in a number of cases, represented factions of the polarized environmental policy conflicts occurring outside of MFBP.

Products

The MFBP produced a number of reports of statewide significance. These included: a two volume assessment of the status and trends in Maine's biological diversity; a report on an inventory and design of potential ecological reserves on Maine's public lands and private nature reserves; a manual for foresters on "biodiversity friendly" forestry practices; and a report on using federal forest databases as a tool for monitoring Maine's biodiversity.

The MFBP officially ended January 1999.

Maryland's Green Infrastructure Assessment

http://www.dnr.state.md.us/greenways/

The Green Infrastructure land network is a proposed concept to protect and link Maryland's remaining ecologically valuable lands. These lands include, large contiguous tracts of forestlands, important wildlife habitats, wetlands, riparian corridors, and areas that reflect key elements of Maryland's biological diversity. The proposed network would be linked by a system that connects large contiguous blocks of natural resource lands (hubs) through corridors that encompass the most ecologically valuable areas between these hubs (e.g., areas of high aquatic integrity, wetlands, wildlife migration routes, and important forest lands). This concept is not a plan or a mandate to protect these valuable lands, but rather it envisions the cooperative efforts of many people and organizations, including government agencies, land trusts, and interested private landowners.

The purpose of the Green Infrastructure land network is to create a coordinated statewide approach to land conservation and restoration that will: 1) systematically identify and protect lands with important ecological and biodiversity characteristics; 2) address problems of forest fragmentation, habitat degradation, and water quality; 3) maximize the influence and effectiveness of public and private land conservation investment; 4) promote shared responsibility for land conservation between public and private sectors; and 5) guide and encourage compatible uses and land management practices.

The Department of Natural Resources has undertaken a statewide analysis to identify a first cut of the Green Infrastructure network. Green Infrastructure areas have been identified on public and private lands throughout the State. Because only limited statewide data was available to define the initial draft of this network, the Department recognizes that the network will change as better and more up-to-date information becomes available. The input of local governments, land trusts, citizens, and scientific experts has been incorporated in this cooperative endeavor to identify a potential Green Infrastructure land network.

An important goal in this process is to produce a set of Green Infrastructure maps and data that could be used for a number of land conservation purposes. These include: 1) furnishing information to help set conservation priorities; 2) providing a strategic means to orchestrate multiple land conservation and restoration programs and decisions; 3) assisting in the assessment of natural resource related impacts of proposed developments; 4) identifying opportunities for natural resource enhancement activities; 5) preserving lands for resource based industries, such as, forestry, hunting, fishing, and nature tourism; and 6) completing and utilizing smart growth initiatives to encourage growth only in appropriate areas.

Massachusetts EOEA Biodiversity Project

http://www.state.ma.us/envir

Massachusetts Environmental Office of Environmental Affairs (EOEA) Secretary Bob Durand has made biodiversity and ecosystem protection a top priority. There are three objectives under his biodiversity and ecosystem protection initiative:

Build a constituency for biodiversity through education and outreach to the public.

EOEA has instituted a school visits program, where the Secretary and agency employees spend time classrooms and outdoors teaching kids about the natural world. The Secretary's Statewide Environmental Education Plan, which has a biodiversity focus, promotes the environment as an integrating context for learning in both formal and non-formal education settings. In June 2000, EOEA held a Massachusetts *Biodiversity Days* when 15,000 citizens were assisted by experts in 100 cities and towns to inventory animals and plants. Citizen data was compiled in a central database. EOEA is sponsoring a statewide citizen's Biodiversity Days in June 2001. A new publication, "Exploring Biodiversity," was developed to teach how to inventory species and habitats in backyards and neighborhoods.

Protect and restore ecosystems through land protection and ecological restoration projects.

EOEA is implementing an aggressive land protection program that uses biodiversity as a primary criterion for State acquisitions. Six focus areas that contain important biological resources have been selected for priority protection. The Governor has set a goal to protect 200,000 acres by 2010. The centerpiece of the land acquisition program is the creation of BioReserves in large, unfragmented parcels of biologically important lands that are open to the public for passive recreation.

To guide land protection efforts, EOEA is mapping biological diversity in the State. Intensive field inventories of rare species habitat, exemplary natural communities, and associated ecological lands are being performed statewide. This effort will produce GIS maps of biodiversity "hot spots," or priority areas for conservation, and orthophoto maps of vernal pool habitats.

The restoration of biodiversity and ecosystem functions also is an important objective of EOEA's biodiversity work. An Invasive Species Council has been established and the Wetlands Restoration Program is implementing an initial goal of restoring 3000 acres of wetlands by 2010. Additional ecological restoration programs include the River Restore Program to evaluate and restore dams for removal to restore anadromous fish habitat, the Upland Habitat Management Program to restore early successional habitats, and the Lakes and Ponds Restoration Program to restore lakes and ponds.

Promote incorporation of biodiversity and ecosystem considerations in public and private decision-making.

