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NATIONAL COUNCIL FOR AIR AND STREAM IMPROVEMENT

**A SUMMARY OF CONSERVATION PLANNING
EFFORTS IN FORESTED REGIONS
OF THE UNITED STATES:
2010 UPDATE**

**TECHNICAL BULLETIN NO. 982
APRIL 2011**

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Acknowledgments

We thank members of the NCASI Sustainable Forestry and Eastern Wildlife Task Group for their input and guidance during development of this report and Ms. Susan Kirkland of NCASI for her assistance with formatting this technical bulletin.

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Cite this report as:

National Council for Air and Stream Improvement, Inc. (NCASI). 2011. *A summary of conservation planning efforts in forested regions of the United States: 2010 update*. Technical Bulletin No. 982. Research Triangle Park, N.C.: National Council for Air and Stream Improvement, Inc.



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PRESIDENT'S NOTE

Many companies engaged in timber production and/or wood procurement are participating in forest certification programs that include requirements related to conservation of biodiversity. In order to meet these requirements, managers of forest certification activities need to be knowledgeable about ongoing conservation programs.

This report is a compendium of information about biodiversity conservation programs in the United States. Programs were selected for inclusion based on their relevance to wood procurement and timberland operations. Managers and technical specialists with responsibilities for sustainable forestry and wood procurement will find this report useful in gaining general understanding of the scope and content of biodiversity conservation programs and in identifying specific programs that are most relevant to their companies.

The material in this report updates the information in NCASI Technical Bulletin 947, which was published in 2008. The primary author is Ms. Carolyn A. Mehl of the Ecosystem Management Research Institute (EMRI). Philip R. Weatherford of NCASI contributed to development of this report by compiling information on statewide forest resource assessments and plans. Dr. Ben Wigley of NCASI collaborated with EMRI staff in the development of the report.

A handwritten signature in black ink, appearing to read "Ron Yeske", is positioned above the printed name.

Ronald A. Yeske

April 2011

MOT DU PRÉSIDENT

Plusieurs compagnies impliquées dans la production de bois et/ou l'approvisionnement en bois participent à des programmes de certifications des forêts incluant certaines exigences sur la conservation de la biodiversité. Afin de respecter ces exigences, les responsables des activités de certification des forêts doivent être au fait du développement des programmes de conservation.

Ce rapport est un compendium d'informations sur les programmes de conservation de la biodiversité aux États-Unis. Les programmes inclus dans ce rapport ont été retenus en fonction de leur pertinence par rapport aux opérations d'approvisionnement en bois et de gestion forestière. Ce rapport permettra aux directeurs et spécialistes techniques responsables de l'approvisionnement en bois et du développement durable des forêts, d'obtenir une compréhension générale de la portée et du contenu des programmes de conservation de la biodiversité tout permettant l'identification des programmes qui sont les plus pertinents pour la compagnie qui les implante.

Ce rapport est une mise à jour des informations contenues dans le Bulletin technique n° 947 publié par NCASI en 2008. L'auteure principale de ce rapport est Mme. Carolyn A. Mehl de l'Institut de recherche sur la gestion des écosystèmes (*Ecosystem Management Research Institute, EMRI*). M. Philip R. Weatherford de NCASI a contribué à la préparation de ce rapport en compilant des informations sur les plans et évaluations des ressources forestières à l'échelle des états américains. Finalement, le Dr. Ben Wigley de NCASI a collaboré avec le personnel de EMRI lors de la préparation de ce rapport.



Ronald A. Yeske

Avril 2011

A SUMMARY OF CONSERVATION PLANNING EFFORTS IN FORESTED REGIONS OF THE UNITED STATES: 2010 UPDATE

TECHNICAL BULLETIN NO. 982
APRIL 2011

ABSTRACT

Concern about the potential impacts of human activities on biological diversity has led government agencies, environmental non-government organizations, industry, and others to engage in conservation planning in order to identify areas of highest priority and to direct limited conservation resources in a strategic manner. Like many activities, conservation planning can occur at different spatial and temporal scales. Regional or sub-global conservation planning efforts often guide decisions and planning within relatively large sub-continental areas such as ecoregions and identify species, communities, and locations that should be conserved. As a result, they are of particular interest to forest products companies because priorities within those plans can sometimes directly affect their operating environments and identify conservation actions that should be considered by companies participating in sustainable forestry certification programs. This compendium characterizes national, regional, and state conservation planning and priority-setting initiatives that affect 37 states of priority to the forest products industry as evidenced by existence of a logger education program. For each planning effort, the report describes the coordinating organization, partners and collaborators, states influenced, the primary goal, the approach used, salient results, and where to find more information (e.g., website address, contact person, citation for the plan or program).

KEYWORDS

biological diversity, conservation planning, imperiled species, sustainable forestry certification programs

RELATED NCASI PUBLICATIONS

Technical Bulletin No. 947 (March 2008). *A summary of conservation planning efforts in forested regions of the United States.*

Technical Bulletin No. 885 (August 2004). *Managing elements of biodiversity in sustainable forestry programs: Status and utility of NatureServe's information resources to forest managers.*

Technical Bulletin No. 857 (January 2003). *Wildlife and biodiversity metrics in forest certification systems.*

Special Report No. 06-05 (November 2006). *Synthesis of large-scale bird conservation plans in Canada: A resource for forest managers.*

Special Report No. 95-04 (March 1995). *Threatened and endangered species potentially affected by forest alteration: Invertebrates.*

Special Report No. 95-03 (March 1995). *Threatened and endangered species potentially affected by forest alteration: Plants.*

Special Report No. 95-02 (March 1995). *Threatened and endangered species potentially affected by forest alteration: Vertebrates.*

RÉSUMÉ DES EFFORTS DE PLANIFICATION DE LA CONSERVATION DES ZONES FORESTIÈRES AUX ÉTATS-UNIS: MISE-À-JOUR 2010

BULLETIN TECHNIQUE N^o 982
AVRIL 2011

RÉSUMÉ

Les préoccupations à propos de l'impact potentiel des activités humaines sur la diversité biologique ont mené les agences gouvernementales, les organisations non-gouvernementales pour la protection de l'environnement, les industries et d'autres parties intéressées à s'impliquer dans la planification de la conservation afin d'identifier les secteurs d'intérêts prioritaires et d'y injecter les ressources nécessaires (quoique limitées) de manière stratégique. Comme pour bien d'autres activités, la planification de la conservation peut survenir selon différents ordres de grandeur d'espaces et de temps. Il est fréquent que les efforts de conservation régionaux et sous-globaux guident les décisions et la planification affectant des aires sous-continentales relativement grandes, telles que des écorégions et qu'ils permettent d'identifier les espèces, les communautés et les endroits qui devraient être conservés. Conséquemment, ces efforts sont d'un grand intérêt pour les compagnies forestières puisque les priorités qui émanent de la planification peuvent, dans certains cas, affecter l'environnement dans lequel elles opèrent. Ces efforts de planification peuvent aussi permettre d'identifier des avenues de conservation intéressantes qui devraient être prises en compte par les compagnies impliquées dans des programmes de certification des forêts liés au développement durable. Ce compendium détaille les initiatives de planification de la conservation et d'établissement des priorités au niveau national, régional et des états. Ce compendium détaille les initiatives de planification de la conservation et d'établissement des priorités affectant 37 états ayant des programmes d'éducation des travailleurs en forêts. Pour chaque effort de planification identifié, ce rapport décrit l'organisation responsable, les partenaires et collaborateurs, les états touchés, l'objectif principal, l'approche utilisée, les résultats principaux et où trouver des informations supplémentaires (ç-à-d. site web, personne ressource, citation du plan ou du programme).

MOTS CLÉS

Diversité biologique, planification de la conservation, espèces en péril, programmes de certification des forêts, développement durable

AUTRES PUBLICATIONS DE NCASI DANS CE DOMAINE

Bulletin technique n^o 947 (mars 2008). *A summary of conservation planning efforts in forested regions of the United States.*

Bulletin technique n^o 885 (août 2004). *Managing elements of biodiversity in sustainable forestry programs: Status and utility of NatureServe's information resources to forest managers.*

Bulletin technique n^o 857 (janvier 2003). *Wildlife and biodiversity metrics in forest certification systems.*

Rapport spécial n^o 06-05 (novembre 2006). *Synthesis of large-scale bird conservation plans in Canada: A resource for forest managers.*

Rapport spécial n^o 95-04 (mars 1995). *Threatened and endangered species potentially affected by forest alteration: Invertebrates.*

Rapport spécial n° 95-03 (mars 1995). *Threatened and endangered species potentially affected by forest alteration: Plants.*

Rapport spécial n° 95-02 (mars 1995). *Threatened and endangered species potentially affected by forest alteration: Vertebrates.*

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A SUMMARY OF CONSERVATION PLANNING EFFORTS IN FORESTED REGIONS OF THE UNITED STATES: 2010 UPDATE

1.0 INTRODUCTION

Many companies engaged in timber production and/or wood procurement participate in sustainable forestry certification programs that include requirements related to conservation of biological diversity. Current standards ask participants to engage in activities such as protection of imperiled species, consideration for landscape-scale factors, and promotion of wildlife habitat, forest type, and ecological or natural community type diversity. Participants in some certification programs are also required to be knowledgeable about regional conservation planning and priority-setting efforts that involve stakeholders.

The National Council for Air and Stream Improvement (NCASI) supported development of this compendium to help its member companies identify conservation planning efforts in their areas of operation. Thus, the report identifies and reviews national, regional, and state conservation planning and priority-setting initiatives that affect 37 states (Appendix A) identified by NCASI as having priority for the forest products industry as evidenced by existence of a logger education program. Much of the material in this report describing planning efforts was extracted from Internet sites or published material associated with the initiatives themselves. Inclusion of a planning and/or priority-setting initiative in the compendium does not imply that the initiative should necessarily be recognized as including a broad set of stakeholders or as being “credible” as required by some certification programs. Rather, this information has been compiled strictly as a tool to help companies be more knowledgeable about various ongoing initiatives or programs. As a result, this report does not evaluate or critique plans. Rather, it merely compiles available information and provides brief summaries that allow companies to reach their own conclusions.

2.0 METHODS

The methods used in this project involved a multi-step process. Criteria were developed to guide the selection of applicable conservation plans or strategies that affect or influence forest management objectives or activities. These criteria included

1. multi-species conservation, biodiversity, or watershed plans or programs that are forest-based, and that set goals or targets (i.e., population numbers, amounts of habitat, etc.) or use “hot spot”/Gap Analysis Program (GAP) methodology and are applied to private lands as well as other landowner categories;
2. ecosystem-based forest conservation plans that set goals or targets and are applied to private lands as well as other landowner categories;
3. ecoregions identified as high priority or high risk for ecological or species loss to forest systems; and
4. single-species conservation plans that represent broad-scale, high profile, collaborative initiatives affecting forest species.

Using these criteria, we compiled a list of all plans or programs that were identified during a brief initial review and discussed this list with a committee of forest industry representatives to ensure inclusion of applicable plans and programs and to address any deficiencies in our review process. We then conducted an extensive Internet search for any national, regional, or state conservation planning and priority-setting documents or websites that affected or applied to each of the 37 states. We

reviewed the new state Wildlife Action Plans (formerly Comprehensive Wildlife Conservation Strategies) for each state or region and determined if any additional programs or plans were identified by the Wildlife Action Plans. We reviewed any federal documents that address conservation planning across private and public ownership, produced since 1997. A list of all the plans and programs identified during the initial screening was compiled and submitted to NCASI for review and comments. The final list of conservation plans or programs is provided in Table 2.1.

