

## Coordination and Planning Tools That Can Be Applied to Biodiversity Conservation<sup>1</sup>

by Robert B. McKinstry Jr., James McElfish, and Michael Jacobson

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*Editors' Summary: An institutionalized planning process for biodiversity conservation can help fill in gaps left by legal tools that are inadequately designed or rarely implemented. In this Article, authors Robert McKinstry Jr., James McElfish, and Michael Jacobson explain the role that effective planning can play in the conservation of biodiversity. They discuss different types of planning, such as land use planning and planning to protect specific areas valuable to biodiversity, and reveal the mechanisms that can be used to implement these plans.*

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### I. The Importance of Planning for Biodiversity Conservation: The Elements of an Effective Plan

Planning represents one of the most important legal tools for meaningful biodiversity conservation. Meaningful protection of ecological systems requires consideration of the interactions of all media (air, water, soil, and underlying geology), interactions of most taxa of plants and animals, and interactions both within ecoregions spanning

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1. Some of the discussion in this Article has been adapted from an analysis of laws prepared by James McElfish, an analysis of methods for land protection prepared by Robert B. McKinstry Jr., and Michael Jacobson, and an analysis of best management practices and best stewardship practices prepared by McKinstry, Emily B. Schwartz, and Curtis P. Wagner for the Pennsylvania Biodiversity Partnership (PBP) and the Pennsylvania Department of Conservation and Natural Resources (PDCNR) and is used by their permission. The three articles are identified on the PBP website at <http://www.pabiodiversity.org> (last visited Sept. 14, 2005), and will be posted as Pennsylvania Biodiversity White Papers Nos. 1, 2, and 3 on the PBP website in the future. The views expressed here are solely those of the authors and should not be deemed to represent the views of either the PBP or the PDCNR.

many political jurisdictions and between ecoregions that may span continents. It also requires consideration of the legal tools, institutions, and attitudes existing within the various jurisdictions. Given these diverse considerations, a mechanism for coordination is critical to meaningful protection for biodiversity conservation. Planning can provide such a mechanism.

Although planning is a widely used tool under the Endangered Species Act (ESA)<sup>2</sup> and other federal conservation laws, the United States lacks a coordinated structure for planning for comprehensive biodiversity conservation at the federal level. A number of private entities and a few states have recently moved to address this gap by developing plans to integrate biodiversity efforts.<sup>3</sup> Despite the critical importance of planning for biodiversity conservation, most jurisdictions still lack plans to coordinate a wealth of available tools for biodiversity protection.<sup>4</sup> Current biodiversity protection efforts are largely ad hoc with little coordination among the great variety of governmental bodies and private organizations that acquire and manage land for conservation purposes or among the great variety of regulatory programs and grant and aid programs. However, as will be shown in this Article, there are some successful examples and states are moving toward more comprehensive biodiversity planning.

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2. 16 U.S.C. §§1531-1544 (2000), ELR STAT. ESA §§2-18.

3. See JESSICA WILKINSON, STATUS OF THE STATES: INNOVATIVE STATE STRATEGIES FOR BIODIVERSITY CONSERVATION (Env't. L. Inst. 2001).

4. In Pennsylvania, public-private partnership of diverse governmental, industrial, and nonprofit conservation organizations has been formed as the PBP to develop such a plan. See Biodiversity Partnership, *Pennsylvania*, at <http://www.biodiversitypartners.org/state/pa/>. Similar efforts led to the establishment of the Oregon biodiversity plan. See Sarah Vickerman, *The Oregon Biodiversity Project*, in BIODIVERSITY CONSERVATION HANDBOOK 75-89 (Robert B. McKinstry Jr. et al. eds., 2006)..

A biodiversity plan is important because it forces one to consider the big picture and to articulate an overall strategy for biodiversity protection. Planning forces one to identify and make explicit the applicable goals across the many program areas that affect biodiversity. An effective plan will also identify management constraints. Based on consideration of the goals and constraints, it can then identify the most efficient way to accomplish the goals. A good plan enables one to identify costs and constraints and explicitly to evaluate trade offs. Planning ultimately enables one to identify and, thereby, anticipate and avoid problems. The plan should focus on what mix of strategies will best conserve biodiversity in the long run and what tools are best suited to the mix. To be meaningful, the strategy in a plan should not merely focus on means but should identify and coordinate ends. It should further specify how to monitor and measure success in preserving biodiversity.

Planning can be directed to the scientific, organizational, and legal issues alone. For example, a good plan will identify the threats to biodiversity, the most effective tools for addressing those threats, the institutions and funds needed, and the available institutional mechanisms for measuring biodiversity and implementing a plan. Some of these elements of planning need not be “spatially explicit”—that is, they need not address where conservation should occur. Ultimately, however, for a biodiversity conservation plan to be effective, it must be spatially explicit in that it must identify the location of the lands or bioreserve areas whose conservation is essential to conserve elements of biodiversity (including both biodiversity “hot spots” and locations of rare, threatened, and endangered species) and the mechanisms necessary for conserving and managing those lands.

In order to prioritize sites, the plan requires the identification of an underlying strategy for biodiversity conservation and its application to the ecoregions found within the planning area. The strategy should identify what features or sites one intends to protect, the priority assigned to the protected sites or features, and how sites and methods for conservation should be linked. In general, strategies range from what is referred to as “fine filter” strategies to “coarse filter” strategies. Fine filter strategies are keyed to the protection of individual species or special, unusual features—aiming at the protection of the aspects of biodiversity most vulnerable to loss. Coarse filter strategies aim to protect good examples of ecosystems at the landscape scale and seek to conserve the entire range of species and features within landscapes. The most effective strategy for promotion of biodiversity will incorporate both fine and coarse filter strategies. The strategy should also identify legal mechanisms whereby the land can be protected in the long term.

Land preservation alone is not enough to conserve biodiversity against the wide variety of threats. It is usually necessary to manage land to conserve elements of biodiversity. Planning can also provide benefits to land management activities by helping to assure that the big picture is considered there. Therefore, effective plans need to identify what types of management will be required and the legal, institutional, and financial needs for effecting that management. This management necessarily requires long-term monitoring and “adaptive management” mechanisms for responses to changed conditions as well as the initial selection of less effective management regimes.

Spatially explicit, strategic planning, such as that described above, can be used to establish priorities for lands to be protected to preserve biodiversity and to coordinate private and public protection efforts in this regard. Many efforts have sought to employ principles of conservation biology to identify what lands are more important for conservation and to determine the size and shape of conservation areas and linkages among conservation areas. For example, the Ecological Society of America has established a set of guidelines for land use and land planning with eight principles, described below, that should guide land use and land planning.<sup>5</sup> As discussed elsewhere in this book, The Nature Conservancy is developing methodologies for this type of prioritization across the world<sup>6</sup> and the Natural Lands Trust<sup>7</sup> is developing a similar methodology to apply at a more local scale in the areas surrounding Philadelphia, Pennsylvania.<sup>8</sup> Planning can provide a mechanism for coordination among various programs and can assist coordination among various levels of government as well as private entities.