The third objective recognizes that for everything that cannot be protected or restored outright, decision-making must reflect biodiversity and ecosystem considerations. Sustainable Practices Guidelines available on the EOEA Biodiversity Web Page teach citizens how to consider biological resources in daily decision-making. Business guidelines and developer/municipal guidelines are in development. The Secretary's Forest Vision program is the EOEA's commitment to biodiversity-based decision-making in forest management.

Metropolitan Conservation Alliance

http://wcs.org/home/wild/northamerica/740

The Wildlife Conservation Society's Metropolitan Conservation Alliance develops innovative, locally based strategies that tackle ecosystem loss and urban sprawl in the New York City region. This tri-state region is characterized by a great variety of habitats and biogeographical divisions, resulting in an unusually high diversity of temperate flora and fauna. Yet, within the boundaries of this rich natural landscape stand 1,600 cities, towns, and villages that comprise 31 counties at the head of the Boston-to-Washington "megalopolis."

Initiated in 1997 by Dr. Michael W. Klemens, a Wildlife Conservation Society conservation scientist and local land use planner, the Alliance brings together a wide array of stakeholders and experts to discuss and understand the biological, social, economic, and legal aspects of current land use planning systems. It then provides biological information that integrates science into planning practices, and communicates these ideas to land use decision-makers and the public.

The goal of the Metropolitan Conservation Alliance is to protect wildlife by developing models for conserving ecosystems and their functions in an increasingly urbanized environment. The objectives the Alliance needs to meet to accomplish these tasks are: 1) to create a constituency for wildlife, and the ecosystems that support them, that has an understanding of both the conservation problems and potential solutions in the New York metropolitan region; 2) to provide the tools needed to address conservation problems in the region (whether these be information on the ecology of the region or on specific species, developing land use ordinances, training in process oriented methods to develop interdisciplinary constituencies, or technical assistance in mapping or land use planning); and 3) to generate ecological information that is of use in strategic planning for the conservation of biological diversity.

The strategies used are part of a four-pronged approach to changing the biological diversity and land use paradigm. The strategies are to: 1) carry out applied, problem-solving research at specific sites; 2) integrate research results into local and regional land use practices in the tri-state region; 3) expand the capability and number of professionals and decision-makers working on these topics; and 4) raise public awareness of the importance of these issues as well as potential techniques and methods to address them.

Missouri Biodiversity Task Force and Missouri Biodiversity Council

Biodiversity conservation has been ongoing in Missouri for decades. In 1976, the *Design for Conservation*, a citizens-based initiative, provided the Missouri Department of Conservation (MDC) with a 1/8 of one percent sales tax for expanded conservation activities. Central to the initiative was the creation of the Natural History section within MDC. The section was formed to address non-traditional, non-game issues, including rare and endangered species and natural areas. Ultimately, the State Natural Heritage program was also housed within the Natural History section, and a systematic natural features inventory of the entire State was coordinated. Consequently, identification, protection, and management of important elements of Missouri's biodiversity have been ongoing for 25 years.

When Biodiversity Conservation emerged as an issue in the early 1990s, the Missouri Biodiversity Task Force was formed to help address the issue. In March of 1992, the Biodiversity Task Force released its report "The Biodiversity of Missouri – Definition, Status, and Recommendations for its Conservation." The Task Force and the report were sanctioned and endorsed by the Missouri Department of Conservation and the Mark Twain National Forest in response to increasing concerns surrounding the conservation of biodiversity nationally and globally. Missouri was one of the first states to directly tackle the issue, and the report was used as a model by numerous states. In addition to defining biodiversity and briefly describing its status in Missouri, the report outlined a strategy for further assessing and conserving biodiversity in the State.

The goals and objectives outlined in the Biodiversity report have led to many activities that continue today. The goals outlined a coordinated strategy focused on ecosystem conservation that utilizes GIS to assess and plan for resource conservation at a regional scale.

The first goal of the report was to coordinate biodiversity conservation efforts among natural resource agencies and the private sector. This goal led to the formation of the Missouri Biodiversity Council – a fourteen-member council with representatives of all state and federal natural resource agencies, The Nature Conservancy, the Missouri Farm Bureau, and the Missouri Department of Agriculture. The council sponsored numerous inter-agency working groups that were focused on the other goals and objectives in the report. These included working groups for regional resource planning, a Missouri Ecological Classification System, geographic information systems, sensitive species, and natural resource education.

New Hampshire Biodiversity Conservation Project

The State of New Hampshire is one of the fastest growing states in the eastern U.S. The State is experiencing the conversion of nearly 25,000 acres of forest to human dominated landscapes each year. New Hampshire's state government ranks 48th in spending to support the environment. These conditions have resulted in a number of state and regional non-governmental organizations joining forces to address the threats to the State's biological diversity. Under the auspices of the Audubon Society of New Hampshire's Biodiversity Conservation Project, a number of ongoing efforts and new initiatives have been brought together into a coordinated effort to address all aspects of human impacts on biodiversity. Initially, this project will focus on preserving and enhancing biodiversity in the rapidly developing southern tier of the State.