For plans that met the criteria for inclusion, we prepared a brief description including coordinating organization(s), partners/collaborators, states influenced by the program, primary goals, general description, approach, and a brief summary of the plan results as they relate to forest products industry. We also included a link to the website, if available. All website links were current at the time this document was finalized. The plans or programs were characterized by three levels of scope: national, regional, or state. In some instances, national scope can indicate that all of the states were evaluated against the programs' criteria but sites that qualify may have been limited to a few areas or regions. Single-species plans that met the criteria for broad-scale, high profile, collaborative initiatives were also identified where appropriate. Those plans that were initially identified during the screening process but later rejected after closer review and evaluation against the criteria are identified and briefly described in Appendix B.

Table 2.1 List of Conservation Planning Initiatives Summarized for This Document

Name	Coordinating Organization(s)	Plan or Program	Primary Objective
National Conservation Planning Initiatives			
North American Bird Conservation Initiative	USFWS; AF&WA	Program	Bird Conservation
North American Landbird Conservation Plan	Partners In Flight	Plan	Landbird Conservation
Regional/State Landbird Conservation Plans	Partners In Flight	Plan	Landbird Conservation
North American Waterfowl Management Plan	USFWS; Joint Ventures	Plan	Waterfowl Conservation
US Shorebird Conservation Plan	USFWS	Plan	Shorebird Conservation
North American Waterbird Conservation Plan	USFWS	Plan	Waterbird Conservation
Global 200	World Wildlife Fund	Program	Biological Diversity
BioGems	Natural Resources Defense Council	Program	Ecosystem Conservation
AZE Sites	Alliance for Zero Extinction	Program	Prevent Extinctions
Intact Forest Landscapes	Greenpeace	Program	Forest Protection
Conservation By Design	The Nature Conservancy	Program	Protect Major Habitat Types
Ecoregional Assessments	The Nature Conservancy	Program	Biodiversity Protection - ecoregion level
Conservation Action Planning	The Nature Conservancy	Program	Conservation Planning - project level
Biodiversity Hotspots	Conservation International	Program	Biodiversity Conservation
Important Bird Areas	Birdlife Int.; Audubon; Partners In Flight	Program	Birds and Biodiversity Conservation
Endemic Bird Areas	Birdlife International	Program	Bird Conservation
Globally Important Bird Areas	American Bird Conservancy	Program	Bird Conservation
RAMSAR Wetland Sites	RAMSAR Convention on Wetlands	Program	Wetland Conservation
National Fish Habitat Action Plan	National Fish Habitat Initiative	Plan	Fish & Aquatic Conservation
Watershed Planning	U.S. Environmental Protection Agency	Program	Water Quality & other dependent values

(Continued on next page.)

Table 2.1 Continued

Name	Coordinating Organization(s)	Plan or Program	Primary Objective
Regional Conservation Planning Initiatives			
Priority Areas for Freshwater Conservation	The Nature Conservancy	Plan	Freshwater Biodiversity Conservation
Southeast Aquatic Habitat Plan	Southeast Aquatic Resource Partnership	Plan	Aquatic Resource Conservation
South Atlantic Migratory Bird Initiative	Atlantic Coast Joint Venture	Plan	Bird Conservation
Southern Appalachian Forest Plan	Southern Appalachian Forest Coalition	Plan	Biodiversity Conservation
Southeastern Ecological Framework Project	U.S. Environmental Protection Agency	Plan	Priority Ecological Areas
Chattanooga Watershed Conservation Plan	Chattanooga River Watershed Coalition	Plan	Forest Protection
Southern Appalachian Ecosystem - Imperiled Fishes	U.S. Fish and Wildlife Service	Plan	Fish & Aquatic Conservation
Y2Y Priority Areas	Yellowstone to Yukon	Program	Biodiversity Conservation
Two Countries, One Forest (2C1 Forest)	Two Countries, One Forest	Program	Ecosystem Conservation
Wildlife Corridors Initiative	Western Governors' Association	Plan	Wildlife Corridors
State Conservation Planning Initiatives			
Alabama Wildlife Action Plan	AL Dept. of Conservation & Natural Resources	Plan	Biological Diversity
Alabama Forest Assessment and Strategy	Alabama Forestry Commission	Plan	Forest Resources
Arkansas Wildlife Action Plan	AR Game and Fish Commission	Plan	Species Conservation
Arkansas Wetland Conservation Plan	AR Multi-agency Wetland Planning Team	Plan	Wetland Conservation
Arkansas Forest Assessment and Strategy	Arkansas Forestry Commission	Plan	Forest Resources
California Wildlife Action Plan	CA Department of Fish and Game	Plan	Species & Habitat Conservation
California Legacy Project	CA Resources Agency	Program	Resource Conservation
California Forest Assessment and Strategy	CA Dept. Forestry and Fire Protection	Plan	Forest Resources
Colorado Wildlife Action Plan	CO Division of Wildlife	Plan	Species Conservation
Colorado Bat Conservation Plan	Committee of Western Bat Working Group	Plan	Bat Conservation

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Table 2.1 Continued

Name	Coordinating Organization(s)	Plan or Program	Primary Objective
State Conservation Planning Initiatives - Continued			
Colorado Forest Assessment and Strategy	Colorado State Forest Service	Plan	Forest Resources
Connecticut Wildlife Action Plan	CT Dept. of Environmental Protection	Plan	Species and Habitat Conservation
Connecticut Forest Assessment and Strategy	CT Dept of Environment Protection	Plan	Forest Resources
Delaware Wildlife Action Plan	DE Dept. of Nat. Res. & Env. Control	Plan	Species and Habitat Conservation
Delaware Forest Assessment and Strategy	Delaware Forest Service	Plan	Forest Resources
Florida Wildlife Action Plan	FL Fish & Wildlife Cons. Commission	Plan	Species Conservation
Florida Closing the Gaps Project	FL Game & Freshwater Fish Commission	Plan	Biological Diversity
Florida Greenways/Ecological Network Project	FL Dept. of Environmental Protection	Program	Biological Diversity
Georgia Wildlife Action Plan	GA Department of Natural Resources	Plan	Biological Diversity
Georgia Forest Assessment and Strategy	Georgia Forestry Commission	Plan	Forest Resources
Idaho Wildlife Action Plan	ID Department of Fish and Game	Plan	Species Conservation
Old Growth Ponderosa Pine in Idaho	ID Department of Fish and Game	Plan	Ecosystem Conservation/Rest.
Idaho Forest Assessment and Strategy	Idaho Department of Lands	Plan	Forest Resources
Indiana Wildlife Action Plan	IN Department of Natural Resources	Plan	Species and Habitat Conservation
Indiana Forest Assessment and Strategy	Indiana Dept. of Natural Resources	Plan	Forest Resources
Kentucky Wildlife Action Plan	KY Dept. of Fish and Wildlife Resources	Plan	Species Conservation
Kentucky Forest Assessment and Strategy	KY Dept. of Natural Resources	Plan	Forest Resources
Little River Riparian Corridor Conservation Plan	Eno River Assoc. & Trust of North Carolina	Plan	Habitat Protection
Louisiana Wildlife Action Plan	LA Depart. of Wildlife and Fisheries	Plan	Species and Habitat Conservation
Louisiana Forest Assessment and Strategy	LA Dept. of Agriculture and Forestry	Plan	Forest Resources

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Table 2.1 Continued

Name	Coordinating Organization(s)	Plan or Program	Primary Objective
State Conservation Planning Initiatives - Continued			
Maine Wildlife Action Plan	ME Dept. of Inland Fisheries and Wildlife	Plan	Species Conservation
Maine's 'Beginning with Habitat' Program	ME Dept. of Inland Fisheries and Wildlife	Program	Habitat Conservation
Maine Forest Assessment and Strategy	Maine Department of Conservation	Plan	Forest Resources
Maryland Wildlife Action Plan	MD Dept. of Natural Resources	Plan	Species Conservation
Maryland GreenPrint/Green Infrastructure	MD Dept. of Natural Resources	Program	Habitat Protection
Maryland Forest Assessment and Strategy	Maryland Department of Natural Resources	Plan	Forest Resources
Massachusetts Wildlife Action Plan	MA Department of Fish and Game	Plan	Conservation of Biological Diversity
Massachusetts BioMap	MA Department of Fish and Game	Plan	Habitat Protection
Michigan Wildlife Action Plan	MI Dept. of Nat. Resources and Environment	Plan	Species Conservation
Michigan Forest Assessment and Strategy	MI Dept. of Nat. Resources and Environment	Plan	Forest Resources
Minnesota Wildlife Action Plan	MN Dept. of Natural Resources	Plan	Species and Habitat Conservation
Minnesota Landscape Program	Minnesota Forest Resources Council	Program	Forest Sustainability
Minnesota Habitat Conservation Partnership	MN Habitat Conservation Partnership	Program	Species and Habitat Conservation
Minnesota Forest Assessment and Strategy	MN Dept. of Natural Resources	Plan	Forest Resources
Mississippi Wildlife Action Plan	MS Dept. of Wildlife, Fish, and Parks	Plan	Biodiversity Conservation
Missouri Wildlife Action Plan	MO Dept. of Conservation	Plan	Species and Habitat Conservation
Mississippi Forest Assessment and Strategy	Mississippi Forestry Commission	Plan	Forest Resources
Montana Wildlife Action Plan	MT Fish, Wildlife, and Parks	Plan	Species and Habitat Conservation
Priority Linkage Assessments	American Wildlands	Program	Wildlife Linkage Zones
Montana Forest Assessment and Strategy	MT Dept. of Nat. Resources and Conservation	Plan	Forest Resources

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Table 2.1 Continued

Name	Coordinating Organization(s)	Plan or Program	Primary Objective
State Conservation Planning Initiatives - Continued			
New Hampshire Wildlife Action Plan	NH Fish and Game Department	Plan	Species and Habitat Conservation
New Hampshire Forest Assessment and Strategy	NH Dept. of Resources and Economic Dev.	Plan	Forest Resources
New York Wildlife Action Plan	NY State Dept. of Env. Conservation	Plan	Species Conservation
New York Forest Assessment and Strategy	NY Dept. of Environmental Conservation	Plan	Forest Resources
North Carolina Wildlife Action Plan	NC Wildlife Resources Commission	Plan	Species and Habitat Conservation
North Carolina Forest Assessment and Strategy	NC Dept. of Environment & Natural Resources	Plan	Forest Resources
Ohio Wildlife Action Plan	OH Dept. of Nat. Res. Division of Wildlife	Plan	Species and Habitat Conservation
Oregon Wildlife Action Plan	OR Dept. of Fish and Wildlife	Plan	Species and Habitat Conservation
Willamette Restoration Strategy	Willamette Restoration Initiative	Plan	Willamette River Basin Restoration
Oregon Biodiversity Project	Defenders, TNC, & OR Natural Heritage	Plan	Biodiversity Conservation
Oregon's Greatest Wetlands	The Wetland Conservancy	Program	Ecosystem Conservation
Oregon Plan for Salmon and Watersheds	Oregon Watershed Enhancement Board	Plan	Species and Habitat Conservation
Oregon Forest Assessment and Strategy	Oregon Department of Forestry	Plan	Forest Resources
Pennsylvania Wildlife Action Plan	PA Game Commission	Plan	Species Conservation
Pennsylvania Biodiversity Conservation Plan	PA Biodiversity Partnership	Plan	Conservation of Biological Diversity
Pennsylvania Forest Assessment and Strategy	PA Dept. of Cons. and Natural Resources	Plan	Forest Resources
Rhode Island Wildlife Action Plan	RI Dept. of Environmental Management	Plan	Species Conservation
South Carolina Wildlife Action Plan	SC Dept. of Natural Resources	Plan	Species and Habitat Conservation
South Carolina Forest Assessment and Strategy	South Carolina Forestry Commission	Plan	Forest Resources
South Dakota Wildlife Action Plan	SD Fish, Wildlife and Parks	Plan	Ecosystem & Species Conservation
South Dakota Forest Assessment and Strategy	SD Dept. of Agric., Res. Cons. & Forestry Div.	Plan	Forest Resources

(Continued on next page.)