A report by a committee of the Ecological Society of America has developed a set of ecological principles and guidelines for managing the use of land. This report describes five ecological principles, dealing with “time, place, species, disturbance, and the landscape” that should guide planning to conserve biodiversity:

- Ecological processes function at many time scales, some long, some short; and ecosystems change through time.
- Particular species and networks of interacting species have key, broad-scale ecosystem-level effects.
- Local climatic, hydrologic, edaphic, and geomorphologic factors as well as biotic interactions strongly affect ecological processes and the abundance and distribution of species at any one place.
- The type, intensity, and duration of disturbance shape the characteristics of populations, communities, and ecosystems.
- The size, shape, and spatial relationships of land-cover types influence the dynamics of populations, communities, and ecosystems.<sup>9</sup>

Based on those principles, the committee also recommended that the following eight guidelines be employed in making decisions related to land use:

5. V.H. Dale et al., *ESA Report: Ecological Principles and Guidelines for Managing the Use of Land*, 10 *ECOLOGICAL APPLICATIONS* 639 (2000) [hereinafter *ESA Report*]. The *ESA Report* is a report of the Ecological Society of America. See also Robert B. McKinstry Jr. et al., *Biodiversity Protection Through Acquisition of Land or Development Rights and Management to Conserve Biodiversity: A Case Study Using Pennsylvania*, in *BIODIVERSITY CONSERVATION HANDBOOK*, *supra* note 4, at 293-345; JAMES M. McELFISH JR., *NATURE-FRIENDLY ORDINANCES 7-11* (Envtl. L. Inst. 2004).
6. See Wayne Myers et al., *Landscape-Level Habitat Modeling and Mapping for Conservation Planning: Use of GAP Analysis*, in *BIODIVERSITY CONSERVATION HANDBOOK*, *supra* note 4, at 113-26.
7. See Roger Latham, *Smart Conservation's™ Plant Community Module: A Tool for Rapid Quality Assessment of Natural Communities by Non-Experts*, in *BIODIVERSITY CONSERVATION HANDBOOK*, *supra* note 4, at 139-46; Wayne Myers, *Envisioning a Bioreserve Strategy for Pennsylvania*, in *BIODIVERSITY CONSERVATION HANDBOOK*, *supra* note 4, at 147-57.
8. See Nels C. Johnson, *The Nature Conservancy's Ecological Approach to Setting Priorities and Developing Conservation Strategies*, in *BIODIVERSITY CONSERVATION HANDBOOK*, *supra* note 4, at 101-12; Latham, *supra* note 7, at 139-46; Myers, *supra* note 7, at 147-57.
9. *ESA Report*, *supra* note 5, at 648-54.

- (1) Examine the impacts of local decisions in a regional context.
- (2) Plan for long-term change and unexpected events.
- (3) Preserve rare landscape elements, critical habitats, and associated species.
- (4) Avoid land uses that deplete natural resources over a broad area.
- (5) Retain large contiguous or connected areas that contain critical habitats.
- (6) Minimize the introduction and spread of nonnative species.
- (7) Avoid or compensate for effects of development on ecological processes.
- (8) Implement land-use and land-management practices that are compatible with the natural potential of the area.<sup>10</sup>

These principles and guidelines provide a useful guide for any planning effort whose objective is to conserve biodiversity.

An example of the need for comprehensive and spatially explicit biodiversity planning and the benefits that can be achieved by such planning is presented by a recent analysis of existing, voluntary best management practices (BMPs) and best stewardship practices (BSPs) for conservation of biodiversity.<sup>11</sup> That study identified “a wealth of BMPs/BSPs applicable to management of biodiversity,” but found that there was no overall context that would allow meaningful application of those methods.<sup>12</sup> Most existing BMPs/BSPs recommend that a landowner manage for a region based on the usually unstated assumption that preservation of existing diversity within each ecoregion will best preserve global biodiversity. However, without a settled definition of the region for which one should manage, standards for measuring what factors are critical for the region or standards for how to measure success, a landowner lacks any context as to how to manage its parcel of land. Similarly, although a variety of BMPs and BSPs call for preservation of rare or sensitive habitats, there are no criteria for defining which habitats fall within that category, for determining whether management tools should be employed to improve or upgrade rare habitats that are identified, or for prioritizing the types of sites that are most important for preservation and how they should be linked. A regional, spatially explicit plan can assist even voluntary efforts by providing a consistent definition of the applicable planning region, identifying critical features for diversity in each region to give better direction to planning efforts, and providing methods for monitoring and measuring success.

Finally, a good plan must consider what mechanism will be employed to assure that it will be implemented. Plans can be either mandatory and require consistency of certain actions with their provision or hortatory and merely provide guidance. Even without any consistency requirements, a plan can be valuable in that it can assist in providing context to guide individual actions. However, many plans without effective implementation mechanisms have simply gathered dust after their adoption.

10. *Id.* at 656.

11. Robert B. McKinstry Jr. et al., Survey and Proposed Conceptual Model for Best Management Practices and Best Stewardship Practices to Be Applied in Pennsylvania to Promote Biodiversity, Pennsylvania Biodiversity White Paper No. 3 (Pennsylvania Biodiversity Partnership, 2002), to be posted at <http://www.pabiodiversity.org/>.

12. *Id.*

## II. Types of Planning Efforts Applicable to Biodiversity Conservation

Engaging in a planning effort requires authority, resources, and an appropriate mechanism for implementation. Statutory authority for planning tools has frequently been provided to serve other purposes or to protect a particular resource. Nevertheless, this authority has been used or has the potential to be used for biodiversity conservation. Sources of authority for biodiversity planning include: (1) the general authority provided most environmental and resource agencies to order their own affairs as well as specific grants of environmental planning authority; (2) authority for land use planning under local land use laws; and (3) planning authority for areas designated for special protection, such as national and state forests,<sup>13</sup> the coastal zone,<sup>14</sup> the Pinelands region<sup>15</sup> and Highlands region<sup>16</sup> in New Jersey, and the Adirondacks in New York.<sup>17</sup> Each of these potential authorities, their advantages, and their limitations are discussed below.

### *A. General Planning Authority as a Basis for Developing Biodiversity Plans*

Most state environmental and natural resource agencies have planning authority that can be used to develop biodiversity conservation plans. That authority can be specified by statute or it can be implicit in grants of power to the agency. A compilation of 14 states that had initiated biodiversity planning efforts as of 1998 included instances where states had based the planning effort on executive orders, interagency memoranda, private-sector funding, a multisector agreement, state statutes requiring biodiversity planning or planning generally, or general state agency guidelines for the management of their programs and affairs.<sup>18</sup>

An example of a statutory grant of general environmental planning authority that can be readily used to authorize adoption of a biodiversity plan exists in Pennsylvania, where the legislature has provided the authority for adopting a general, statewide environmental plan that could provide such structure and guidance. Although that authority has been used to establish plan elements related to biodiversity, it has not been used to establish a statewide blueprint for biodiversity protection. The Pennsylvania Environmental Quality Board (EQB) has the authority and “the responsibility for developing a master environmental plan for the Commonwealth.”<sup>19</sup> In accordance with that responsibility, the EQB adopted an environmental master plan in

13. See National Forest Management Act, 16 U.S.C. §§1600-1687, ELR STAT. NFMA §§2-16.

14. See Coastal Zone Management Act, §§1451-1465, ELR STAT. CZMA §§302-319; New Jersey Coastal Area Facilities Review Act, N.J. STAT. ANN. §§13:19-1 et seq. (Westlaw 2005).

15. See New Jersey Pinelands Protection Act, N.J. STAT. ANN. §§13:18A-1 et seq. (Westlaw 2005); *id.* §13:18A-8 (calling for a plan).

16. See New Jersey Highlands Water Protection and Planning Act, N.J. STAT. ANN. §§13:20-1 et seq. (Westlaw 2005).

17. N.Y. EXEC. LAW §§800-820 (McKinney 2005).

18. Jessica Bennett, *State Biodiversity Planning*, ENVTL. F., July/Aug. 1998, at 24.

19. 71 PA. STAT. ANN. §510-20(a) (West 2005), *preserved at id.* §1340.502(a).