The *New Hampshire Ecological Reserve System Project*, a public-private partnership, is working on identifying and protecting a system of reserves on public and private lands across the State. These lands will be managed to protect all aspects of biodiversity. Reserve selection criteria have been developed by a group of New Hampshire's leading scientists and private funding has been raised to fund a project coordinator position for the second year. The first of the system of reserves should be dedicated by spring 2001. These reserves will serve as an important part of the green infrastructure supporting biodiversity in the built environment.

The *New Hampshire Minimum Impact Development Partnership* is working to limit the impact of the gray infrastructure on the environment. This project is developing guidelines to address impacts at the building, site, and landscape levels. Draft guidelines have recently been posted on a web site for use by developers and municipalities. A transportation workgroup has engaged the state department of transportation in discussions aimed at creating a consensus position on limiting the effect of transportation improvements and expansion on wildlife. This project has brought together a diverse group of stakeholders representing non-governmental organizations, state agencies, and the private sector.

The interaction between the social infrastructure and biodiversity will be addressed in two ways. The Audubon Society of New Hampshire is using its seven environmental education centers and ten chapters around the State to engage and energize people to take actions to protect biodiversity on their own land and in their own communities. They also hope to collaborate with the Environmental Law Institute to analyze the effects on current state law and policy on biodiversity and make recommendations for change. They have the support of the Governor for this work, which will afford good access to each of the state agencies with natural resource responsibilities.

New Jersey's Landscape Project

http://www.state.nj.us/dep/fgw/lndscpe.htm

The protection of biodiversity at the state level requires a program that operates at all scales, from ecosystem down to individual communities or parcels. A state agency must take on all species, and for the most part it is the last resort for both species and the interested public.

The New Jersey Endangered and Nongame Species Program, a part of the state fish and wildlife agency, began in the heady days marked by the passing of the federal Endangered Species Act and the first Earth Day. The first efforts focused on charismatic mega-fauna: eagles, ospreys, and rattlesnakes, with great success. With greater understanding, they tackled less popular species: mussels, dragonflies, fish, etc. Now they conduct over 30 field projects covering most of New Jersey's 500+ species. These projects are the first line of protection as they often result in direct protection of animals and their habitats. Their projects are nationally recognized for their leadership and success, such the Delaware Bay Migratory Shorebird Project and the Cape May Stopover Protection project.

By the early 1990's, the program began working on several projects that added two new important perspectives to their work. The first grew from the technical need to embrace a larger geographic perspective. Most animals require large areas of habitat; they may have large home ranges (bobcats), or require contiguous habitats (interior forest nesting birds), or they may exist in small populations as part of a meta-population (most reptiles and amphibians). To identify these needs they initiated our Landscape Project, which maps all significant wildlife habitats in the State. In partnership with Rutgers University, they pioneered a scientifically defensible method of ranking all significant patches using state of the art GIS and their considerable database of information. Now their mapping is integrated into the state planning system as well as those of Regional Planning Association, the New Jersey Conservation Foundation, and other conservation agencies.

The second understanding arose from the Landscape Project, which found that the job of protection is immense and must start with an involved citizenry working at the community level. Consequently, they expanded the use of volunteers in all of the projects. Now they have over 2,000 people working on everything from bald eagle nest watches to shorebird banding. With new grants from two private foundations, they are about to expand even further with more training and better feedback. Their work is popular in the State not only because it is interesting to most people, but also because the data collected (after verification) is used to guide conservation through the Landscape Project and all of its users. New Jersey has created an online data entry system to make reporting easy and efficient. They are also making all of this data available to all users. Although CD's of the map products are available now, within the next few weeks the mapping will be online, allowing anyone access to maps of important habitats within their community.

New Mexico Biodiversity Project

In 1998, the Center for Wildlife Law, in partnership with Defenders of Wildlife and the Environmental Law Institute, researched and drafted a report on the laws and policies of New Mexico that affect wildlife conservation and wildlife habitat protection. The report, entitled *New Mexico's Natural Heritage: A Handbook of Law and Policy*, describes this "legal infrastructure," identifies gaps and opportunities for change, and suggests the need for a comprehensive biodiversity conservation strategy for the State.

The next step was to initiate a discussion about the potential for a comprehensive conservation strategy and to develop some baseline recommendations for a strategy-setting process. Because of funding constraints, project staff began these conversations with just two groups, non-profit conservation organizations and state agency staff. In September 2000, the Center and Defenders convened a daylong meeting of representatives of conservation organizations from around the State to discuss and determine interest in a statewide biodiversity conservation strategy. They have also had a number of meetings this fall with individual State officials and staff of the university-based Natural Heritage Program about the potential for biodiversity planning.

They will be consulting with the Environmental Law Institute as they develop a report on the results of these meetings and their recommendations for a comprehensive planning and strategy-setting process. The wealth of information and ideas that will come out of ELI's national biodiversity symposium should also be of great benefit as New Mexico considers a biodiversity planning effort.