Table 2.1 Continued

Name	Coordinating Organization(s)	Plan or Program	Primary Objective
State Conservation Planning Initiatives - Continued			
Tennessee Wildlife Action Plan	TN Wildlife Resources Agency	Plan	Species and Habitat Conservation
Texas Wildlife Action Plan	TX Parks and Wildlife Department	Plan	Species and Habitat Conservation
Texas Land & Water Res. Cons. & Recreation Plan	TX Parks and Wildlife Department	Plan	Natural/historic heritage cons.
Texas Forest Assessment and Strategy	Texas Forest Service	Plan	Forest Resources
Vermont Wildlife Action Plan	VT Fish and Wildlife Department	Plan	Species and Habitat Conservation
Vermont's Natural Heritage	VT Biodiversity Project	Plan	Conservation of Biological Diversity
Vermont Forest Assessment and Strategy	VT Dept of Forests, Parks, and Recreation	Plan	Forest Resources
Virginia Wildlife Action Plan	VA Dept. of Game and Inland Fisheries	Plan	Species Conservation
Virginia Forest Assessment and Strategy	VA Department of Forestry	Plan	Forest Resources
Washington Wildlife Action Plan	WA Department of Fish and Wildlife	Plan	Species and Habitat Conservation
Washington Natural Heritage Plan	WA Department of Natural Resources	Plan	Ecosystems & Species Protection
Forest Practices Habitat Conservation Plan	WA Department of Natural Resources	Plan	Compliance with ESA
Chinook Salmon Conservation Plan	King County Dept. of Natural Resources	Plan	Species and Habitat Conservation
Washington Forest Assessment and Strategy	WA State Department of Natural Resources	Plan	Forest Resources
West Virginia Wildlife Action Plan	WV Division of Natural Resources	Plan	Biodiversity Conservation
Wisconsin Wildlife Action Plan	WI Department of Natural Resources	Plan	Species and Habitat Conservation
Wisconsin Forest Assessment and Strategy	WI Department of Natural Resources	Plan	Forest Resources
Wyoming Wildlife Action Plan	WY Game and Fish Department	Plan	Species Conservation
Wyoming Forest Assessment and Strategy	Wyoming State Forestry Division	Plan	Forest Resources

(Continued on next page.)

Table 2.1 Continued

Name	Coordinating Organization(s)	Plan or Program	Primary Objective
Single Species Conservation Initiatives			
Strategically Important Landscapes	The Rocky Mountain Elk Foundation	Program	Landscape protection for elk
The Northern Bobwhite Conservation Initiative	SE Assoc. of Fish and Wildlife Agencies	Plan	Bobwhite Quail Conservation
Ruffed Grouse Conservation Plan	Assoc. of Fish and Wildlife Agencies	Plan	Ruffed Grouse Conservation
Puget Sound Salmon Recovery Plan	Shared Strategy for Puget Sound	Plan	Salmon recovery in Puget Sound
American Woodcock Conservation Plan	Woodcock Task Force, AFWA	Plan	American Woodcock Conservation
Spruce Grouse Continental Conservation Plan	Resident Gamebird Work Group, AFWA	Plan	Spruce Grouse Conservation
Eastern Brook Trout Joint Venture	Nation Fish Habitat Initiative	Plan	Brook Trout Conservation
Conservation Plan for Long-leaf Pine	Regional Working Group for America's Longleaf	Plan	Long-leaf Pine Conservation

3.0 NATIONAL CONSERVATION PLANNING INITIATIVES

3.1 North American Bird Conservation Initiative

Coordinating Organization(s): U.S. Fish and Wildlife Service and Association of Fish and Wildlife Agencies

Partners/Collaborators: State and federal government agencies, non-governmental conservation organizations, and private industry.

States influenced by the program: Nationwide

Website Link: www.nabci-us.org

Primary Goal: To improve the conservation of birds and their habitats in North America.

General Description: The North American Bird Conservation Initiative (NABCI) is helping partners across the continent meet their common bird conservation objectives. Its strategy is to foster coordination and collaboration among the bird conservation community on issues of concern.

Approach: NABCI emphasizes six action areas:

1. *Monitoring.* Improve the current state of priority population level data management systems.
2. *Private Lands.* Engage with the Natural Resources Conservation Service (NRCS) and the Farm Service Agency (FSA) to advance strategic habitat initiatives and increase biological capacity to deliver the Farm Bill conservation programs.
3. *International Efforts.* Promote the Continentally Important Proposals in order to assist with implementation and funding of the proposals and support the development of regional alliances in Mexico. Promote tri-national partnership development.
4. *Communications.* Engage and inform audiences on priority issues by motivating and collaborating with partners to speak with one voice. Use the *State of the Birds* report as a rallying document.
5. *Internationalize Bird Interests.* Develop and begin implementation of a targeted strategy to institutionalize integrated bird management/conservation. The strategy should include a method by which to measure implementation of the vision.
6. *Conservation Design.* Bring together the resources needed to reassess the current status of conservation design and address the most challenging aspects of bird conservation science that continue to make application of bird conservation efforts inefficient.

Results: NABCI works with multiple organizations such as Joint Ventures, Partners in Flight, American Bird Conservancy, etc., to promote and implement the results of national and regional bird conservation plans such as the North American Waterfowl Management Plan, Partners in Flight Bird Conservation Plans, U.S. Shorebird Conservation Plan, and North American Waterbird Conservation Plan. In addition, state-based conservation initiatives are also being developed.

Website Citation: North American Bird Conservation Initiative. Integrated Bird Conservation in the US. www.nabci-us.org/workplan.htm.

3.2 North American Landbird Conservation Plan

Coordinating Organization(s): Partners in Flight

Partners/Collaborators: State and federal government agencies, non-governmental conservation organizations, and private industry.

States influenced by the plan: Nationwide

Year completed: 2004

Website Link: www.partnersinflight.org/cont_plan/default.htm

Primary Goal: To ensure that populations of native birds will occur in their natural habitats, and natural geographic ranges, through coordinated efforts by scientists, government and private citizens.

General Description: The North American Landbird Conservation Plan provides a continental synthesis of priorities and objectives that will guide landbird conservation actions at national and international scales. Together with plans for shorebirds, waterbirds, waterfowl, and other game birds, this document serves as the blueprint for continental habitat conservation under the North American Bird Conservation Initiative (NABCI).

Approach: The plan used a stepwise planning approach that ensures a sound scientific basis for decision-making and a logical process for setting, implementing, and evaluating conservation objectives. These steps included 1) assessing conservation vulnerability among all native landbird species, 2) identifying species most in need of conservation attention at a continental level, 3) setting quantitative population objectives for Species of Continental Importance, 4) outlining an implementation strategy for meeting species and habitat objectives at a continental scale, and 5) evaluating success, making revisions, and setting updated objectives for the future.

Results: Of the 448 species of native landbirds evaluated, 100 of these species were determined to warrant inclusion on the Partners in Flight (PIF) watch list, due to a combination of threats to their habitats, declining populations, small population sizes, or limited distributions. Of these 100 species, 28 were identified for immediate action to protect remaining small populations, and an additional 44 were described as “in need of management” to reverse long-term population declines.

Plan Citation: Rich, T. D., C. J. Beardmore, H. Berlanga, P. J. Blancher, M. S. W. Bradstreet, G. S. Butcher, D. W. Demarest, E. H. Dunn, W. C. Hunter, E. E. Iñigo-Elias, J. A. Kennedy, A. M. Martell, A. O. Panjabi, D. N. Pashley, K. V. Rosenberg, C. M. Rustay, J. S. Wendt, T. C. Will. 2004. *Partners in Flight North American Landbird Conservation Plan*. Ithaca, NY: Cornell Lab of Ornithology. www.partnersinflight.org/cont_plan/ (VERSION: December 2008).

3.3 Regional/State Landbird Conservation Plans

Coordinating Organization(s): Partners in Flight

Partners/Collaborators: State and federal agencies, non-governmental organizations, private industry, professional associations, academia, and private individuals.

States influenced by the plans: Nationwide; see Figure 3.1.

Website Link: www.blm.gov/wildlife/pifplans.htm

Primary Goal: Ensure long-term maintenance of healthy populations of native landbirds.

General Description: Landbird Conservation Plans provide priorities and objectives that will guide landbird conservation actions at physiographic region levels, except in California, Idaho, Montana, Wyoming, Colorado, Oregon, and Washington where plans identify priorities and objectives at state or region levels (e.g., Oregon and Washington) but describe habitat relative to physiographic regions.

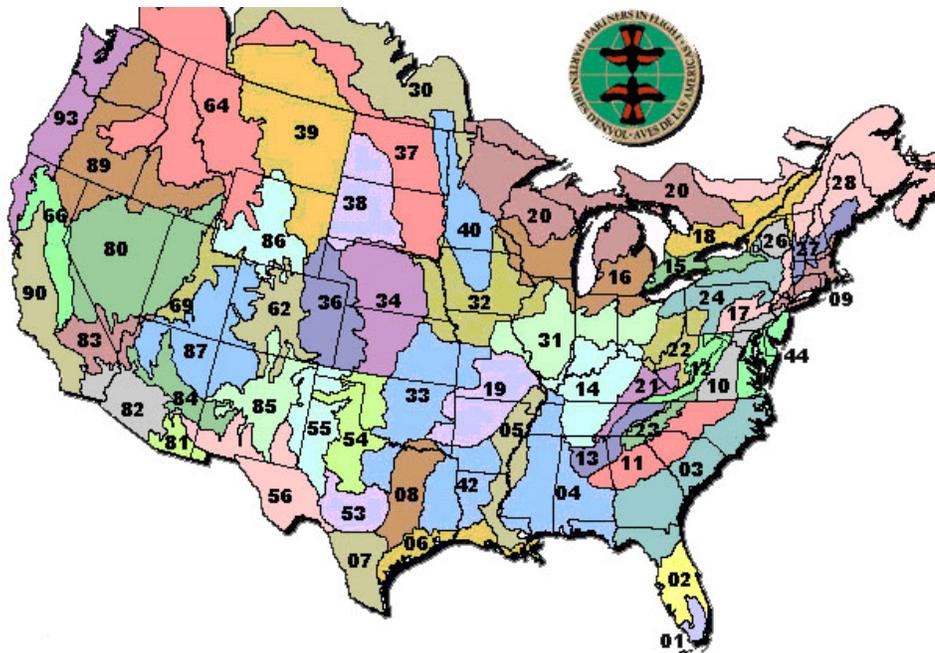


Figure 3.1 Landbird Conservation Plans Physiographic Regions
(www.blm.gov/wildlife/pifplans.htm)

Approach: The regional/state landbird conservation plans were developed to address the goals of the North American Landbird Conservation Plan at a regional or state level and emphasize effective and efficient management through a four-step process: 1) identify habitats and species that are conservation priorities, 2) describe desired conditions for priority habitats and species, 3) develop biological objectives to be used as management targets to achieve desired conditions, and 4) recommend conservation strategies to be implemented at multiple scales to achieve objectives.

3.4 North American Waterfowl Management Plan

Coordinating Organization(s): U.S. Fish and Wildlife Service and Joint Ventures

Partners/Collaborators: Federal and state government agencies, non-government organizations, corporations, tribes, and individuals.

States influenced by the plan: See Figure 3.2.

Year Completed: 1998

Website Links: www.fws.gov/birdhabitat/NAWMP; www.fws.gov/birdhabitat/JointVentures

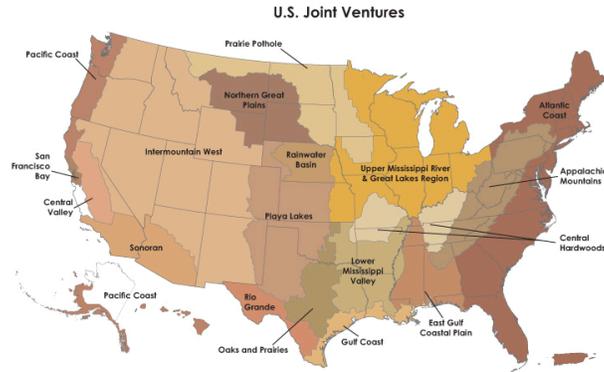


Figure 3.2 North American Waterfowl Management Plan Regions

Primary Goal: To identify desirable goals and general recommendations that should be considered in developing additional governmental and nongovernmental measures aimed at protection of North American waterfowl.