January 1977,<sup>20</sup> and amended the plan in August 1977,<sup>21</sup> to include specific provisions aimed at protecting natural areas and rare, threatened, and endangered species.<sup>22</sup> While that authority could be used to support the adoption of a comprehensive biodiversity strategy, to date, it has not. Nevertheless, several Pennsylvania environmental and natural resource agencies and commissions are providing funding for participating in both a joint private-public partnership that is developing a statewide biodiversity plan that could be promulgated under this authority<sup>23</sup> and a joint agency effort to evaluate and improve Pennsylvania habitat.<sup>24</sup> In these cases, the agencies have relied on a broad array of powers granted to them to protect and manage the environment and natural resources and on their power to adopt rules to implement these powers and organize their own affairs.

Most states engaging in biodiversity planning efforts have relied on existing powers to protect the environment and natural resources and to develop rules and policies to adopt and to implement biodiversity plans. While state administrative agencies cannot exercise power without some specific grant of authority, agencies are given the implied or incidental powers reasonably necessary to carry out expressly granted powers.<sup>25</sup> Given the range of powers afforded virtually all state environmental and natural resource agencies, this implied power can include the power to engage in a biodiversity conservation planning effort and to adopt a plan emerging from that process.<sup>26</sup> In most states, environmental protection agencies are given broad power to protect the environment, including terrestrial and aquatic ecosystems, by a broad array of laws that address air and water quality, solid and hazardous waste, remediation, wetlands protection, mining, and other media and activities.<sup>27</sup> Similarly, most states provide authority to natural resource agencies to protect fish and wildlife, to protect rare and endangered plants and animals, to own and manage public lands, and to engage in research and public education.<sup>28</sup>

A number of states have relied on these diverse authorities and their implied or express powers to coordinate their efforts on biodiversity conservation and to develop and implement a statewide biodiversity plan. These planning efforts also can assist and coordinate private conservation efforts and to guide local zoning and land use policies. These programs, discussed elsewhere in this book,<sup>29</sup> include, for example, Maryland's Greenprint Program, the Massachusetts BioMap Program, and the Oregon map of conservation priorities developed by the public-private partnership there, as well as efforts more directly linked to statewide land use controls, such as those in Florida and New Jersey, discussed below.

Under the Greenprint program, the Maryland Department of Natural Resources, with the assistance of local governments, scientists, and conservation organizations, has mapped a network of the lands most valuable to biodiversity. This network includes larger "Green Hubs" of significant habitat areas. Maryland has put a priority on conserving large areas of contiguous, unfragmented forest habitat as Green Hubs. The Hubs are linked by corridors referred to as Green Links, which will prevent habitat isolation and loss of diversity due to "island effects." This green infrastructure will receive priority for conservation funding. Maryland has linked its land planning to conservation planning, giving priority to assistance and funding in designated growth areas and for conservation in the green areas. It has linked this prioritization, in turn, with local county planning. It has also linked recreational opportunity, such as recreational trails, with conservation funding.<sup>30</sup>

Massachusetts has also put a statewide priority on integrated planning for biodiversity conservation.<sup>31</sup> The commonwealth established a Biodiversity and Ecosystem Protection program, administered by the Executive Office of Environmental Affairs, thus centralizing the coordinating function for biodiversity protection. Massachusetts used geographical information systems to map areas within the commonwealth requiring protection in order to conserve biodiversity. This BioMap system, created by a \$1.5 million bond issue, identifies core habitats and supporting landscape areas. It aims to guide both state and local acquisition programs and land planning for future development. The commonwealth also implemented a land acquisition program aiming to create a system of bioreserves, consisting of large, unfragmented habitats of biologically important lands. These lands are open to the public for passive use. The commonwealth's goal is to protect 200,000 acres by 2010.

The Oregon mapping program and the New Jersey Landscape Project represent two other models. Oregon's program has mapped key conservation opportunity areas based on biodiversity and has created a variety of financial and

20. 7 Pa. Bull. 214 (Jan. 22, 1977).

21. 7 Pa. Bull. 2174 (Aug. 6, 1977).

22. The plan is codified at 25 PA. CODE §9 (2005).

23. That planning process is discussed in Sue A. Thompson, *Biodiversity Conservation in Pennsylvania: The Pennsylvania Biodiversity Conservation Plan*, in BIODIVERSITY CONSERVATION HANDBOOK, *supra* note 4, at 569-77.

24. That process is discussed in Laurie J. Goodrich et al., *An Inter-agency-Led Effort: Biodiversity Conservation in Pennsylvania: A Summary of the Status of Wildlife Habitat and Habitat Threats State-wide*, in BIODIVERSITY CONSERVATION HANDBOOK, *supra* note 4, at 559-67.

25. See 2 AM. JUR. 2D *Administrative Law* §57 (2005).

26. That plan may, however, identify cases where new legislative authority is necessary to implement its recommendations.

27. Examples of such diverse authorities, which often mirror federal laws, are presented by Richard Mather's analysis of Pennsylvania environmental protection laws in Richard P. Mather Sr., *Biodiversity Conservation in Pennsylvania: View From the Department of Environmental Protection*, in BIODIVERSITY CONSERVATION HANDBOOK, *supra* note 4, at 489-503.

28. Examples of the authority granted the PDCNR can be found at 71 PA. STAT. ANN. §1340.101 et seq. (West 2005). Additional powers are granted to the Pennsylvania Fish and Boat Commission and the Pennsylvania Game Commission to protect fish and game, as discussed in Daniel W. Brauning, *Biodiversity Conservation in Pennsylvania: A View From the Pennsylvania Game Commission*, in BIODIVERSITY CONSERVATION HANDBOOK, *supra* note 4, at 519-23; Andrew L. Shiels, *Biodiversity Conservation and the Pennsylvania Fish and Boat Commission: More Than Just Fish!*, in BIODIVERSITY CONSERVATION HANDBOOK, *supra* note 4, at 525-38.

29. See the discussion in Susan George, *The State of the States: An Overview of State Biodiversity Programs*, in BIODIVERSITY CONSERVATION HANDBOOK, *supra* note 4, at 51-59; Bob Durand & Sharon McGregor, *Mainstreaming Biodiversity Conservation in Massachusetts*, in BIODIVERSITY CONSERVATION HANDBOOK, *supra* note 4, at 61-73; Vickerman, *supra* note 4. Some of these programs and those of other states are also described in greater depth in JAMES M. McELFISH JR. & RYAN HAMILTON, SMART LINKS: TURNING CONSERVATION DOLLARS INTO SMART GROWTH OPPORTUNITIES (Env'tl. L. Inst. 2002), and WILKINSON, *supra* note 3.

30. See McELFISH & HAMILTON, *supra* note 29, at 9-12.

31. This program is described in detail in Durand & McGregor, *supra* note 29.

regulatory incentives to encourage conservation of these areas while discouraging development of those areas and encouraging development elsewhere.<sup>32</sup> New Jersey's Landscape Project seeks to identify the lands most critical for biodiversity conservation and the linkages, so that their identification can be used in a variety of state and local regulatory programs as well as in providing financing for major projects.

Florida and New Jersey are both required by law to adopt a statewide land use plan.<sup>33</sup> By statute, each of these statewide land use plans must include elements related to the protection of natural resources and other elements relating to protection to biodiversity.<sup>34</sup> Both of these states have used this authority to develop, in their statewide plans, an identification of the areas of the state most valuable for biodiversity, with the view of using a variety of tools to direct development away from those areas. Florida includes a statewide greenways program based on biodiversity conservation, as well as other criteria.<sup>35</sup>

All of these programs contain elements valuable to other states considering development of an integrated strategy for biodiversity conservation. All of these programs map areas statewide and establish priorities for conservation areas, while the Maryland system consciously establishes links between biodiversity conservation areas. All of the programs seek to coordinate funding and regulatory programs, particularly for land use. The programs also seek to target funds to redevelop urban growth areas and to conserve valuable natural areas. They include the common element of linking economic development of urban centers with conservation of remaining open lands.