New York State Biodiversity Project

http://research.amnh.org/biodiversity/

http://www.nysm.nysed.gov/bri/index.html

Initiated and coordinated by the American Museum of Natural History's Center for Biodiversity and Conservation, this project is a joint effort between the Museum, The Nature Conservancy of New York, the New York Natural Heritage Program, the New York State Museum's Biodiversity Research Institute, the New York State Department of Environmental Conservation, and the Environmental Law Institute. The project was initiated in December 1999 and is funded in part by Surdna Foundation, Inc. and the New York State Biodiversity Research Institute.

The goals of this project are:

- To assess the current status of knowledge of New York State's biodiversity and to identify information gaps, conservation threats, and research needs by compiling and organizing existing available knowledge about biodiversity in the State;
- To make that information useful, meaningful, and accessible to a broad array of users by providing one central location where groups and individuals can find information about all components of New York State's biodiversity;
- To support the development of collaborative strategies that will allow key players throughout the State to take action on issues critical to the State's biodiversity by incorporating biodiversity information into policy and planning, land management, business decision-making, and research and education; and
- To prioritize future conservation and systematic work with the full complement of biodiversity in mind.

Results to date:

- A needs assessment of key policy-makers, land managers, planners, business and industry representatives, and educators statewide to determine how best to provide science-based biodiversity information.

Anticipated future results:

- Summaries of the current status of knowledge for selected taxonomic groups of New York State.
- A summary publication about New York State's biodiversity. It will address the following topics: what is known, what is unique and special, what are critical threats to biodiversity, what are possible solutions, and where future research is needed.
- A central repository web site featuring information about New York State's biodiversity, to be housed on the New York State Museum's Biodiversity Research Institute website.
- A workshop for a broad array of key biodiversity information users with emphasis on increasing participants' knowledge of New York's biodiversity and enhancing their understanding of how to use scientific information in decision-making.

Ohio Biodiversity Plan

In 1997, the Ohio Department of Natural Resources (ODNR) began an effort to formulate a five-to-ten year strategic plan for supporting, increasing, and enhancing biodiversity on ODNR lands and in ODNR programs. A department-level Biodiversity Team was formed to "develop a departmental strategic plan and implementation plan which integrates biological diversity principles into department actions." The ODNR Biodiversity Team formed a Support Group with representatives from outside natural resource agencies and organizations to review and provide input to the draft strategic plan. In June 1998, ODNR published the *Biological Diversity Strategic Plan and Implementation Plan*.

At the same time, the Environmental Law Institute began working with partner organizations in Ohio – primarily ODNR, National Audubon Society/Ohio, and The Nature Conservancy – to analyze the effects of the State's laws, policies, and programs on biodiversity. The ELI report, *Ohio's Biological Diversity: Strategies and Tools for Conservation*, was published in December 1998.

In December 1999, ELI, ODNR, The Nature Conservancy's Ohio Field Office, and National Audubon Society/Ohio hosted a conference titled "Connecting Ohio's Biodiversity Interests: A Collaborative Workshop." Over 150 people attended this full-day event, which served to highlight the findings of the ELI report and to promote the implementation of the ODNR plan.

Most recently, the Biodiversity Team produced a Biological Diversity Questionnaire for ODNR employees to determine employees' awareness of biodiversity. More than 3,700 surveys were distributed in June 2000 and approximately 13 percent were returned. Despite the low response, the survey indicated that employees are interested in biodiversity and would like more training and information on the subject. The Team is currently working on a brochure about biodiversity and what the Department is doing related to biodiversity conservation (several examples of Division activities). The brochure should be completed and distributed to employees by early summer of 2001.

Oklahoma Biodiversity Plan

On October 10, 1992, Oklahoma Governor David Walters, the Oklahoma Department of Wildlife Conservation, and Vice Presidents of Weyerhaeuser Company signed an agreement to develop a Biodiversity Plan for the State of Oklahoma. Weyerhaeuser Company agreed to award the Department of Wildlife Conservation $50,000 per year, renewed annually, for three years to develop the plan. The Department of Wildlife Conservation contracted a biodiversity coordinator to facilitate the plan's development. The Department of Wildlife Conservation, in coordination with the Governor and the Wildlife Commission, appointed a Biodiversity Council to oversee the project and established a Biodiversity Task Force that developed the plan. According to the agreement, the plan would "assess and document biodiversity in Oklahoma, assess relationships of biodiversity to economic development and human use of land and natural resources, and propose the application of these assessments to integrate biodiversity, human use, and economic development to meet Oklahoma's needs into the future." Work on the project began on March 1, 1993.

Because most of the land in Oklahoma is privately owned, the Department of Wildlife Conservation involved a broad range of interests in the plan's construction, rather than conducting the project as an in-house report. Biodiversity Council membership includes directorate-level individuals of various federal and state governmental agencies and private organizations that are responsible for biodiversity or whose activities impact biodiversity. The Council works to ensure that all issues of biodiversity conservation are addressed fairly, coordinates the effort, and provides direction to implementation efforts.