General Description: The North American Waterfowl Management Plan serves as a guide for the participation of various private organizations and the public in the conservation and management of waterfowl. Although the NAWMP emphasizes waterfowl, many other species are associated with water and wetlands and should be considered in developing operational plans for habitat preservation. This plan focuses on the value of maintaining an adequate habitat base. *Note:* NAWMP outlined the process for developing Joint Ventures, which is the framework used today to implement NAWMP. Joint Ventures are approved and administered by the U.S. Fish and Wildlife Service.

Approach: Eight primary principles were identified by the plan: 1) protection of habitat requires long-term planning and cooperation by Canada, Mexico, and the United States; 2) priority should be given to perpetuating waterfowl populations and their supporting habitats; 3) maintaining abundant waterfowl populations is dependent upon protecting, restoring, and managing habitat; 4) waterfowl populations should be managed by identifiable subpopulations; 5) joint ventures of private and governmental organizations should be developed to pool resources; 6) subsistence and recreational harvests are desirable and consistent with waterfowl conservation objectives; 7) recreational hunting will be managed under existing regulatory processes; and 8) stabilized hunting regulations are desirable.

Results: Population goals were identified that would maintain the current diversity of waterfowl species, and by the year 2000, would achieve a breeding population level of 62 million. In addition, goals for breeding populations and habitat of the 10 most common duck species and geese and swans were developed. Joint Venture Regional Waterfowl Management Plans were also developed to help ensure the goals identified in the NAWMP were met and applied at appropriate scales.

National Plan Citation: North American Waterfowl Management Plan. 1986. *North American Waterfowl Management Plan- A Strategy for Cooperation*. U.S. Department of the Interior and Environment Canada. Updated 1994 and 1998.

Supporting documents: Strategic Guidance – 2004 and Implementation Framework – 2004

3.5 US Shorebird Conservation Plan

Coordinating Organization(s): U.S. Fish and Wildlife Service

Partners/Collaborators: State and federal government agencies, non-governmental conservation organizations, academia institutions, and individuals.

States influenced by the plan: See Figure 3.3.



Figure 3.3 U.S. Shorebird Conservation Plan

Year completed: 2001

Website Link: www.fws.gov/shorebirdplan/

Primary Goal: To provide an overview of the current status of shorebirds, the conservation challenges facing them, current opportunities for integrated conservation, broad goals for the conservation of shorebird species and subspecies, and specific programs necessary to meet the overall vision of restoring stable and self-sustaining population of all shorebirds.

General Description: The U.S. Shorebird Conservation Plan provides a scientific framework to determine species, sites, and habitats that most urgently need conservation action. It presents the major conclusions and recommendations of the technical and regional working groups that contributed to the development of a coordinated national initiative for shorebird conservation. Separate technical reports were developed for a conservation assessment, research needs, a comprehensive monitoring strategy, and education and outreach. Many of the details pertaining to the development of specific goals and objectives are presented in the supporting technical reports.

Approach: Species were prioritized relative to their conservation status and risks. The variables used to prioritize shorebird species are the same as those used in the Partners in Flight prioritization system. However, the definition of variables and the scoring system have been modified slightly to better reflect the ecology of shorebirds. Detailed descriptions of the variables used in scoring are provided.

Results: The plan identified 7 highly imperiled species and 23 species of high concern for all of North America. The Shorebird Plan was designed to complement the existing landscape-scale conservation efforts of the North American Waterfowl Management Plan, Partners in Flight, and the North American Colonial Waterbird Conservation Plan. These national shorebird assessments were used to step down goals and objectives into 11 regional plans. Six of these were applicable to this review: Intermountain West; Northern Pacific Coast; Upper Mississippi Valley/Great Lakes; Lower Mississippi Valley/Western Gulf Coast; Southeastern Coastal Plains; and Northern Atlantic. In addition, five Joint Venture Regional Shorebird Implementation Plans were developed to help ensure the goals identified in the U.S. Shorebird Conservation Plan were met and applied at appropriate scales with only the Upper Mississippi Valley/Great Lakes Plan relevant to this review.

National Plan Citation: Brown, S., C. Hickey, B. Harrington, and R. Gill, eds. 2001. *The U.S. Shorebird Conservation Plan*, 2nd ed. Manomet, MA: Manomet Center for Conservation Sciences.

3.6 North American Waterbird Conservation Plan

Coordinating Organization(s): U.S. Fish and Wildlife Service

Partners/Collaborators: State and federal government agencies, non-governmental conservation organizations, and academic institutions.

States influenced by the plan: See Figure 3.4.

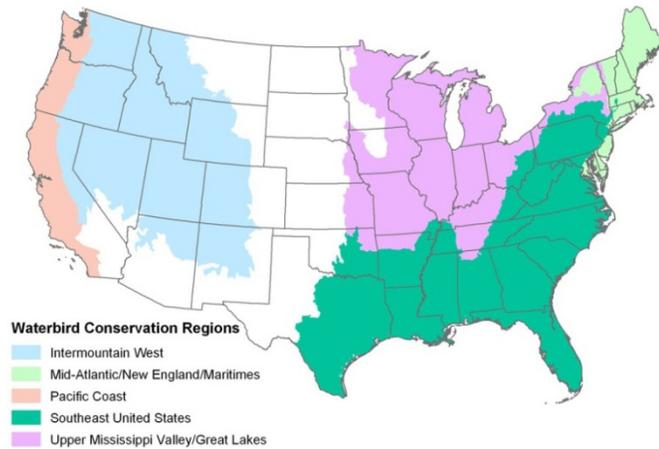


Figure 3.4 North American Waterbird Conservation Plan Regions

Year Completed: 2002

Website Link: www.waterbirdconservation.org

Primary Goal: To provide a continental-scale framework for the conservation and management of 210 species of waterbirds, including seabirds, coastal waterbirds, wading birds, and marshbirds utilizing aquatic habitats throughout North America.

General Description: The North American Waterbird Conservation Plan identifies strategies and opportunities for effective conservation and management of waterbirds. It documents a process

identifying species priorities at a regional scale and identifying key issues requiring conservation action.

Approach: Species assessment protocol was adapted from the Partners in Flight and U.S. Shorebird Conservation Plan. The plan identified four components for implementation: identifying species and population goals, identifying habitat goals, developing education and information goals, and developing coordination and integration goals. Strategies to address these four components were identified and described and desired results are outlined.

Results: The plan promotes habitat and site-based conservation actions throughout the Americas, with emphasis on Important Bird Area programs. Regional waterbird conservation working groups have stepped down the continental-level goals of the plan to regional and local levels. Nine of these regional-scale plans have been identified for the United States, with five of these being applicable to this review: the Pacific Coast; Intermountain West; Upper Mississippi Valley/Great Lakes; Southeast; and Mid-Atlantic/New England/Maritimes. The plan advocates integration with other bird conservation initiatives where appropriate.

National Plan Citation: Kushlan, J.A., M.J. Steinkamp, K.C. Parsons, J. Capp, M. Acosta Cruz, M. Coulter, I. Davidson, L. Dickson, N. Edelson, R. Elliot, R.M. Erwin, S. Hatch, S. Kress, R. Milko, S. Miller, K. Mills, R. Paul, R. Phillips, J.E. Saliva, B. Sydeman, J. Trapp, J. Wheeler, and K. Wohl. 2002. *Waterbird Conservation for the Americas: The North American Waterbird Conservation Plan*, Version 1. Washington, DC: Waterbird Conservation for the Americas.

3.7 Global 200

Coordinating Organization(s): World Wildlife Fund

Partners/Collaborators: Not indicated.

States influenced by the program: Nationwide; see Figure 3.5 for priority ecoregions.



Olson, D. M. and E. Dinerstein. The Global 200: Priority ecoregions for global conservation. (PDF file) *Annals of the Missouri Botanical Garden* 98:125-126

Figure 3.5 United States Global 200 Priority Ecoregions (Olson and Dinerstein 2007)

Website Link: www.worldwildlife.org/science/ecoregions/global200.html

Primary Goal: Identify ecoregions whose conservation would achieve the goal of saving a broad diversity of the Earth's ecosystems.

General Description: World Wildlife Fund’s Global 200 program identifies 200 ecoregions that are characterized by exceptional levels of biodiversity, such as high species richness or endemism, or those with unusual ecological or evolutionary phenomena. The Global 200 aims to represent all of the world’s biodiversity by identifying outstanding ecoregions in all of the world’s biomes and biogeographic realms. Limited funding and manpower compels WWF to initially focus its conservation efforts to develop biodiversity visions for these 200 ecoregions.

Approach: WWF had previously delineated 867 terrestrial ecoregions through its ecoregional classification program. The criteria used to prioritize ecoregions for the Global 200 include selecting those ecoregions within each biome that are considered to harbor biodiversity that is globally outstanding or regionally outstanding based on the following parameters.

1. Recognized centers of species richness and endemism
2. Presence of higher taxonomic uniqueness
3. Extraordinary ecological phenomena
4. Globally rare – e.g., major habitat type represented in fewer than eight distinct regions of the world
5. Higher levels of intact habitat and biotas
6. Ecoregions that represented the best example of their biome
7. Conservation status – existing or expected threats and impacts

Results: To date, 238 ecoregions were identified for the Global 200 initiative. Of these, 142 (60%) are terrestrial, 53 (22%) are freshwater, and 43 (18%) are marine ecoregions. In the United States, 5 ecoregions were identified that are relevant to this effort: 1) Pacific Temperate Rainforest, 2) Klamath-Siskiyou Coniferous Forest, 3) Sierra Nevada Coniferous Forest, 4) Appalachian and Mixed Mesophytic Forest, and 5) Southeastern Coniferous and Broadleaf Forest.

Program Citation: Olsen, D.M. and E. Dinerstein. 2007. “The Global 200: Priority ecoregions for global conservation.” *Annals of the Missouri Botanical Garden* 89:199-224.

3.8 Biogems

Coordinating Organization(s): Natural Resources Defense Council

Partners/Collaborators: Grassroots conservation groups or activists.

States influenced by the program: Nationwide; seven sites have been identified to date, four of which are in the lower 48 states:

Yellowstone/Greater Rockies – Montana, Wyoming, Colorado, New Mexico

Utah’s Redrock Wilderness – Utah

The Great North Woods – New York, New Hampshire, Vermont, Maine

The Cumberland Plateau – Kentucky, Virginia, Tennessee, North Carolina, South Carolina, Georgia, Alabama

Website Link: www.savebiogems.org/wildlands

Primary Goal: To mobilize concerned individuals in defense of exceptional and imperiled ecosystems.

General Description: Launched in 2001, the BioGems Initiative uses citizen activists to help protect exceptional and imperiled ecosystems. BioGem Defenders number more than 550,000 and have sent over 7 million messages to corporations and government officials calling for wildland protection.

Approach: The approach used to designate a BioGem is not indicated. The BioGem Initiative applies to North and South America.

Results: To date, 12 BioGems have been designated, with four of these occurring in the United States. Three of these four have relevance to this effort and are identified as the Cumberland Plateau, Emerald Coast, and Yellowstone/Rockies BioGems. In addition, the Great North Woods and the Catskill Mountains have been added to the Watch List for future BioGem status.

Program Citation: No single document is available to describe the BioGems program. A more complete description of the program is available at the website link provided above.