### B. Land Use Planning

All states have requirements or provide authorization for planning in connection with land use and most incorporate mechanisms whereby biodiversity concerns can be incorporated into that planning.<sup>36</sup> A recent study by the Environmental Law Institute (ELI) and the Defenders of Wildlife found that in all states, the land use authority took the form of land use planning enabling statutes that had been updated to varying degrees.<sup>37</sup> In addition, 13 states have adopted growth management laws providing more far-

reaching authority.<sup>38</sup> While land use planning relates to many concerns, the consideration of biodiversity and the protection of natural resources, ecosystems, and sensitive receptors are increasingly being required. Many state laws and plans developed under such laws now address biodiversity conservation or elements relating to biodiversity conservation directly.

The various state laws are derived from various model acts.<sup>39</sup> Two were developed in the 1920s—the Standard City Planning Enabling Act and the Standard State Zoning Enabling Act.<sup>40</sup> States have since significantly updated their laws, with some relying on the American Law Institute's standard state zoning enabling law.<sup>41</sup> Although there are significant differences among the various states' land use laws, they all rely on planning as a central tool; all either require or authorize the preparation of comprehensive land use plans governing land use within the government unit responsible for land use regulation.<sup>42</sup> These plans are all spatially explicit and most include an official map. The plans usually are developed by a planning commission created for the purpose of planning land use.<sup>43</sup> While the plans themselves do not regulate land use, they establish community development objectives and the overall desired pattern for land use and describe how the community will achieve these objectives. They are typically implemented through other tools such as subdivision approvals and zoning.<sup>44</sup>

Although the use of planning is a common element of state land use laws, there are significant differences among the various state laws. The structure of local governments differ in the various states, and the locus of authority for planning represents one of the most significant differences for purposes of biodiversity planning. In most states, local governments are given primary power over land use planning. However, there are significant differences in the nature of local government responsible for the planning. In most southern, western, and midwestern states, the county is given primary authority for land use planning, but that authority will devolve to incorporated cities and towns after incorporation. In the Northeast and upper Midwest, smaller units of government, typically consisting of both incorporated and unincorporated towns, cities, and boroughs, are given primary authority while the larger counties are given more limited powers. In 11 of the states with growth management laws, some or, in one case, all of the authority for planning rests with the state.<sup>45</sup> The various jurisdictions

32. Oregon's program is described in Vickerman, *supra* note 4.

33. See Linda Breggin & Susan George, *Planning for Biodiversity: Sources of Authority in State Land Use Laws*, 22 VA. ENVTL. L.J. 81, 105-07 (2003) (citing FLA. STAT. ANN. §§163.3161, -.3204, .3177(9)(c) (West 2000 & Supp. 2003) and N.J. STAT. ANN. §52:18A-199 (West 2001)); see also ENVIRONMENTAL LAW INSTITUTE (ELI) & DEFENDERS OF WILDLIFE, *PLANNING FOR BIODIVERSITY: AUTHORITIES IN STATE LAND USE LAWS* (2003) [hereinafter ELI/DEFENDERS].

34. *Id.*

35. *Id.* For a discussion of the Florida program, see McELFISH & HAMILTON, *supra* note 29, at 8-9, and WILKINSON, *supra* note 3, at 28-29. For a discussion of New Jersey's efforts, see McELFISH & HAMILTON, *supra* note 29, at 14-15.

36. ELI and Defenders of Wildlife have recently studied the use of land use planning and zoning for biodiversity conservation. A comprehensive list of the pertinent authorities can be found in Breggin & George, *supra* note 33, and ELI/DEFENDERS, *supra* note 33. A discussion of mechanisms whereby these authorities can be used for biodiversity conservation can be found in McELFISH, *supra* note 5.

37. Breggin & George, *supra* note 33, at 88-89.

38. *Id.* at 91-92. The states are California, Delaware, Florida, Georgia, Hawaii, Maine, Maryland, New Jersey, Oregon, Rhode Island, Tennessee, Vermont, and Washington.

39. Breggin & George, *supra* note 33, at 88-89.

40. *Id.*

41. *Id.*

42. *Id.*

43. *Id.*

44. McELFISH, *supra* note 5, at 31.

45. According to the ELI/Defenders study, all planning authority lies with the state in Hawaii, HAW. REV. STAT. ANN. §226-52 (Michie 2001). The statutes in Florida, FLA. STAT. ANN. §§163.3161, -.3204, .3177(9)(c) (West 2000 & Supp. 2003); Maryland, MD. CODE ANN. STATE FIN. & PROC. §§5-402, -403, -602(a)-(b) (2001); New Jersey, N.J. STAT. ANN. §52-18A-199 (West 2001); and Rhode Island, R.I. GEN. LAWS §45-22.2-9 (1999), require the development of statewide plans establishing goals that direct state-level actions and guide local actions. The statutes in California, CAL. GOV'T CODE §§65040.1-.11 (West 1997 & Supp. 2003); Delaware, DEL. CODE ANN. tit. 9, §§2657(b), 4957(b), 6957(b) (Supp. 2002); Maine, ME.

also differ in the requirement for any comprehensive plan. In some jurisdictions plans are optional and in others they are mandatory.<sup>46</sup>

Most state laws either authorize or require that comprehensive land use plans include various elements relevant to conservation of biodiversity. All 13 states with growth management laws require protection of elements of biodiversity. Among the 37 remaining states, 23 require the inclusion of biodiversity-related elements in comprehensive plans, 14 authorize but do not require the inclusion of elements related to biodiversity and 8 state laws do not specify any biodiversity-related elements at all.<sup>47</sup> The precise biodiversity related elements that are required or authorized also differ from state to state. For example, the ELI/Defenders of Wildlife survey identified 16 states that required that local governments account for natural resources, generally.<sup>48</sup> The study identified 14 states whose land use planning enabling statutes require provisions related to the designation or protection of open space in comprehensive plans.<sup>49</sup> Five states require that comprehensive plans include consideration of wildlife habitat or an equivalent concept.<sup>50</sup> Two states re-

quire that comprehensive plans consider critical and sensitive areas,<sup>51</sup> and two require environmental planning.<sup>52</sup> Other states include authorization for the inclusion of these types of provisions as discretionary elements of comprehensive land use plans but do not require their inclusion in the plan.

Pennsylvania presents one example of the way in which biodiversity elements can be considered in municipal planning. Land planning in Pennsylvania occurs at the local level of the approximately 2,700 townships, boroughs, and cities in that state under the Pennsylvania Municipalities Planning Code (PAMPC).<sup>53</sup> The PAMPC authorizes but does not require the preparation of comprehensive land use plans. However, if those plans are prepared, they must include provisions related to biodiversity. Under the PAMPC, Pennsylvania comprehensive plans must include “a plan for the protection of natural and historic resources.”<sup>54</sup> Section 301(a)(6) of the PAMPC further provides that “[t]o the extent not preempted by federal or state law, this clause includes, but is not limited to, wetlands and aquifer recharge zones, woodlands, steep slopes, prime agricultural land, flood plains, unique natural areas and historic sites.” This authorization is sufficiently broad to include express plan provisions protecting land for biodiversity purposes. Zoning ordinances are required to be generally consistent with these plans. A comprehensive plan including specific consideration of biodiversity can then bring a variety of specific zoning tools to bear on biodiversity conservation.