The Biodiversity Task Force performed the labor involved in creating the Biodiversity Plan. Seven committees – biology, conservation and recreation, education, forestry and agriculture, land resources, mineral resources, and water resources – were formed to provide input from a variety of interests. Committee members included both governmental and private representatives and were selected from lists of nominees as recognized leaders within their profession or organization. During the period that they were active, committees met approximately once every two months. The plan was reviewed by each committee and is the result of the hard work the committees gave toward developing a plan all participants could support.

The primary purpose of the biodiversity plan is to provide information about Oklahoma's biodiversity and make recommendations on how biodiversity conservation can be included in a variety of economic and other activities. These recommendations are intended to function as a "shopping list" of ideas a landowner or company can review, selecting those to implement that relate to their circumstances. Participation in the Biodiversity Project is strictly voluntary and landowners and companies will not be required to follow the recommendations in this document.

Oregon Biodiversity Project

http://www.biodiversitypartners.org

Defenders of Wildlife, The Nature Conservancy, and private industry representatives initiated the Oregon Biodiversity Project in 1994. They believed that existing conservation programs were often too narrowly focused on individual species and sites, implemented under pressure, and characterized by antagonistic interactions among opposing interests. Inspired by the Gap Analysis Program, the project used GIS technology to evaluate the overall distribution of species, habitat types, land ownership and management strategies across the Oregon landscape to determine which areas should receive the highest priority for conservation. The project provided a science-based collaborative approach to conserving all native species and their habitat. It also provided a comprehensive assessment of different incentive programs that are or could be used to encourage private landowners to conserve biodiversity on lands that may be used primarily for other purposes, like agriculture and forestry.

Through the analysis of over 100 ecological and socioeconomic spatial data themes, the strategy highlights 42 conservation opportunity areas where desired ecological attributes converge with favorable political and social circumstances. The project had three committees (steering, science, and implementation) with representatives from government, industry, conservation, and academia.

The project took five years and cost nearly $1 million. It produced a variety of products: an atlas containing a biodiversity assessment and strategy; a poster showing the 42 conservation opportunity areas; a CD-ROM containing biodiversity-related data sets; two conservation incentives books; a process report detailing the lessons learned from the project; and several versions of a slide presentation.

The Biodiversity Partnership was created as the implementation vehicle for the Oregon Biodiversity Project, and to expand the idea to other states and regions. It is a loosely structured network of diverse groups and individuals interested in working together to find creative solutions that protect the nation's natural heritage within the context of human activities. Information about the Oregon Project and the partnership can be found on the web at biodiversitypartners.org.

The Oregon project/partnership has stimulated considerable discussion about biodiversity in Oregon, and led directly to the conservation of some priority areas. However, since implementation involves multiple agencies and organizations, it is not always possible to attribute a particular action to the project. Defenders maintains a list of implementation steps that have been taken on the ground and in the policy arena, and updates it periodically. The summary is available upon request.

Currently, Biodiversity Partners are working on a series of legislative proposals to address elements in the strategy. For example, several federal and state initiatives will address incentives for private landowners. The Oregon Progress Board has adopted eighteen new environmental benchmarks, including three for biodiversity. There are also efforts underway to improve the management and distribution of biological information, and to improve the alignment between land use planning and the conservation of natural resources.

Pennsylvania Biodiversity Partnership

In September 1998, Governor Tom Ridge's 21st Century Environment Commission presented its findings on the state of the environment and natural resources in Pennsylvania. The Commission report proposed that a broad-based public-private partnership be formed to move forward with recommendations focusing on the protection and conservation of biodiversity, and that the Department of Conservation and Natural Resources (DCNR) take a leadership role among the public agencies. Responding to this challenge, DCNR Secretary John Oliver, along with the Pennsylvania Fish and Boat Commission, the Pennsylvania Game Commission, and the Governor's Sportsmen's Advisor convened a coalition of over 30 groups and individuals in October 1999 to discuss implementation of these recommendations.

After a series of meetings, the Pennsylvania Biodiversity Partnership (PBP), a public-private partnership dedicated to building a biodiversity conservation movement in the State, was formed in March 2000. A 21-member Interim Executive Board, including representatives from state agencies, industry, and conservation organizations as well as individuals, consented to establish the organization within one year and an unpaid Interim Executive Director was appointed. PBP is a voluntary coalition and anyone interested in Pennsylvania's biodiversity may participate in one of the seven task forces (education, funding, bioinformatics, public relations, policy, science, stewardship). Membership presently includes approximately 50 organizations and individuals and most of the task forces have met at least twice during 2000. Articles of Incorporation as a nonprofit organization were filed in December 2000; bylaws have been drafted and reviewed by DCNR legal staff; and they are presently pursuing status as an independent 501(c)(3) organization.