3.9 AZE Sites

Coordinating Organization(s): Alliance for Zero Extinction

Partners/Collaborators: The Alliance for Zero Extinction (AZE) is a global initiative of over 60 biodiversity conservation organizations.

States influenced by the program: Nationwide; nine current sites identified in Alabama, California, Colorado, Florida, Mississippi, Texas, and West Virginia.

Website Link: www.zeroextinction.org

Primary Goal: To prevent extinctions by identifying and safeguarding key sites where species are in imminent danger of disappearing.

General Description: The purpose of AZE is to identify sites in most urgent need of conservation, and to act together to prevent species extinctions. AZE first focuses on species that face extinction due to their last remaining habitat being degraded at a local level, and/or because their tiny global range makes them especially vulnerable to external threats.

Approach: AZE uses the following criteria to identify priority sites (must meet all three to qualify).

1. *Endangerment* - An AZE site must contain at least one Endangered (EN) or Critically Endangered (CR) species, as listed on the IUCN Red List.
2. *Irreplaceability* - An AZE site should be designated only if it is the sole area where an EN or CR species occurs, contains the overwhelmingly significant known resident population of the EN or CR species, or contains the overwhelmingly significant known population for one life history segment (e.g., breeding or wintering) of the EN or CR species.
3. *Discreteness* - The area must have a definable boundary within which the character of habitats, biological communities, and/or management issues have more in common with each other than they do with those in adjacent areas.

Results: To date, 590 AZE sites have been identified to prevent the extinction of 811 threatened species across the globe. Eight of these sites were designated in the United States and have relevance to this effort. These eight sites and their nine trigger species are as follows:

- Alabama: Mobile Bay, Trigger Species: Alabama red-bellied turtle
- California: Torrey Pines State Reserve, Trigger Species: Torrey pine
- Colorado: Gunnison Basin, Trigger Species: Gunnison sage-grouse
- Texas: Bastrop County, Trigger Species: Houston toad
- Texas: Aransas National Wildlife Refuge, Trigger Species: Whooping crane
- Mississippi: Glens Pond in DeSoto National Forest, Trigger Species: Dusky gopher frog
- Mississippi: Pascagoula River, Trigger Species: Yellow-blotched map turtle
- Florida: Apalachicola River and Forests, Trigger Species: Florida yew
- West Virginia: General Davis Cave, Trigger Species: West Virginia spring salamander

Program Citation: Alliance for Zero Extinction. 2005. *Pinpointing and Preventing Imminent Extinctions*. American Bird Conservancy publisher. 20 pp.

3.10 Intact Forest Landscapes

Coordinating Organization(s): Greenpeace

Partners/Collaborators: Greenpeace, Biodiversity Conservation Center and International Socio-Ecological Union, Luonto-Liitto, and Global Forest Watch

States influenced by the program: Nationwide; see Figure 3.6 for locations in the lower 48 states.



Figure 3.6 Intact Forest Landscape Locations (<http://www.intactforests.org/pub.map.html>)

Website Link: <http://www.intactforests.org/pub.map.html>

Primary Goal: To preserve the last intact forests and the biodiversity they support.

General Description: Researchers recognize the special value of large natural areas for preserving all strata of biological diversity. Fragmentation and loss of natural habitats are the prime factors threatening plant and animal species with extinction. These maps provide a starting point for monitoring these last large, forest landscapes and are a baseline for a roadmap to recovery. An intact forest landscape is defined as territory within the forest zone, which contains forest and non-forest ecosystems minimally disturbed by human economic activity with an area of at least 200 sq. miles and with a minimal width of 6 miles.

Approach: The method used to map intact forest landscapes was based on a subtractive approach. Sources of information were analyzed to detect disturbed areas or infrastructure lines dividing natural landscape into separate isolated parts. All areas remaining after disturbed areas were identified are classified as intact forest landscapes, if they met the size criteria of at least 500 km² and a minimal width (diameter of the inscribed circle) of 6 miles. Areas that were not clearly identified as disturbed through this approach were assumed to be intact. Data used in the assessment included topographic maps and satellite images.

Results: This effort identified that less than one fourth of the world's forest zone remains as Intact Forest Landscape, equating to 8.8% of the Earth's land surface. Within the United States, 593,122 km² remains as Intact Forest Landscape with only 11% of this amount currently in a protected status. States identified with intact forests include California, Colorado, Florida, Georgia, Idaho, Minnesota, Montana, New Mexico, New York, North Carolina, Oregon, Utah, Washington, and Wyoming.

Program Citation: Greenpeace. Roadmap to Recovery: The world's last intact Forest landscapes. www.intactforests.org/pub.map.html

3.11 Conservation by Design

Coordinating Organization(s): The Nature Conservancy

Partners/Collaborators: Not indicated.

States influenced by the program: Nationwide

Website Link: conserveonline.org/workspaces/cbdgateway

Primary Goal: By 2015, The Nature Conservancy will work with others to ensure the effective conservation of places that represent at least 10% of every major habitat type on earth.

General Description: Conservation by Design represents a strategic framework to combine a collaborative, science-based approach with key analytical methods to assess and plan appropriate conservation actions.

Approach: The basic concepts of Conservation by Design include setting goals and priorities, developing strategies, taking action and measuring results. It is an iterative and adaptive approach that operates on multiple scales including Major Habitat Assessment (global), Ecoregional Assessment, and Conservation Action Planning. In general, the Major Habitat and Ecoregional Assessments emphasize setting goals and priorities while the Conservation Action Planning emphasizes developing and implementing strategies to address the priority and achieve goals. The Major Habitat Assessment level is outside the scope of this project but the Ecoregional Assessments and Conservation Action Planning are described in the following sections.

Results: The Nature Conservancy has protected more than 17 million acres in the United States. Conservation by Design was developed to provide a more strategic framework for future protection and is ongoing.

Program Citation: Baumgartner, J., T. Comendant, A. Erickson, J. Hardesty, P. Hardy, M. Hodgkins, A. Lehnhoff, M. Lipford, C. Macdonald and B. Northrup (chair). 2006. *Conservation By Design: A Strategic Framework for Mission Success*. Arlington, VA: The Nature Conservancy.

3.12 Ecoregional Assessments

Coordinating Organization(s): The Nature Conservancy

Partners/Collaborators: Federal and state agencies, and regional organizations as appropriate.

States influenced by the program: Nationwide; see Figure 3.7 for TNC ecoregions.

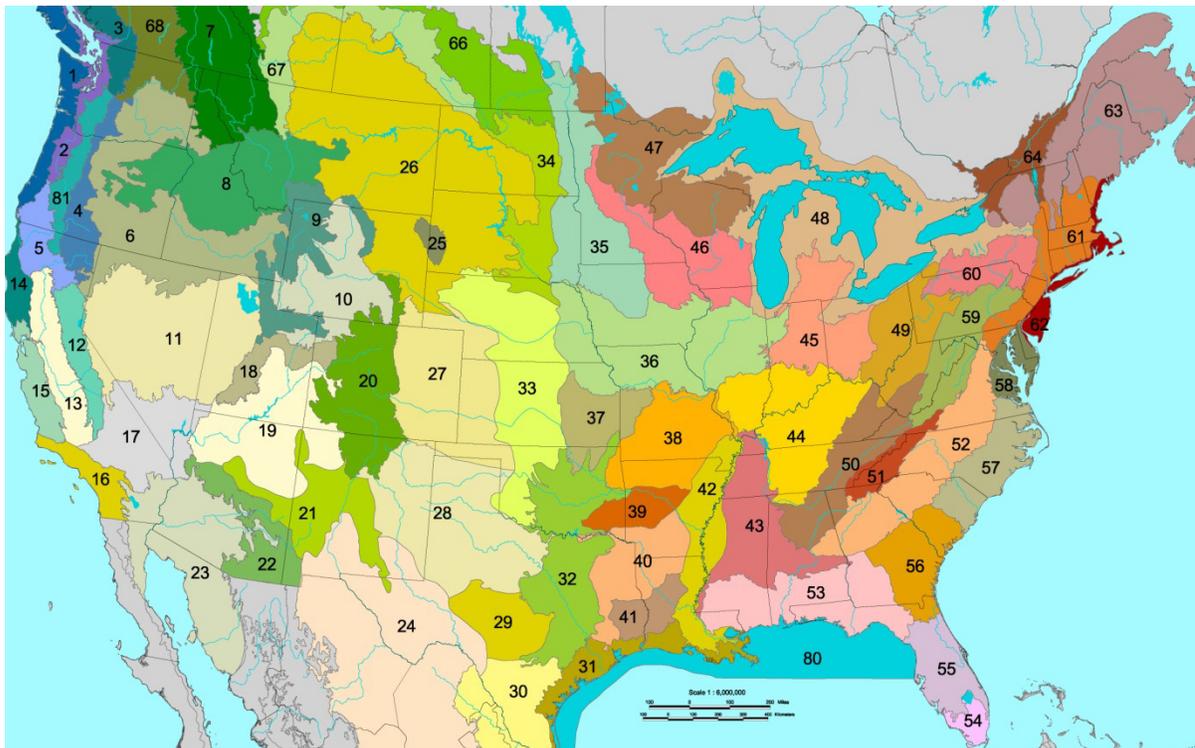


Figure 3.7 The Nature Conservancy Map of Ecoregions (www.tnc.org)

Website Link: conserveonline.org/workspaces/cbdgateway/era/

Primary Goal: To support and guide comprehensive and representative biodiversity protections at the ecoregion level.

General Description: To establish goals and priorities for the ecoregions identified in the Major Habitat Assessment, an Ecoregional Assessment works with partners to develop and disseminate finer-scale data on the distribution and status of biodiversity, habitat condition, current and future threats, and socio-political conditions that influence conservation success within those regions.

Approach: Primary guidelines used in the development of an ecoregional assessment follow.

1. Assemble an ecoregion team with multi-disciplinary capacity.
2. Engage key internal and external partners and stakeholders.
3. Seek peer review for all plans, content, and products.
4. Make all products, methods, and supporting data publicly available.
5. Use a consistent data management framework in accordance with internal and partner organization data standards.
6. Develop assessments within ecologically meaningful areas adopted or adapted from existing ecoregional classifications.
7. Select terrestrial, freshwater, and marine conservation targets/biodiversity elements/features across biological and spatial scales.
8. Develop explicit abundance and distribution goals for conservation targets/biodiversity elements.
9. Screen all target/biodiversity element occurrences for viability or ecological integrity.
10. Conduct an analysis of the severity and geographic scope of threats to the targets/biodiversity elements and their occurrences.
11. Design ecoregional portfolios to best meet the goals for all conservation targets/biodiversity elements, using the principles of efficiency, representation, irreplaceability, and functionality.
12. Set overall priorities for conservation action within the ecoregional portfolio/biodiversity vision and define institutional goals, roles and priorities.

Results: All or portions of 68 ecoregions are delineated within the lower 48 states. The results of The Nature Conservancy's ecoregional assessments are available through the Internet. Additional assessments are being added all the time and additional ecosystem targets as well (i.e., lakes and streams, riparian and wetland, etc.).

Program Citation: The Nature Conservancy and World Wildlife Fund. 2006. *Standards for Ecoregional Assessments and Biodiversity Visions*. Version: January 26, 2006. Arlington, VA: The Nature Conservancy.

3.13 Conservation Action Planning

Coordinating Organization(s): The Nature Conservancy

Partners/Collaborators: Developed at the regional or project level depending on the issues and needs addressed by the individual Conservation Action Planning effort.

States influenced by the program: Nationwide

Website Link: conserveonline.org/workspaces/cbdgateway/cap/

Primary Goal: To provide an integrated process for planning, implementing, and measuring conservation success for its conservation projects.

General Description: Major Habitat and Ecoregional Assessment priorities are stepped down to conservation strategies and actions through Conservation Action Planning. This planning level is used to design and manage conservation projects that advance conservation at any scale and range from

conserving species and ecosystems in a single watershed or landscape to efforts to reform regional or multi-national policies.