Planning at the local level is unlikely to function at a scale that will be desirable for adequate biodiversity protection. Regions on the scale of several municipalities or on the county level, in most cases, are also not sufficiently large to coordinate biodiversity concerns. As discussed above, a number of states authorize statewide land use plans, which are more likely to function at a scale sufficient to conserve significant biodiversity. Even in states such as Pennsylvania or other northeastern or northern central states with local control of land use, land use laws frequently contain provisions encouraging planning at the more regional level, which will more effectively consider biodiversity. For example, there are numerous provisions in the PAMPC encouraging intermunicipal cooperation in planning and requiring consistency of Pennsylvania Department of Environmental Protection actions with regional comprehensive plans implemented in ordinances. While these provisions will encourage the regionalism necessary for biodiversity protection, regions still will not be large enough to conserve species with wide ranges or systems.<sup>55</sup> Moreover, ecoregions will not be consistent with political boundaries. These limitations, however, could be overcome, and the planning efforts by local or county governments could be made more effective through the development of statewide, multistate, or national biodiversity plans, as has occurred in

REV. STAT. ANN. tit. 30-A, §4312(3) (West 2002); Oregon, OR. REV. STAT. §§197.005-.860 (1999); Vermont, VT. STAT. ANN. tit. 24, §4302(b)(1)-(4) (Supp. 2002), *id.* §§4345a(5), 4381 (1992); and Washington, WASH. REV. CODE ANN. §§36.70A.010, A.103 (West 2003), do not require statewide plans but merely the establishment of statewide goals to guide local planning. Breggin & George, *supra* note 33, at 105.

46. McELFISH, *supra* note 5, at 31.

47. ELI/DEFENDERS, *supra* note 33.

48. Arizona, ARIZ. REV. STAT. ANN. §§9-461.05(E)(I), 11-806(B) (West Supp. 2002); Colorado, COLO. REV. STAT. §§30-28-106(3)(a)(ii), 31-23-206(1)(b) (2002); Idaho, IDAHO CODE ANN. §§67-6508(f) (Michie 2001); Kansas, KAN. STAT. ANN. §§12-744, -747(b) (2001); Massachusetts, MASS. GEN. LAWS ANN. ch. 41, §81D(5) (West Supp. 2003); Michigan, MICH. COMP. LAWS ANN. §125.36 (West Supp. 2003); Montana, MONT. CODE ANN. §76-1-601(2)(b)(vii) (2001); Nebraska, NEB. REV. STAT. ANN. §15-1102 (Michie 1995); NEB. REV. STAT. ANN. §23-174.05 (Michie 1999); Nevada, NEV. REV. STAT. ANN. §278.160(1)(b) (Michie 2002); New Hampshire, N.H. REV. STAT. ANN. §674:2(II) (Supp. 2002); New York, N.Y. GEN. CITY LAW §28-a(4)(d) (McKinney 2003); Ohio, OHIO REV. CODE ANN. §712.23(B)(1)(f) (Anderson 2000); Oklahoma, OKLA. STAT. ANN. tit. 19, §863.7 (West 2000), *id.* §866.10 (West Supp. 2003); Pennsylvania, 53 PA. STAT. ANN. §10301(a)(6), (a)(7)(i) (West Supp. 2003); South Carolina, S.C. CODE ANN. §6-29-510(D)(3) (Law. Co-op. Supp. 2002); and West Virginia, W. VA. CODE ANN. §§24-16 (Michie 1998), *cited in* Breggin & George, *supra* note 33, at 98.

49. Alabama, ALA. CODE §11-52-8 (1994); Arizona, ARIZ. REV. STAT. ANN. §9-461.05(D)(1) (West Supp. 2002); Colorado, COLO. REV. STAT. §§30-28-106(3)(a)(ii), 31-23-206(1)(b) (2002); Connecticut, CONN. GEN. STAT. ANN. §8-23(a)(1), (e)(7)(E) (West 2001); Louisiana, LA. REV. STAT. ANN. §33:106 (West 2002); Massachusetts, MASS. GEN. LAWS ANN. ch. 41, §81D(6) (West Supp. 2003); Michigan, MICH. COMP. LAWS ANN. §§125.36(3)(a), (d), .104(2)(a), (c) (West Supp. 2003); Minnesota, MINN. STAT. ANN. §§462.351, 473.145 (West 2001); Mississippi, MISS. CODE ANN. §§17-1-1, -1-11 (1973-2003); Nebraska, NEB. REV. STAT. ANN. §15-1102 (Michie 1995), *id.* §23-174.05(2) (Michie 1999); North Dakota, N.D. CENT. CODE §§40-48-01, -48-02 (1983); Ohio, OHIO REV. CODE ANN. §713.02 (Anderson 2000); Oklahoma, OKLA. STAT. ANN. tit. 11, §§47-101, -106 (West 1994); and South Carolina, S.C. CODE ANN. §6-29-510(D)(7) (Law. Co-op. Supp. 2002), *cited in* Breggin & George, *supra* note 33, at 98-99.

50. Colorado, COLO. REV. STAT. §§30-28-106(3)(a)(xi), 31-23-206(1)(k) (2002); Michigan, MICH. COMP. LAWS ANN. §125.36(4)(a) (West Supp. 2003); Nevada, NEV. REV. STAT. ANN. §§278.150(3)-(4), .160(1)(b) (Michie 2002); South Carolina, S.C. CODE ANN. §6-29-510(D)(3) (Law. Co-op. Supp. 2002); and Utah, UTAH CODE ANN. §17-27-30(1)(b) (Supp. 2003), *cited in* Breggin & George, *supra* note 33, at 99.

51. Colorado, COLO. REV. STAT. §§30-28-106(3)(a)(xi), 31-23-206(1)(k) (2002), and New York, N.Y. GEN. CITY LAW §28-a(4)(d) (McKinney 2003) (referring to “sensitive areas”), *cited in* Breggin & George, *supra* note 33, at 99.

52. Arizona, ARIZ. REV. STAT. ANN. §9-461.05(D)(3) (West Supp. 2002), and West Virginia, W. VA. CODE ANN. §§8-25-5, -25-8 (Michie 1998), *cited in* Breggin & George, *supra* note 33, at 99.

53. 53 PA. STAT. ANN. §§10101-11202.

54. *Id.* §10301(a)(6).

55. *See id.* §§10619.2, 11105.

Massachusetts and Oregon, for example. Even where such plans are not mandatory, they can still provide guidance for local governments in developing individual comprehensive plans.

### *C. Planning to Protect Specific Areas Valuable to Biodiversity*

Planning has also frequently been used to protect specific areas that are valuable for biodiversity. In most cases, these areas have been set aside, publicly acquired, or designated specifically to conserve their natural or scenic characteristics. Planning is statutorily required to assure that these conservation purposes are achieved. In these cases, unlike the case of land use planning, planning is required for the central purpose of conserving biodiversity conservation. Planning has been used to protect special places in two ways. First, plans have been used to coordinate the management of publicly owned lands to conserve their natural values. Second, plans have been used in a more regulatory context to assure the conservation of natural values and biodiversity in sensitive or biologically important areas under private or mixed ownership.

Planning has long been used as a tool by individual state agencies and the federal government in their land management activities. In many cases, public lands were acquired or set aside expressly for their value for biodiversity. This is true of both the national and state forest and park systems. These systems were set aside or acquired to protect forests, watersheds, and natural areas from the exploitation that characterized land use in the late 19th and early 20th centuries. In order to better protect these values, both the federal government and state governments have relied upon planning to govern the use and management of these public lands.