PBP's mission is to conserve biodiversity statewide by promoting communication and cooperation among a broad spectrum of stakeholders and includes the following strategies and objectives:

- Educate stakeholders and the public on the ways biodiversity sustains economic and environmental health and ensures quality of life for all citizens;
- Develop a scientifically based strategic plan for short-term and long-term conservation of biodiversity;
- Advise state agencies on opportunities and programs to conserve biodiversity;
- Encourage state agencies to take a leadership role in the conservation of biodiversity;
- Promote voluntary conservation of biodiversity on private lands;
- Advocate both private and public long-term funding for biodiversity conservation; and
- Assess and regularly account for progress on biodiversity conservation in Pennsylvania.

PBP is unique among biodiversity organizations in Pennsylvania in its involvement of government, business and industry, and environmental organizations as equal partners. Although members represent diverse backgrounds and opinions, a consensus has emerged that a plan focusing on strategies and opportunities for protecting Pennsylvania's biodiversity must be developed and implemented.

PBP is presently embarking on strategic planning for conserving biodiversity statewide, with funding for Phase 1 (information gathering and benchmarking) from the Heinz Endowments, Wild Resource Conservation Fund, and DCNR (pending). A draft strategic plan will emerge from the information and data assembled during Phase 1 and will serve as the focus of facilitated stakeholder meetings in Phase 2 (2002) and public meetings in Phase 3 (2003).

Wisconsin Biodiversity Plan

In the early 1990s, the Resource Management Division Administrator in the Wisconsin Department of Natural Resources, James Addis, initiated discussions within the department on how to protect Wisconsin's biological diversity. These discussions led to the formation of a group of natural resources specialists within the department to develop a strategy for the conservation of biological diversity. The group decided that in order to develop a strategy that would be implemented by department managers, it was necessary to provide managers with "a common point of reference for incorporating the conservation of biodiversity into our management framework." The outcome of their work was "Wisconsin's Biodiversity as a Management Issue: A Report to Department of Natural Resources Managers."

The Natural Resources Board, which develops natural resources policy in the State, approved the report in 1995 with the understanding that the report would serve as a dialogue with the department's "partners and customers;" that the department would adopt ecosystem management as the decision-making model for planning and management; and that the department would work with the Natural Resources Board to set priorities to develop policy concerning the actions listed for the biological community types. The report also called upon the department to use ecoregions as the geographic basis for developing consensus on regional goals for program planning and to use adaptive management to conserve biodiversity and retain future options.

Since 1995, the department has implemented the ecosystem management decision model as the basis for management decision-making and planning. It has revised its strategic plan to include ecosystem thinking. The department's administrative boundaries have been changed to correspond to watershed boundaries, and the department's structure was reorganized to form integrated teams that would implement policy and programs. The Division of Land developed the Ecological Landscapes of Wisconsin as the geographic basis for planning for the land programs, and has begun to provide ecological information by landscapes to focus planning on biological diversity issues. Performance measures are being incorporated into biennial work planning to help assure achievement of ecosystem management goals. This process is "evolution, not revolution;" it is the gradual agency-wide movement toward the goal of protecting biological diversity.

Appendix B

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Appendix C

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Appendix D

Grant Opportunities

Many state biodiversity initiative representatives indicated that a lack of financial resources is a major impediment to reaching their goals. Because these efforts are often collaborative ventures, not housed in one organization or agency and not funded by a single source, identifying major funding vehicles remains a challenge. To facilitate this process, the following is a list of potential federal sources of funding for state-based initiatives.

Department of Transportation

A new Department of Transportation/Federal Highway Administration rule allows federal highway funding from TEA-21 to be used for mitigation of impacts to wetlands and natural habitats that may include some wetland planning (Part 777). The rule defines natural habitat as "a complex of natural, primarily native or indigenous vegetation, not currently subject to cultivation or artificial landscaping, a primary purpose of which is to provide habitat for wildlife, either terrestrial or aquatic." Under this definition, upland habitat receives the same consideration as wetlands. Under the rule, the Federal Highway Administration is not required to mitigate impacts to resources, but it does clarify eligibility for funding. Significantly, the rule allows mitigation funds to be used for road projects that are already completed. Under mitigation of impacts "Federal-aid funds may participate in the development of statewide and regional wetlands conservation plans."

State departments of transportation will have increased flexibility and funding for planning and implementing mitigation for impacts to wetland and upland habitat caused by highway projects. Each state's environmental agency will need to work with the state department of transportation to create proposals for wetland planning and mitigation, but the TEA-21 funds may be significant to implementing biodiversity planning activities. The program went into effect in March 2001.

For additional information:

Federal Register. Vol. 65, No. 251. Friday, December 29, 2000. Pp. 82913–82926.

http://www.access.gpo.gov/su_docs/fedreg/a001229c.html

National Marine Fisheries Service: Community-Based Restoration Program

The National Oceanic & Atmospheric Administration's National Marine Fisheries Service's Community-Based Restoration Program (CRP) is a federal financial and technical assistance program that funds grass-roots, community-based activities that restore living marine resources and their habitats, including anadromous species (such as salmon and herring that that spawn in freshwater and migrate to the sea).