Approach: Ten primary steps are used in the CAP process.

1. Identify the people involved in the project.
2. Define scope and focal conservation targets.
3. Assess viability of focal conservation targets.
4. Identify critical threats.
5. Conduct situation analysis.
6. Develop strategies: objectives and actions.
7. Establish measures for results.
8. Develop a work plan.
9. Implement the plans.
10. Analyze, learn, adapt, and share.

Results: The CAP process has been picking up momentum over the past five years and has been completed or is in progress within many landscapes and watersheds across the country. Some of these efforts are available on the Internet but many can only be obtained by contacting The Nature Conservancy office in a state or region of interest. Several of the regional and state reports reviewed for this project have used the CAP process in the development of the plan.

Program Citation: No single document is available to describe the Conservation Action Planning program. Many tools and resources have been developed to support the Conservation Action Planning process and are available at the website link provided above.

3.14 Biodiversity Hotspots

Coordinating Organization(s): Conservation International

Partners/Collaborators: Not indicated.

States influenced by the program: Nationwide; see Figure 3.8 for Biodiversity Hotspots in the United States.

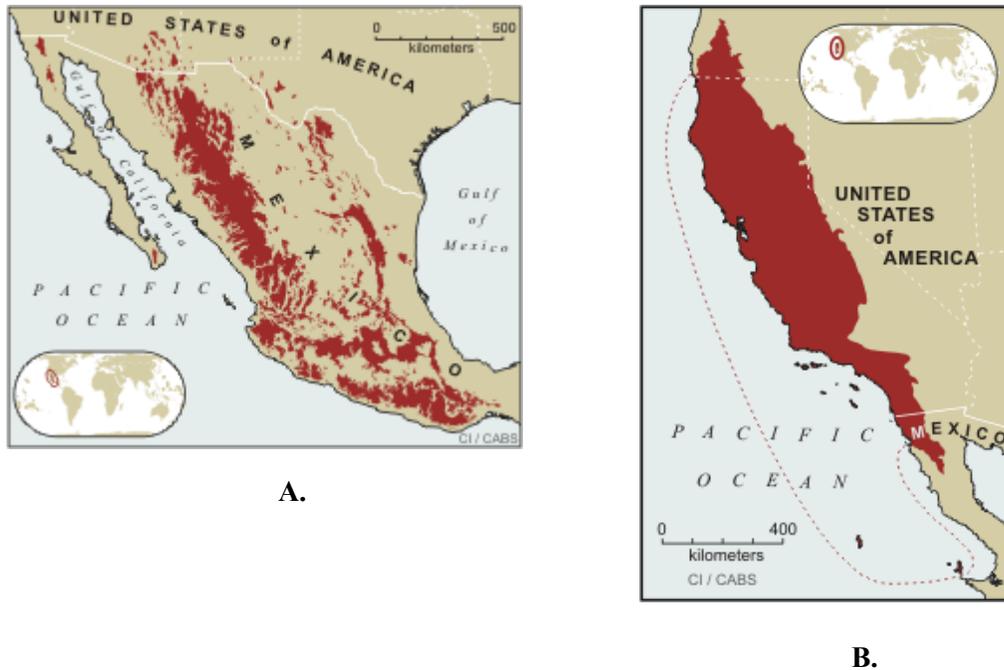


Figure 3.8a and 3.8b. Biodiversity Hotspots Located in or Partially Occurring in the United States (www.biodiversityhotspots.org)

Website Link: www.biodiversityhotspots.org

Primary Goal: To keep nature intact by stopping anthropogenic species extinctions.

General Description: In 1998, Norman Myers first defined the hotspot concept to address the dilemma of what areas are the most immediately important to protect for conservation of biodiversity. Hotspots are characterized both by exceptional levels of plant endemism and by serious levels of habitat loss. In 1989, Conservation International adopted Myers's hotspots as its institutional blueprint for biodiversity conservation. In 1999, Conservation International made the decision to undertake a global reassessment of the hotspots concept, including an examination of whether key areas had been overlooked. Hotspots were reevaluated to check on the status of existing hotspots, refine their boundaries, update the information associated with them, and consider a number of potential new hotspots. Six new hotspots were identified as a result of the reevaluation.

Approach: To qualify as a hotspot, a region must meet two strict criteria: it must contain at least 1,500 species of vascular plants (> 0.5% of the world's total) as endemics, and it has to have lost at least 70% of its original habitat.

Results: The updated analysis identified 34 biodiversity hotspots across the globe. In North America, the California Floristic Province and the northern portion of the Madresan Pine-Oak Woodlands are the only hotspots of relevance to this effort.

Program Citation: No single document is available to describe the Biodiversity Hotspot program. Please refer to the website provided above for a more complete description of the program.

3.15 Important Bird Areas

Coordinating Organization(s): Birdlife International, Audubon, and Partners In Flight

Partners/Collaborators: Birdlife International partners with Audubon and Partners In Flight in the United States to identify Important Bird Areas and advocate for their protection.

States influenced by the program: Nationwide. IBAs can be searched by state, habitat type, land use, ownership, and other factors at iba.audubon.org/iba/siteSearch.do.

Website Link: www.birdlife.org/action/science/sites/index.html ; web4.audubon.org/bird/iba/

Primary Goal: To identify and protect a key site network for birds and biodiversity, through joint efforts of governmental and non-governmental organizations and the public in general.

General Description: The Important Bird Areas (IBAs) program identifies priority areas for the conservation of globally threatened, range restricted, and congregatory birds. These areas are also excellent indicators of biodiversity richness and are therefore important for a wide range of species. IBAs are identified using globally agreed to criteria to ensure consistency among sites.

Approach: A site qualifies as an IBA if it holds species that trigger one or more of the following criteria:

1. Globally Threatened Species - based on IUCN Red List criteria;
2. Range Restricted Species - with distribution of 50,000 km² or less;
3. Biome Restricted Species - found only within a particular biome, and or habitat;
4. Congregations of significant numbers of birds – sites with a high concentration of seabirds, shorebirds, aquatic and migratory birds based on global population estimates.

Results: Approximately 47 states have identified more than 2,500 sites, encompassing more than 380 million acres. IBAs are a voluntary program with no regulatory authority. Private land will be included in the program only with the approval of the land owner. Conservation objectives and alternatives for selected IBA sites will be set with the cooperation of land owners and managers, as well as other interested parties. IBAs on private land will only be identified to the public with the approval of the private land owner. A map of IBAs is not available to the public.

Program Citation: No single document is available to describe the Important Bird Areas program. Please refer to the website provided above for a more complete description of the program.

3.16 Endemic Bird Areas

Coordinating Organization(s): Birdlife International

Partners/Collaborators: Not indicated.

States influenced by the program: Nationwide. Four areas are identified in the lower 48 US states.

California EBA – California, Oregon

Michigan jack pine savanna EBA (secondary area) - Michigan

Edwards Plateau EBA (secondary area) - Texas

Northern Sierra Madre Oriental EBA - Texas

Website Link: www.birdlife.org/action/science/endemic_bird_areas/index.html

Primary Goal: To evaluate the world's bird species and identify species which are endemic to a specified region.

General Description: Of the world's 10,000 or more bird species, more than 2,500 are considered to be endemic (range smaller than 50,000 km²). Endemic Bird Areas (EBAs) contain nearly all of the world's restricted-range bird species with only 7% of restricted-range species not overlapping with other such species and therefore not occurring within an EBA. The EBAs are also believed to support many of the world's more widespread bird species. BirdLife indicates that half of all restricted-range species are identified as globally threatened or near-threatened and the other half remain vulnerable to the loss or degradation of habitat owing to the smallness of their ranges.

The majority of BirdLife's EBAs are also described as important for the conservation of restricted-range species from other animal and plant groups. For example, they identify an overlap of 70% between the location of EBAs and areas that are similarly important for endemic plants globally. The natural habitat in most EBAs (83%) is described as forested with particular emphasis on tropical lowland forest and moist montane forest. EBAs vary considerably in size, from a few square kilometers to more than 100,000 km², as well as in the numbers of endemic species that they support (from 2 to 80).

Approach: BirdLife has identified regions of the world where the distributions of two or more restricted-range species overlap. These regions of overlap, which are considered to be relatively rich in endemic bird species compared to other parts of the world, are identified as Endemic Bird Areas (EBAs).

Results: To date, 218 Endemic Bird Areas have been identified worldwide. Within the United States, three EBAs (in California, Michigan, and Texas) could be relevant to this effort.

Plan Citation: No single document is available to describe the Endemic Bird Areas program. Please refer to the website provided above for a more complete description of the program.

3.17 Globally Important Bird Areas of the United States

Coordinating Organization(s): American Bird Conservancy

Partners/Collaborators: American Birding Association, the North American Bird Conservation Initiative, Partners in Flight, the North American Waterfowl Management Plan, the North American Waterbird Conservation Plan, and the U.S. Shorebird Conservation Plan.

States influenced by the program: Nationwide

Website Link: www.abcbirds.org/abcprograms/domestic/iba/index.html

Primary Goal: Identify and document the most important bird areas and mobilize the resources needed to protect them.

General Description: The American Bird Conservancy Globally Important Bird Areas (IBAs) program was launched in 1995. It identifies those sites of significance on a global level and represents national wildlife refuges, national parks and forests, state lands, conservation organization lands, and some private lands. The program was developed using objective scientific information and by relying on the recommendations of experts throughout the US.

Approach: A site qualifies as an IBA if, during at least some part of the year, it contains critical habitat that supports

1. a significant population of an endangered or threatened species;
2. a significant population of a Watch List species;
3. a significant population of a species with a limited range;
4. a significantly large concentration of breeding, migrating, or wintering birds including waterfowl, seabirds, wading birds, raptors, or landbirds.

Results: Over 500 Important Bird Areas have been identified in the United States, with each state represented by one or more IBAs. Private ownership accounts for 1.6% of the total ownership of Globally Important Bird Areas in the United States. Federal and state ownership accounts for nearly 88% of the total ownership.

Program Citation: No single document is available to describe the Globally Important Bird Areas program. Please refer to the website provided above for a more complete description of the program.

3.18 RAMSAR Wetland Sites

Coordinating Organization(s): Wetlands International

Partners/Collaborators: RAMSAR Convention on Wetlands (currently 154 member countries to the convention).

States influenced by the program: Nationwide; see Figure 3.9 for RAMSAR wetland sites in the United States.

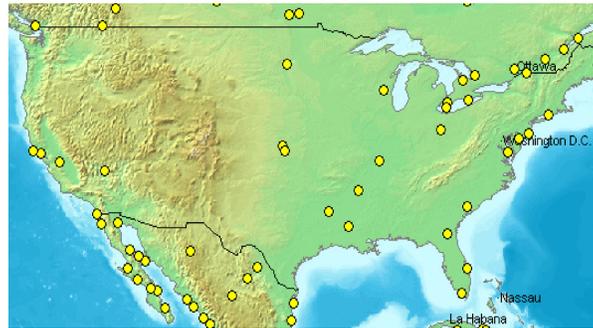


Figure 3.9 RAMSAR Wetland Sites Located in the United States (lower 48)

Website Link: www.ramsar.org/cda/en/ramsar-about-sites/main/ramsar/1-36-55_4000_0

Primary Goal: Identify and document the most important bird areas and mobilize the resources needed to protect them.

General Description: The RAMSAR Convention on Wetlands is an intergovernmental treaty which provides the framework for national action and international cooperation and wise use of wetlands and their resources. The Convention uses a broad definition of the types of wetlands covered, including swamps and marshes, lakes and rivers, wet grasslands, peatlands, etc. Each member country is committed to designating at least one wetland site that meets the criteria for inclusion in the “RAMSAR List” and ensuring the ecological quality of that site.