For example, federal land management activities in national forests are governed by a management plan incorporating protection of lands valuable to biodiversity pursuant to the National Forest Management Act (NFMA).<sup>56</sup> The NFMA calls for the management of these lands through resource management plans that must, *inter alia*, conserve biodiversity. The NFMA specifies the creation of a program that as a goal,

provides for the diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives, and within the multiple-use objectives of a land management plan adopted pursuant to this section, provide, where appropriate, to the degree practicable, for steps to be taken to preserve the diversity of tree species similar to that existing in the region controlled by the plan.<sup>57</sup>

The Federal Land Policy and Management Act further calls for the development of land use plans that “give priority to the designation and protection of areas of critical environmental concern” for all other federal lands.<sup>58</sup> Biodiversity conservation becomes a central focus of many aspects of these plans. Nevertheless, there is no consistent federal effort to plan for biodiversity conservation across all federal

lands. Moreover, the fragmentation of agency responsibility and the fragmentation of the federal land holdings themselves makes development of a consistent strategy and policy problematic.<sup>59</sup>

States also frequently use planning as a mechanism for management of their public lands and incorporate biodiversity conservation as a central element in that planning. Sometimes, the planning is undertaken pursuant to specific statutory authority or a specific statutory mandate, as in the federal system. In other cases, states undertake planning pursuant to more general authority to manage lands, to order their own affairs, or to adopt rules and policies.<sup>60</sup> For example, in Pennsylvania, the Bureau of Forestry in the Pennsylvania Department of Conservation and Natural Resources developed the State Forest Resource Management Plan: 2001-2005,<sup>61</sup> pursuant to its general authority to own and manage forest lands and to adopt rules and regulations governing such activities.<sup>62</sup> This statewide umbrella plan articulates a number of goals including biodiversity. Planning is an integral part of any effort to ensure the practice of sustainable forestry, and the plan was one of the principal tools that enabled the Bureau of Forestry to certify the entire 2.1 million acres making up the state forest system as sustainable under the Forest Stewardship Council’s certification program. As one element of its strategy for assuring sustainability, the plan establishes an initial bioreserve system and an old growth system in Pennsylvania’s 2.1 million acre state forest system.<sup>63</sup>

Although many planning efforts for publicly owned lands increasingly address biodiversity conservation, some do not. More importantly, these existing planning efforts often fail to integrate planning over a larger landscape, since they are limited to the lands controlled by the particular agency. These agency-specific planning efforts also remain fragmented. Federal and state plans are not integrated. Moreover, they account for only limited portions of the landscape. For example, in Pennsylvania, these fragmented planning efforts account for 513,000 acres of national forest land and 2.1 million acres of state forest land and do not encompass the remaining 1.9 million acres of publicly owned forest or the 24.5 million acres of private forest land.<sup>64</sup>

59. See Edward J. Heisel, *Biodiversity and Federal Land Ownership: Mapping a Strategy for the Future*, 25 *ECOLOGY L.Q.* 229 (1998).

60. Planning falls within the implied powers reasonably necessary to carry out these duties. See *supra* note 25 (“Generally, administrative agencies have the implied or incidental powers that are reasonably necessary in order to carry out the powers expressly granted.”).

61. BUREAU OF FORESTRY, PDCNR, STATE FOREST RESOURCE MANAGEMENT PLAN: 2001-2005 (2000), available at <http://www.dcnr.state.pa.us/forestry/sfrmp/> (last visited Sept. 16, 2005).

62. 71 PA. STAT. ANN. §1340.302(a) (Purdon’s Supp. 2004).

63. The Bureau of Forestry’s biodiversity planning efforts and the principles underlying the creation of the bioreserve system are described in Myers, *supra* note 7. The bioreserve system was required as a condition of the Bureau of Forestry’s efforts to certify the state forest system under the Forest Stewardship Council’s program. The certification efforts are described in McKinstry, *supra* note 5; Carroll Missimer, *The Role of Forest Certification in Preserving Biodiversity in Pennsylvania—Public and Private Case Studies*, in *BIODIVERSITY CONSERVATION HANDBOOK*, *supra* note 4, at 469-79.

64. Acreage figures taken from Robert B. McKinstry Jr. et al., *Analysis of the Pennsylvania Payment in Lieu of Taxes Program: The Costs and Benefits of State-Owned Forestland* (unpublished report to the PDCNR, Service Purchase Contract No. SP 3820025, the Pennsylvania State University School of Forest Resources, 2004).

56. 16 U.S.C. §§1600-1687, ELR STAT. NFMA §2-16.

57. *Id.* §1604(b)(3)(B).

58. 43 U.S.C. §1712(c)(3).

Planning is also used as a tool to protect biodiversity in particular areas that, while in both private and public ownership, are subject to special regulatory controls to protect the natural values of the area. The Coastal Zone Management Act (CZMA)<sup>65</sup> represents a federal law using planning as a tool to protect the important habitats and ecological values of the coastal zone while conserving its important economic values.<sup>66</sup> The CZMA encourages each coastal state to develop a program, consisting of a coastal zone management plan, that includes the identification of areas of concerns, guidelines on priorities for use of areas, a management program and organizational structure to manage the program, planning processes for major facilities, and a continuing planning process.<sup>67</sup> Once a plan has been approved, any federal action within the coastal zone “shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs.”<sup>68</sup>

New Jersey, the most densely populated state in the United States, has employed planning tools to protect the biodiversity of its extensive coastal area<sup>69</sup> and two other regions within the state that retain significant value to biodiversity. To implement its coastal zone management plan and program, New Jersey adopted the New Jersey Coastal Area Facilities Review Act,<sup>70</sup> which requires approvals for most major developments and actions in the coastal zone and provides for a set of coastal rules governing such approvals.<sup>71</sup> Those rules identify and contain requirements calling for the protection of “special areas” that include, inter alia, most elements of the coastal zone that are important for biodiversity conservation, including habitat, threatened and endangered species, and rare or sensitive areas.<sup>72</sup> The rules and, thus, the plan coordinate biodiversity conservation with conservation of important economic and social values, as contemplated by the CZMA.

New Jersey has extended this use of a regulatory planning program to two other areas in the state valuable for biodiversity conservation: the New Jersey Pinelands, which abut and include the coastal zone; and the New Jersey Highlands, in the northeastern part of the state. The New Jersey Pinelands Protection Act<sup>73</sup> require the preparation of a comprehensive management plan for the Pinelands National Reserve.<sup>74</sup> The Act requires that the plan, among other things, designate areas of “critical ecological importance”<sup>75</sup> and coordinate land use and economic policies, including those supporting existing development and rural uses such as agri-

culture. The first of several goals for the plan as enumerated by the Pinelands Act is to “[p]reserve and maintain the essential character of the existing pinelands environment, including the plant and animal species indigenous thereto and the habitat therefor.”<sup>76</sup> The plan has been incorporated into regulations<sup>77</sup> that establish, inter alia, standards for land use, environmentally sensitive areas, and a variety of activities that might take place within the Pinelands. Those standards, like those for the coastal zone, include specific standards aimed at biodiversity conservation such as protection of rare and endangered species, protection of habitat, water quality, and sensitive environmental areas, and control of exotic species. The plan is implemented through two mechanisms. First, counties and local governments<sup>78</sup> must revise their municipal master plans and land use ordinances to make them consistent with the Pinelands plan.<sup>79</sup> Second, all state and local approvals for construction, land disturbance, or finance must be consistent with the plan.<sup>80</sup>

New Jersey again applied the planning tools used in the coastal zone and the Pinelands to protect the biodiversity and other natural attributes of the Highlands, the other major region in the state supporting open space and biological diversity. The Highlands Region encompasses the highlands of Connecticut, New Jersey, New York, and Pennsylvania west of the Philadelphia-New York urbanized area. It is the area closest to that intensely urbanized area supporting extensive natural areas and unfragmented landscapes. In a 1992 report and again in a 2002 update, the U.S. Forest Service identified the Highlands Region as an area critical to conservation of biodiversity, as well other important natural values, such as clean drinking water and recreation.<sup>81</sup> In response, New Jersey enacted the Highlands Water Protection and Planning Act (Highlands Act)<sup>82</sup> to protect its portion of the region, and the U.S. Congress subsequently enacted the Highlands Conservation Act<sup>83</sup> to provide financial and technical assistance to the states for conservation of the region.