For additional information: http://www.nmfs.noaa.gov/habitat/restoration/community/feb9

U.S. Department of Agriculture

The U.S. Department of Agriculture's Initiative for Future Agriculture and Food Systems (IFAFS) grant program provides large grants (as much as $3 million in FY 2000) for control of invasive species (see Natural Resource Management 14.2). The program will focus on newly emerging non-native invasive species that threaten, or are already impacting agricultural, forest and rangeland resources and their associated waterways. Proposals will be considered that address five key areas: 1) prevention of introductions (including pathway analysis), 2) prevention of spread of newly established invasive species 3) early detection of and rapid response to invasion, 4) monitoring of control efforts, and 5) quantification of impact of the invasive species (e.g. economic and/or ecological). Letters of intent (which are strongly encouraged) are due March 23, 2001. Proposals are due April 23, 2001.

For additional information: http://www.reeusda.gov/ifafs/

U.S. Fish and Wildlife Service

Partners for Fish and Wildlife Program

The Partners for Fish and Wildlife Program is a voluntary incentive program to assist private landowners in restoring fish and wildlife habitat. Interested landowners may contact the Service and receive expert advice and financial assistance (cost-sharing) to restore degraded habitats. The Partners Program helps landowners restore wetlands, native prairies and grasslands, riparian areas (i.e., streamside areas) and stream habitat on private lands. The four goals of the Partners Program are to: 1) accomplish state-of-the-art habitat restoration on private and tribal lands; 2) build partnerships; 3) demonstrate technology; and 4) increase public understanding of, and participation in, habitat restoration. Since its start in 1987, the Partners Program has entered into 24,000 landowner agreements to restore or improve 550,000 acres of native grasslands, 526,000 acres of wetlands, and 3,200 miles of riparian and stream habitat.

For additional information: http://partners.fws.gov

Coastal Program

The Coastal Program forms partnerships to conserve coastal habitats including salt marshes, forests, dunes, prairies, mud flats, and stream banks. The program provides habitat assessments, restoration expertise, and financial assistance to a variety of partners, including private landowners, other federal agencies, state and local governments, conservation organizations, local land trusts, watershed councils, and businesses. These cooperative partnerships: 1) restore coastal wetlands, uplands, and riparian areas; 2) protect coastal habitats through conservation easements and fee-title acquisitions; 3) remove or retrofit barriers to fish passage in coastal watersheds, and 4) control non-native invasive species that threaten estuarine health. Since 1994, the Coastal Program has protected or restored more than 300,000 acres of habitat, and reopened 3,300 miles of coastal streams to fish passage. In 2001, the Coastal Program will fund projects in 15 major coastal watersheds around the country.

For additional information: http://www.fws.gov/cep/coastweb.html

National Coastal Wetlands Conservation Grants

The National Coastal Wetlands Conservation Grants program provides funds to assist states in pursuing coastal wetland conservation. Funds can be used for acquisition of coastal lands or waters, and for restoration, enhancement, or management of coastal wetland ecosystems. The grants are awarded on a competitive basis. Eligible applicants include the coastal states (including the Great Lakes) and Trust Territories. Conservation of coastal habitats is of vital importance to migratory birds, many endangered and threatened species, and anadromous and inter-jurisdictional fish and shellfish resources. The grant program was established by the Coastal Wetlands Planning, protection, and Restoration Act of 1990.

For additional information: http://www.fws.gov/cep/coastweb.html

National Fish Passage Program

The National Fish Passage Program works with local communities, partner agencies, and individuals to voluntarily restore natural flows and fish migration by removing or by-passing barriers. Project funds are primarily used to retrofit culverts, build fishways, and install fish screens.

For additional information: http://fisheries.fws.gov/DraftFP/index.htm

Wildlife Grants Program (Fiscal Year 2001)

State Wildlife Grants Program

Under the Interior Appropriations Act, Congress provided $50 million for fiscal year 2001 for a State Wildlife Grants Program. This cost-shared, competitively awarded program was designed to provide funding to states for "on-the-ground conservation projects that implement existing or future planning efforts to stabilize, restore, enhance, and protect species and habitats of conservation concern."

Criteria used to evaluate proposals includes: "the extent of threats to habitat used by the species benefited by the project; whether a project brings in multiple partners particularly partners across state lines, tribal partners or international partners; and the extent which a project leverages federal funds."

Wildlife Conservation and Restoration Program

Under this program, funds are provided for: state planning, wildlife conservation education, wildlife associated recreation, and existing programs and projects. The focus is on those species with the greatest conservation and funding needs. State plans must include a description of four elements: 1) state fish and wildlife agency authority or delegated authority to develop and implement the Wildlife Conservation and Restoration Program; 2) eligible projects; 3) the state's involvement with the public in the plan and implementation; and 4) the state's commitment to development of a wildlife conservation strategy, including identification of targets, threats, solutions, monitoring, and periodic strategy review.