Approach: The criteria for identifying a RAMSAR Site include 1) sites containing representative, rare, or unique wetland types; and/or 2) sites of international importance for conserving biological diversity.

Results: To date, over 1,700 RAMSAR sites have been designated in 158 countries. In the United States, 26 RAMSAR sites have been identified for a total of nearly 1.5 million hectares. A search of the RAMSAR database showed three sites in the US totaling 113,634 ha that have forestry as a land use within or outside the catchment. Those three sites are

- Cache-Lower White Rivers (Arkansas);
- Caddo Lake (Texas and Louisiana); and
- Cache River and Cypress Creek Wetlands (Illinois).

Program Citation: No single document describes the RAMSAR Wetland Sites program. However, the following document provides more specific information on the criteria for selection of sites: Strategic Framework and Guidelines for the Future Development of the List of Wetlands of International Importance of the Convention on Wetlands (Ramsar, Iran, 1971) third edition, as adopted by Resolution VII.11 (COP7, 1999) and amended by Resolutions VII.13 (1999), VIII.11 and VIII.33 (COP8, 2002), IX.1 Annexes A and B (COP9, 2005), and X.20 (COP10, 2008). Please refer to the website provided above for a more complete description of the program.

3.19 National Fish Habitat Action Plan

Coordinating Organization(s): National Fish Habitat Initiative

Partners/Collaborators: State and federal agencies, tribes, non-governmental organizations, businesses, industry, and fisheries professionals.

States influenced by the plan: Nationwide

Website Link: www.fishhabitat.org

Primary Goal: To protect, restore, and enhance the nation’s fish and aquatic communities.

General Description: The National Fish Habitat Action Plan focuses on fish and their habitats as keystones for the full range of aquatic biodiversity and aquatic habitats in the United States. The plan is science-based, voluntary, non-regulatory, and offers a nationwide strategy to protect or restore fish habitat and aquatic communities. It works at federal, state, tribal and local levels to target new and existing funding and technical resources for fish habitat projects.

Approach: The plan uses existing and emerging science-based tools to target priority areas and identify causative factors and best management practices. The science and data strategy identifies four associated activities: 1) identify causative factors for declining fish populations, 2) utilize an integrated landscape approach, 3) assess and classify the nation's fish habitats, and 4) provide partners easy access to science and data information.

Implementation: The plan will be implemented through four strategies: 1) support existing fish habitat partnerships and foster new efforts; 2) mobilize and focus national and local support for achieving fish habitat conservation goals; 3) measure and communicate the status and needs of aquatic habitats; and 4) provide national leadership and coordination to conserve fish habitats. Sixteen fish habitat partnerships have been developed to implement this plan. An example of a regional plan developed to meet the objectives of the National Fish Habitat Action Plan is the Southeast Aquatic Habitat Plan found in Section 4, Southeast region.

Plan Citation: National Fish Habitat Initiative. 2006. *National Fish Habitat Action Plan*. Washington, DC: Association of Fish and Wildlife Agencies. 28 pp.

3.20 Watershed Planning

Coordinating Organization(s): U.S. Environmental Protection Agency

Partners/Collaborators: As appropriate, states and tribes develop partnerships with local, regional, state, tribal, and federal agencies, conservation districts, public interest groups, industries, academic institutions, private landowners, concerned citizens, and others.

States influenced by the program: Nationwide

Website Link: iaspub.epa.gov/watershedplan/watershedPlanning.do?pageId=48&navId=35

Primary Goal: To provide a road map to help identify the problems, set goals, and implement solutions in a watershed.

General Description: The U.S. Environmental Protection Agency watershed planning program advocates a watershed approach that strives to prevent pollution, achieve and sustain environmental improvements, and meet other goals important to the community. Actions developed through the watershed planning process are based upon shared information and a common understanding of the roles, priorities, and responsibilities of all involved stakeholders.

Approach: The watershed planning program envisions locally driven, watershed-based activities embedded in comprehensive state and tribal watershed approaches. This approach uses four guiding principles: 1) stakeholder involvement; 2) specific geographic areas (i.e., watershed); 3) coordinated management activities; and 4) use of scientific data, tools, and techniques in an iterative decision making process. The decision making process includes

- assessment and characterization of the natural resources (includes habitat and endangered species), and the communities that depend upon them;
- goal setting (includes habitat);
- problem prioritization and resource targeting;
- development of specific management options and watershed (action) plans;
- implementation; and
- monitoring and evaluation.

Results: There are many watershed plans in place or being developed across the country at varying watershed sizes and scales, depending on the objectives of the stakeholders. Many of these include assessments and goal setting that address endangered species or biodiversity objectives. Some of these are identified and described on EPA websites. Others may be identified by contacting the state or tribal agency responsible for water quality programs in a geographic area or watershed of interest.

Program Citation: Not available.

4.0 REGIONAL CONSERVATION PLANNING INITIATIVES

4.1 Priority Areas for Freshwater Conservation Action: A Biodiversity Assessment of the Southeastern United States

Coordinating Organization(s): The Nature Conservancy

Partners/Collaborators: State and federal agencies, academic institutions, industry, and conservation organizations.

Year Completed: 2002

States influenced by the plan: See Figure 4.1.



Figure 4.1 Southeastern Ecoregions Included in the Biodiversity Assessment of Freshwater Biodiversity Conservation (Smith et al. 2002)

Website Link: conserveonline.org/coldocs/2003/08/se_biodiv_assess.pdf

Primary Goal: Identify the most important areas for freshwater biodiversity conservation in the southeastern United States.

General Description: Provides a detailed and comprehensive assessment of freshwater species and systems to identify a set of priority conservation areas in four specific aquatic regions, based on World Wildlife Fund's definition of freshwater ecoregions: 1) Tennessee-Cumberland, 2) Mobile Bay, 3) South Atlantic, and 4) Mississippi Embayment.

Approach: Conservation areas were identified using the Conservation Action Planning (CAP) process in each of the four freshwater regions. Six primary steps were used in this process: 1) stratify regions into Ecological Drainage Units; 2) select conservation targets (aquatic species and systems) as the focus of conservation assessment efforts; 3) set conservation goals for targets; 4) identify viable occurrences of targets; 5) delineate conservation areas within each freshwater ecoregion; and 6) identify data gaps and research needs. Regional experts provided detailed and up-to-date knowledge of the targets, their distribution and status, and the threats to their viability and persistence. Expert workshops were conducted in each of the four freshwater ecoregions.

Results: Tennessee-Cumberland – 135 species targets and 120 aquatic systems; 70 conservation areas

Mississippi Embayment – 82 species targets and 160 aquatic systems; 79 conservation areas

South Atlantic – 118 species targets and 176 aquatic systems; 107 conservation areas

Mobile Region – 142 species targets and 115 aquatic systems; 100 conservation areas

Plan Citation: Smith, R.K., P.L. Freeman, J.V. Higgins, K.S. Wheaton, T.W. FitzHugh, K.J. Ernstrom, and A.A. Das. 2002. *Priority Areas for Freshwater Conservation Action: A Biodiversity Assessment of the Southeastern United States*. Arlington, VA: The Nature Conservancy.

4.2 Southeast Aquatic Habitat Plan

Coordinating Organization(s): Southeast Aquatic Resource Partnership, a sub-region of the National Aquatic Habitat Initiative.

Partners/Collaborators: State and federal agencies, regional and local governments, businesses, conservation organizations, academia, scientific societies, and private citizens.

Year Completed: 2008

States influenced by the plan: See Figure 4.2.



Figure 4.2 Location of Priority Watersheds Selected by SARP Conservation Action Planning

Website Link: www.sarpaquatic.org/habitat.shtml

Primary Goal: Provide the basis from which the Southeast Aquatic Resource Partnership (SARP) can lead the development of the Southeast Aquatic Habitat Plan directed at reversing current trends and protecting aquatic resources of the region.

General Description: One of SARP's primary objectives is to address the lack of a focused regional effort by leading the development of a Southeast Aquatic Habitat Plan. This project takes the first step toward the design of that plan. It was designed to conduct watershed-scale planning in four priority watersheds chosen by SARP (see Figure 4.5). The conservation plans for the four priority watersheds are included as "case studies." Lessons learned from these plans and other resources will be used in the development of a Southeast Aquatic Habitat Plan, including recommendations on new partnerships to implement the plan.

Approach: This project uses The Nature Conservancy's finer-scale, watershed-level process, known as Conservation Action Planning, as its approach. This approach identifies 1) conservation targets of concern in a planning area, 2) stresses, 3) sources of stress, and 4) conservation strategies. This methodology was applied to each of the four priority watersheds.

Results: Conservation Action Plans were developed for each of the four priority watersheds:

Roanoke River – identified 8 conservation targets and 11 conservation objectives /strategic actions

Duck River – identified 7 conservation targets and 8 conservation objectives /strategic actions

Altamaha River – identified 8 conservation targets and 20 conservation objectives /strategic actions

Pascagoula River – identified 4 conservation targets and 4 conservation objectives/strategic actions.

Plan Citation: Southeast Aquatic Resources Partnership. 2008. *Southeast Aquatic Habitat Plan*. Southeast Aquatic Resources Partnership. southeastaquatics.net/uploads/document_pdfs/SAHP08.pdf.

4.3 South Atlantic Migratory Bird Initiative

Coordinating Organization(s): South Atlantic Migratory Bird Initiative of the Atlantic Coast Joint Venture

Partners/Collaborators: State and federal agencies and conservation organizations.

Year Completed: 2004

States influenced by the plan: See Figure 4.3.

Website Link: www.acjv.org/documents/sambi_plan.pdf

Primary Goal: Integrate common goals and objectives of existing international, national, regional, and local migratory bird planning efforts, to achieve healthy ecosystems and healthy bird populations in the midst of increasing threats along the Atlantic Coast.

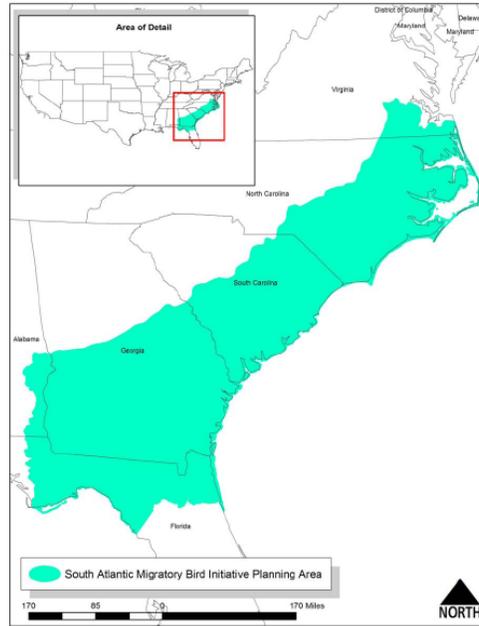


Figure 4.3 The Area Included in the South Atlantic Migratory Bird Initiative (Watson and McWilliams 2005)

General Description: Provides a regional scale framework for the conservation of waterfowl, shorebirds, waterbirds, landbirds, and other high priority species. The framework utilizes existing national and regional plans of the North American Waterfowl Management Plan (NAWMP), U.S. Shorebird Conservation Plan, Partners In Flight, North American Waterbird Conservation Plan, and the Northern Bobwhite Conservation Initiative.

Approach: The plan developed three primary components to achieve its goals.

1. *Setting population and habitat objectives.* Derived from three primary sources including other existing national and regional plans, bird initiative workshops, and local/regional knowledge and expertise.
2. *Delineating focus areas.* Focus areas are identified to link important habitat areas, guard against fragmentation, and link existing protected areas. Emphasis was placed on public lands, other protected areas, and areas of high avian resource value. Existing waterfowl focus areas were often used as starting points to delineate “all bird” focus areas.
3. *Determining priority species and habitat.* Existing national and regional plans were used to derive the list of priority species and habitat, except waterfowl. Priority waterfowl species were selected based upon population analyses at the continental, regional and local levels, and NAWMP priorities.