76. *Id.* §13:18A-9b(1).

77. N.J. ADMIN. CODE tit. 7, ch. 50.

78. Most regulation of land use and zoning in New Jersey occurs at the local level, e.g., townships, boroughs, and cities, rather than at the county level.

79. N.J. STAT. ANN. §13:18A-12.

80. *Id.* §13:18A-14.

81. MARCUS G. PHELPS & MARTINA C. HOPPE, NEW YORK-NEW JERSEY HIGHLANDS REGIONAL STUDY: 2002 UPDATE (U.S. Forest Service 2002), available at [http://www.na.fs.fed.us/highlands/maps\\_pubs/regional\\_study/regional\\_study.shtm](http://www.na.fs.fed.us/highlands/maps_pubs/regional_study/regional_study.shtm) (last visited Sept. 15, 2005). The report found, inter alia, that

[t]here are over 250 species of plants and animals in the Highlands that are considered in peril . . . . The diversity and arrangement of different habitat types in the Highlands creates an important mosaic that supports the high species biodiversity of the Highlands region. . . . Large contiguous forest tracts (greater than 500 acres) provide critical habitat resources for many species. . . . Over 280,000 acres of the Highlands have received special status for containing important natural community or high biodiversity areas or both. . . . The Highlands serve as a major migratory flyway for many neotropical bird species. . . . Fragmentation and alteration of habitat continue to pose the greatest threat to the biological communities in the Highlands.

*Id.* at 59.

82. N.J. STAT. ANN. §13:20-1 to -37. Regulations under the Act appear at N.J. ADMIN. CODE tit. 7, ch. 38.

83. Pub. L. No. 108-421, 118 Stat. 2375 (Nov. 30, 2004).

65. 16 U.S.C. §§1451-1465; CZMA §§302-319.

66. *See id.* §§1451-1452.

67. *Id.* §1455(d).

68. *Id.* §1456(c)(1)(A).

69. *See* N.J. STAT. ANN. §§13:19-1 to -21 (Westlaw 2005); N.J. ADMIN. CODE tit. 7, ch. 7E (Westlaw 2005).

70. N.J. STAT. ANN. §§13:19-1 to -21.

71. N.J. ADMIN. CODE tit. 7, ch. 7E.

72. *Id.* §§7E-3.1 to -3.49. Special areas include areas that require special treatment for nonenvironmental reasons, as well as environmentally sensitive areas.

73. N.J. STAT. ANN. §§13:18A-1 to -58.

74. Created by §502 of the National Parks and Recreation Act of 1978, Pub. L. No. 95-625, which also authorized grants for the preparation of a comprehensive management plan.

75. N.J. STAT. ANN. §13:18A-8b(2).



Adopting the same planning strategy as employed in the coastal zone and Pinelands, the Highlands Act calls for the creation of a regional master plan.<sup>84</sup> The Act further specifies that the plan's goals include the protection of water quality, preservation of "extensive and, to the maximum extent possible, contiguous areas of land in its natural state," protection of "natural, scenic and other resources . . . including but not limited to contiguous forests, wetlands, vegetated stream corridors, steep slopes, and critical habitat for fauna and flora," and other goals relating to promotion of rural economic development and redevelopment of existing urban areas.<sup>85</sup> The Act also specifies that the plan include a number of elements, including a resource assessment, a financial component, public participation, mechanisms for coordination, and mapping to indicate where growth and where preservation should occur.<sup>86</sup> As was the case with the Pinelands plan, the Highlands Act requires that municipalities revise their local municipal plans and land use regulations to conform to the master plan.<sup>87</sup> Finally, the Act specifies that all state and local projects exceeding certain size or impact thresholds be submitted to the Highlands Council for review for consistency with the plan and approval.<sup>88</sup>

New York has employed the same planning based model for protection of the Adirondack Park in the Adirondack Park Agency Act.<sup>89</sup> The creation of the Adirondack Forest Reserve in 1885 to preserve both public and privately owned forest land represented a milestone in early conservation.<sup>90</sup> Today, the Adirondack Park consists of approximately 6,000,000 acres, about half of which is in private ownership.<sup>91</sup> As when the Adirondack Forest Reserve was first created, the Adirondack region is a site of unfragmented, largely undisturbed forest land that supports significant biodiversity. New York seeks to protect the biological resources of the Adirondacks through the mechanism of a comprehensive management plan that has been adopted in legislation governing land use and development in the park.<sup>92</sup> The requirements of the plan are then implemented through a variety of mechanisms, including direct development controls,<sup>93</sup> provisions for review and approval by the Adirondack Park Agency of certain regional projects,<sup>94</sup> and through local land use programs that have been reviewed and approved by the Agency.<sup>95</sup>

Planning for special areas can, thus, be a powerful tool for biodiversity conservation, particularly if coupled with effective implementation mechanisms, as discussed below. Although regional planning efforts provide a more effective tool than planning for state and federal land alone, these ef-

forts still suffer from the fact that they govern only a particular region and a broader view is often required. New Jersey, therefore, has sought to supplement and to coordinate its regional planning efforts with a statewide effort, known as the "Landscape Project," that seeks to identify important habitat areas statewide, with a view toward coordinating protection efforts under its regional programs as well as its statewide regulatory programs.<sup>96</sup>

### III. Implementation Mechanisms

While planning can provide an important mechanism for coordinating actions to protect biodiversity, the plan will not be effective unless it is implemented. The effectiveness of a plan will depend on the effectiveness of the implementation mechanism specified for that plan. Planning implementation requirements range from those requiring rigid adherence to an enforceable plan to plans that are entirely hortatory. Planning may be made enforceable through legal consistency requirements or through requirements to develop regulatory programs to implement a plan's provisions. For example, some state biodiversity plans, like the New Jersey statutes discussed above, require that permit actions, grant decisions, and decisions regarding infrastructure improvements be consistent with the biodiversity plan. While these consistency requirements will increase the likelihood of a plan's implementation, even hortatory plans can be effective, to an extent, since they can offer guidance for private voluntary actions.

Typically, consistency requirements prohibit any government actions, including permit issuance or approvals, sales, leases, grants, and project initiation, unless the government action is consistent with the plan. The ESA includes such a requirement by prohibiting federal actions interfering with endangered species' critical habitat,<sup>97</sup> which, in turn, will be defined, in part, in recovery plans. The CZMA includes a specific requirement that federal actions be consistent with state coastal zone plans.<sup>98</sup> As discussed above, the New Jersey Pinelands and Highlands Acts and the New York Adirondack Park Agency Act contain similar consistency requirements. Given the ubiquity of federal grant, assistance, and permitting programs, the ESA consistency mandate has resulted in ESA requirements being incorporated into most state and federal environmental programs, thereby protecting critical habitats under state programs. The CZMA has proven a powerful tool in protecting lands valuable to biodiversity in the coastal zone. Finally, the NFMA includes a requirement that all resource plans and permits, contracts, and other instruments governing use of the National Forest lands be consistent with the land management plans for the forests.<sup>99</sup>

In most states, municipal land use decisions must be consistent with municipal comprehensive land use plans. In some cases, however, land use plans are not required. In other cases, subdivision or zoning approvals need not be

84. N.J. STAT. ANN. §13:20-8.

85. *Id.* §13:20-10.

86. *Id.* §13:20-11.

87. *Id.* §13:20-14.