Application Information

To be eligible for grants under the programs, states must have in place or agree to develop a wildlife conservation plan for the conservation of the state's full array of wildlife and their habitats. The Wildlife Conservation and Restoration Program funds have been distributed to states according to a standard formula. For more information on how to utilize these funds or to apply for the State Wildlife Grants Program, contact your state fish and wildlife director's office or Tim Hess with the U.S. Fish and Wildlife Service (Phone: (703) 358-1849).

For additional information:

Federal Register Vo. 68, No. 16. Wednesday, January 24, 2001. Pp 7657-7660.

http://www.access.gpo.gov/su_docs/fedreg/a010124c.html

Appendix E
Additional Resources

The Biodiversity Action Network (BIONET)

The Biodiversity Action Network was established in 1993 at a meeting of non-governmental organizations in Washington, D.C. in response to the need for a network on biodiversity issues. BIONET's mission is to advocate the effective implementation of the Convention on Biological Diversity (CBD) worldwide, primarily through coordinated, joint non-governmental programs and information dissemination designed to catalyze governmental action.

For additional information: http://bionet-us.org/

The Biodiversity Partnership

Administered by Defenders of Wildlife, the Biodiversity Partnership is an alliance of organizations and individuals involved in cooperative efforts to conserve Oregon's biological diversity. The partnership was created to carry on the work of the Oregon Biodiversity Project. The project pioneered a new, collaborative approach to conservation planning that produced a big-picture view of conservation priorities for Oregon's native species and the habitats and ecosystems that support them. Building on that diverse base of support, the Biodiversity Partnership provides and umbrella for an array of efforts to implement the project's conservation strategies.

For additional information: http://www.biodiversitypartners.org

The Biodiversity Project

The Biodiversity Project is an excellent source of information and expertise on how to communicate about biodiversity issues. The Biodiversity Project's mission is to add strength and value to the environmental movement's public outreach on biodiversity, by working with partners in advocacy, education, science, communications, grantmaking and other fields. The Project develops proven and promising strategies and practices for communication and public education, and works to strengthen the outreach capacity of groups and institutions who communicate with the public on biodiversity. Several of their publications, available on the web (http://www.biodiversityproject.org/) may be of particular interest: *Getting on Message: Making the Biodiversity-Sprawl Connection*; *Tip Sheet: Crafting Effective Messages*; *Tip Sheet: Communicating about Biodiversity*; and *Grantmakers Interested in Biodiversity Outreach*.

For additional information: http://www.biodiversityproject.org/

Integrated Taxonomic Information System

The Integrated Taxonomic Information System (ITIS) is a partnership of U.S., Canadian, and Mexican agencies, other organizations, and taxonomic specialists cooperating on the development of an online, scientifically credible, list of biological names focusing on the biota of North America. ITIS is also a participating member of Species 2000, an international project indexing the world's known species.

For additional information: http://rndhouse.nrcs.usda.gov/plantproj/itis/index.html

National Biological Information Infrastructure

The National Biological Information Infrastructure (NBII) is a broad, collaborative program to provide increased access to data and information on the nation's biological resources. The NBII links diverse, high-quality biological databases, information products, and analytical tools maintained by NBII partners and other contributors in government agencies, academic institutions, non-government organizations, and private industry. NBII partners and collaborators also work on new standards, tools, and technologies that make it easier to find, integrate, and apply biological resources information. Resource managers, scientists, educators, and the general public use the NBII to answer a wide range of questions related to the management, use, or conservation of the nation's biological resources.

For additional information: http://www.nbii.gov/

NatureServe

NatureServe is a web site that serves as a source for authoritative conservation information on more than 50,000 plants, animals, and ecological communities of the United States and Canada. NatureServe provides in-depth information on rare and endangered species, but includes common plants and animals too. NatureServe is a product of the Association for Biodiversity Information in collaboration with the Natural Heritage Network.

For additional information: www.natureserve.org

U.S. Geological Survey Biological Resource Division

The Biological Resource Division (BRD), a Division within the U.S. Geological Survey that works with others to provide the scientific understanding and technologies needed to support the sound management and conservation of the nation's biological resources. BRD develops scientific and statistically reliable methods and protocols to assess the status and trends of the nation's biological resources; leads in the development and use of the technologies needed to synthesize, analyze, and disseminate biological and ecological information; enters into partnerships with scientific collaborators to produce high-quality scientific information; and partners with the users of scientific information to ensure the information's relevance and application to real problems.

For additional information: http://biology.usgs.gov/

The Environmental Law Institute

For over three decades, the Environmental Law Institute has played a pivotal role in shaping the fields of environmental law, management, and policy domestically and abroad. Today, ELI is an internationally recognized, independent research and education center. Through its information services, training courses and seminars, research programs, and policy recommendations, the Institute activates a broad constituency of environmental professionals in government, industry, the private bar, public interest groups, and academia. Central to ELI's mission is convening this diverse constituency to work cooperatively in developing effective solutions to pressing environmental problems. The Institute is governed by a board of directors who represent a balanced mix of leaders within the environmental profession. Support for the Institute comes from individuals, foundations, government, corporations, law firms, and other sources.

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