88. *Id.* §13:20-16. The state or local government may override a disapproval under certain limited circumstances.

89. N.Y. EXEC. LAW §§800-820 (Westlaw 2005).

90. Act of May 15, 1885, 1885 N.Y. LAWS ch. 283; *see* N.Y. COMP. CODES R. & REGS tit. 9, §3.119 (2005).

91. New York Adirondack Park Agency, *About the Adirondack Park*, at [http://www.apa.state.ny.us/About\\_Park/index.html](http://www.apa.state.ny.us/About_Park/index.html) (last visited Sept. 15, 2005).

92. N.Y. EXEC. LAW §805.

93. *Id.* §815.

94. *Id.* §809.

95. *Id.* §§807-808.

96. L.J. NILES ET AL., NEW JERSEY'S LANDSCAPE PROJECT, VERSION 2.0 (Endangered and Nongame Species Program, New Jersey Department of Environmental Protection 2004), available at [http://www.njfishandwildlife.com/ensp/landscape/lp\\_report.pdf](http://www.njfishandwildlife.com/ensp/landscape/lp_report.pdf) (last visited Sept. 16, 2005).

97. 16 U.S.C. §1537(a)(2).

98. *Id.* §1456(c).

99. *Id.* §1604(i).

consistent with the plan. Elsewhere, the plan may simply provide guidance and consistency may not be required for individual zoning or development approvals. For example, in Pennsylvania the municipal land use law says that municipal zoning and development approvals must be generally consistent with the comprehensive plan, but comprehensive plans are not required, and the PAMPC further provides that municipal actions cannot be overturned on the basis of inconsistency with a comprehensive plan.<sup>100</sup> Pennsylvania law, however, does include a limited consistency requirement applicable to commonwealth review of applications for funding or permitting of infrastructure of facilities where municipalities have adopted regional zoning ordinances.<sup>101</sup> Where county and municipal comprehensive plans incorporate protection for biodiversity as part of the protection of natural resources, as required by the PAMPC, these consistency requirements will provide particularly strong protection to lands valuable to biodiversity. Because infrastructure such as roads and utility lines can be major fragmenting features, these consistency requirements have the potential to provide significant protection to biodiversity.<sup>102</sup>

Other planning efforts may include no consistency requirements and specify no other implementation mechanism. For example, regional water quality plans developed under §208 of the Clean Water Act (CWA)<sup>103</sup> have no specific consistency requirements. The Pennsylvania Statewide Environmental Master Plan also includes no express requirement for consistency. Even without formal consistency or implementation requirements, planning by an administrative agency within its area of expertise will have some legal force since government decisions substantially departing from the plan could, in most circumstances, be challenged and overturned as “arbitrary and capricious.” It is for this reason that the PAMPC includes an express prohibition against overturning municipal actions on the grounds that they are inconsistent with comprehensive plans.<sup>104</sup>

Even without consistency requirements or other enforcement or mandatory implementation mechanisms, planning

will still be an important tool because it can give direction to voluntary activities. Indeed, the “unenforceable” regional water quality plans developed under CWA §208 resulted in the development of BMPs that have been widely employed to address nonpoint source pollution and have evolved to include recommended practices to preserve biodiversity. In fact, there are some good reasons for eschewing strict consistency requirements since they can introduce elements of rigidity into plans. Planning is most useful for guiding policy. Where consistency is rigidly required, plan amendments will be required even for minor projects and issues that may have little impact upon the larger issues driving the plan. This will introduce needless administrative costs and delays.<sup>105</sup>

Where there is no mandate to implement a plan and no consistency requirements, however, it is critical to have some implementation strategy and to develop that strategy as a part of plan development. Federal environmental programs before the “environmental decade” of the 1970s were largely limited to planning. These earlier programs were often viewed as failures, largely due to the lack of an effective implementation mechanism or strategy. Planning was a tool incorporated into the first major federal environmental regulatory programs. The Clean Air Act required and still requires state implementation plans, which mandate the development of a state implementation strategy including enforcement mechanisms.<sup>106</sup> The CWA called for sewage facilities plans as a prerequisite to grant funding. The CWA also required and continues to require a continuing water quality standards planning program, which is tied to federal funding of state programs, permitting, and state implementation of the program. These programs with their strong implementation mechanisms have been striking successes. By contrast, the more general 208 areawide water quality plans under the CWA lacked an implementation strategy, and, as a result, were rarely finalized from their draft form and have had value only as educational tools. On the other hand, the strategy of the Pennsylvania Environmental Master Plan was to provide flexible guidance to help integrate other programs. Based on the fact that, after one-quarter century, its recommendations have been implemented in many programs, it may be judged a success.

#### IV. Conclusion

While most states have multiple legal tools that *can* be used for biodiversity conservation at both the state and local level, these tools are often not used. This is because many of the laws were designed to address individual threats that adversely affect biodiversity or were designed to achieve multiple purposes. Even where these tools are used for biodiversity conservation, they are often used ineffectively. For these reasons, many states have begun their efforts to ad-

100. 53 PA. STAT. ANN. §10303.

101. Section 619.2 of the PAMPC provides that commonwealth agencies “shall consider” and “may rely upon” comprehensive plans and zoning ordinances in “reviewing applications for funding or permitting of infrastructure or facilities” where: (1) a county has adopted a comprehensive plan in accordance with §§301 and 302, 53 PA. STAT. ANN. §10301-10302, and any municipalities in the county have adopted generally consistent comprehensive plans and zoning ordinances; or (2) where municipalities have adopted a joint zoning ordinance. 53 PA. STAT. ANN. §10619.2. Section 1105(a)(2) imposes an identical requirement where municipalities have either adopted a county plan or a multimunicipal plan and the participating municipalities have conformed their local plans and ordinances to the county or multimunicipal plan through cooperative agreements and appropriate resolutions and ordinances. 53 PA. STAT. ANN. §11105(a)(2).

102. The Pennsylvania Department of Environmental Protection (PADEP) has adopted guidance and proposed revisions to the guidance, effective December 1, 2001, indicating that these requirements will apply to most permits affecting new activities likely to affect biodiversity, including, *inter alia*, soil erosion and sediment control permits, stream encroachment permits, wetlands permits, most mining permits, air permits, solid waste permits, and national pollutant discharge elimination system permits. These apply to virtually all road, utility, and sewer permits. The PADEP will rely upon the municipality to provide comments indicating the applicability and effect of its zoning ordinance and requires that notice be provided to municipalities to provide the opportunity for such comment.

103. 33 U.S.C. §1288.

104. 53 PA. STAT. ANN. §10303(d).

105. Consistency requirements may introduce rigidity by requiring formal adoption of amendments to address individual circumstances not contemplated by the original plan or not addressed due to the level of detail. This, in turn, can generate appeals addressing what should be general approaches in the context of individual circumstances, which may undermine the purpose of planning. This rigidity and litigation has characterized the planning process under the NFMA and has had the effect of diverting U.S. Forest Service resources away from meaningful planning. See Jack Ward Thomas, “What Now? From a Former Chief of the Forest Service, in A VISION FOR THE U.S. FOREST SERVICE: GOALS FOR ITS NEXT CENTURY 18-21 (Roger A. Sedjo ed., Resources for the Future 2000).

106. 42 U.S.C. §7410.

dress biodiversity conservation using planning to identify gaps and needs and to establish new priorities. Implementation can often remain a difficult task and may fail when administrations change. Nevertheless, a plan is a necessary first step and the establishment of an institutionalized con-

tinuing planning process with implementation mechanisms clearly spelled out is a necessary part of any plan, if it can hope to be successful. With these planning tools, planning can be a powerful and necessary tool for biodiversity conservation efforts.