Results: Detailed goals and objectives were developed for each of the three components, by region and state.

Plan Citation: Watson, C. and K. McWilliams. 2005. *The South Atlantic Migratory Bird Initiative Implementation Plan*. US Fish and Wildlife Service, Region 4.

4.4 Southern Appalachian Forest Plan

Coordinating Organization(s): Southern Appalachian Forest Coalition

Partners/Collaborators: Twenty-four conservation organizations.

Year Completed: 2002

States influenced by the plan: See Figure 4.4.

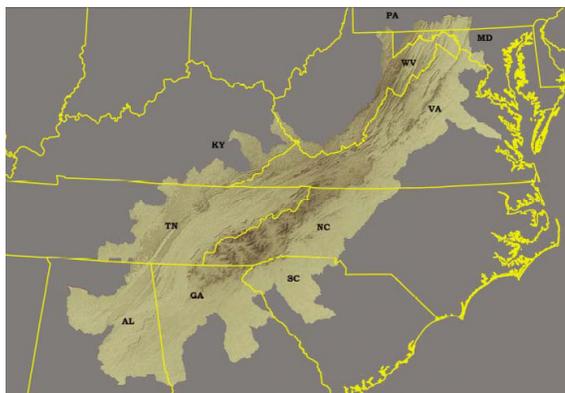


Figure 4.4 The Area Encompassed by the Southern Appalachian Forest Plan (Irwin et al. 2002)

Website Link: www.safc.org/campaigns/

Primary Goal: Sustain healthy populations of native species, generate clean water and air, and satisfy the increasing demand for fulfilling backcountry recreation.

General Description: The document outlines an Action Plan to use existing and new information to identify valuable natural areas and a means by which they can be restored or sustained. These areas would then be permanently protected through changes to existing land uses on public lands, acquisition of private lands, or incentives for private land management.

Approach: The plan used a combination of ecoregion divisions and watershed boundaries to delineate and describe important features. Protecting and restoring conservation building blocks within core areas of habitat and linking these areas together were the primary processes used in this plan. Efforts to identify conservation building blocks were concentrated on national forest lands, where they offer opportunity for protection. Building blocks included 1) protected natural areas, 2) unprotected natural areas, 3) old growth forests, 4) biological hotspots, 5) aquatic watersheds, 6) high priority areas for public acquisition, 7) conservation easement areas, and 8) cultural and heritage areas.

Results: The plan identified 2.8 million acres of unprotected natural areas (766,316 “roadless” acres and 884,315 “mountain treasures” acres), old growth (223,402 acres), biological hotspots (258,457 acres), critical watersheds (712,852 acres), and cultural areas (12,400 acres) that are proposed for some form of permanent protection. These acres consist of 16 core landscape conservation areas ranging in size from 1,000 acres to more than 272,000 acres. The plan emphasized that restoration efforts should benefit five focal elements: 1) American chestnut, 2) black bear, 3) beaver, 4) large predators, and 5) rare species and rare communities.

Plan Citation: Irwin, H., S. Andrew, and T. Bouts. 2002. *Return the Great Forest: A Conservation Vision for the Southern Appalachian Region*. Asheville, NC: Southern Appalachian Forest Coalition. 113 pgs.

4.5 Southeastern Ecological Framework Project

Coordinating organization(s): US Environmental Protection Agency, Region 4

Partners/Collaborators: University of Florida GeoPlan Center and the planning and Analysis Branch, USEPA Region 4

Year Completed: 2002

States influenced by the plan: See Figure 4.5.

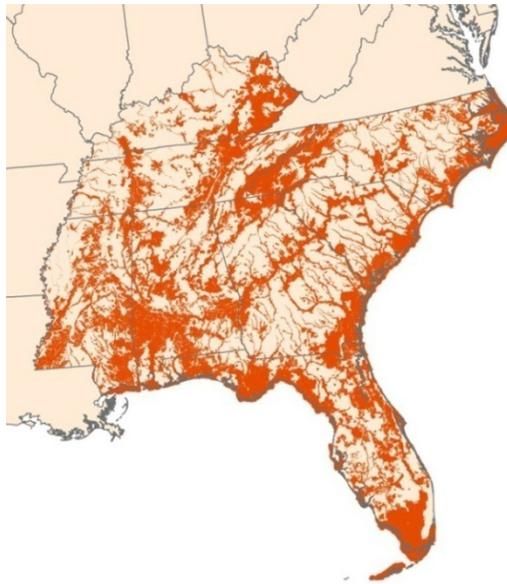


Figure 4.5 Location of Priority and Significant Ecological Areas in the Project Area

Website Link: www.geoplan.ufl.edu/epa/

Primary Goal: Use a regional landscape approach to identify ecologically functional system of areas of ecological significance in the southeastern United States.

Approach: The Southeastern Ecological Framework (SEF) modeling process is based on the methodology used to delineate the Florida Ecological Network developed by the University of Florida. In this model, core areas, landscape linkages or connectivity zones, and buffer zones were identified to 1) maximize protection for the most sensitive species, 2) provide enough space for viable populations of wide-ranging species, 3) maintain functional ecological processes and services, and 4) provide opportunities for biota to functionally respond to future environmental changes. Three primary steps were used in the process: 1) the identification of priority and significant ecological areas, 2) the identification of ecological hubs, and 3) the identification of landscape linkages.

Results: The assessment indicated Priority Ecological Areas (PEAs) encompassed 34% of the region, and Significant Ecological Areas (SEAs) encompasses 30% of the region. PEAs and SEAs combined represented 42% of the region. Hubs were then identified from PEAs > 5,000 acres in size and represented 30% of the region. The Southeastern Ecological Framework (SEF) included the Hubs, all ecological linkages or corridors along major rivers and other suitable landscape features that could functionally connect or smooth the boundaries of Hubs. The resulting SEF represents 43% of the overall project region (USFWS Region 4).

Plan Citation: Carr, M., T. Hctor, C. Goodison, P. Zwick, J. Green, P. Hernandez, C. McCain, J. Teisinger, and K. Whitney. 2002. *Southeastern Ecological Framework. Final report.* Atlanta, GA: U.S. Environmental Protection Agency Region 4. 295 pp.

4.6 Chattooga Watershed Conservation Plan

Coordinating organization(s): Chattooga River Watershed Coalition (Conservancy)

Partners/Collaborators: Chattooga River Watershed Coalition, the Southern Appalachian Forest Coalition, and The Conservation Fund.

Year Completed: Not identified

States influenced by the plan: Portions of Georgia, South Carolina, North Carolina; see Figure 4.6.



Figure 4.6 The Chattooga River Watershed (www.chattoogariver.org)

Website Link: www.chattoogariver.org/ccp/ccp.htm

Primary Goal: The plan seeks to identify, restore, and protect large blocks of un-fragmented forest habitat representing all native forest types in the Chattooga River watershed.

General Description: Using the best available information, the Chattooga Conservation Plan presents a common sense approach to preserving, restoring, and maintaining the native forest ecosystems in the Chattooga River watershed. Public lands make up 70% of the Chattooga River watershed and private lands comprise approximately 30%. The Chattooga Conservation Plan is expected to serve as a starting point for the private landowner by helping to outline the ecological context in which their property lies. Furthermore, land trust arrangements, conservation easements, and sustainable forestry plans, some of which are currently being implemented under the Chattooga River Watershed Coalition's "Private Forestry Initiative," can make conservation management economically viable for the private land owner.

Approach: The plan proposed three special management areas in the Chattooga River watershed: 1) Core/Wildlife Corridor Protection Area, 2) Cooperative Ecological Restoration Management Areas, and 3) Sustainable Economic Development Management Areas. The criteria for selection of these areas were a mix of "ecosystem management principles," "core, corridor and restoration area principles" (conservation biology and fragmentation), and geographic information system (GIS) technology. These principles led to a focus on two types of habitat: mature interior forest, and shaded, un-silted mountain streams.

Results: The plan resulted in 111,500 acres, or 62% of the watershed, identified as Core/Wildlife Corridor Protection Areas. Lands surrounding Core/Wildlife Corridor Protection Areas on both public and private lands were identified as suitable Cooperative Ecological Restoration Management Areas. Private lands in areas of the watershed with higher population densities were identified as suitable Sustainable Economic Development Management Areas.

Plan Citation: Chattooga River Watershed Coalition. Year unknown. *Chattooga Watershed Conservation Plan*. 35 pp.

4.7 Southern Appalachian Ecosystem – Imperiled Fishes

Coordinating organization(s): U.S. Fish and Wildlife Service for the Southern Appalachian Ecosystem Team

Partners/Collaborators: Members of the Southern Appalachian Ecosystem Team are not identified.

Year Completed: 2002

States influenced by the plan: See Figure 4.7.

Website Link: ichthyology.usm.edu/sfc/articles/saefishreport.pdf

Primary Goal: Enhance the Team's knowledge and understanding of the Southern Appalachian Ecosystem (SAE) (boundary defined by USFWS) imperiled fish fauna and manage aquatic faunas on an ecosystem scale.

General Description: A multi-species assessment of fish taxa in the Southern Appalachian Ecosystem.

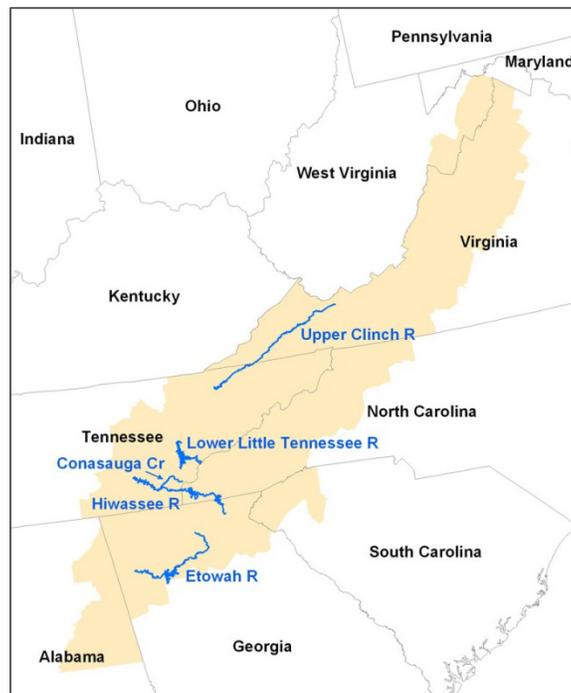


Figure 4.7 High Priority Streams within the Southern Appalachian Ecosystem

Approach: Existing information was used to 1) generate an annotated table of potentially imperiled fishes, 2) compile a list of fishes protected under ESA, 3) compile a list of fishes considered currently stable, 4) determine single drainage endemics and those fishes that occur exclusively in the SAE, 5) develop a list of fishes recommended for addition as USFWS Region 4 “Species of Concern,” and 6) develop a list of imperiled SAE fishes deemed to have the highest relative degree of imperilment and thus in greatest need of assessment. Stream systems having the highest priority for conservation attention were identified based on the level of extant imperiled fish fauna, using a point system weighted towards the more imperiled and endemic fauna. Emphasis was placed on the non-federally listed fish fauna of the SAE.

Results: Conservation status was assigned to or deemed warranted for 58 (19%) of the total 298 taxa identified for the SAE. Sixteen of these species are currently protected under the ESA. Five rivers were identified as the highest priority stream systems in the SAE and included the Etowah, Conasauga, Little Tennessee, Clinch, and Hiwassee Rivers. Twenty one taxa were identified as critically imperiled, with 16 of these endemic to the SAE.

Plan Citation: Butler, R.S. 2002. *Imperiled Fishes of the Southern Appalachian Ecosystem, with Emphasis on the Non-Federally Listed Fauna*. Prepared for The Southern Appalachian Ecosystem Team, U.S. Fish and Wildlife Service. 45 pp.

4.8 Y2Y Priority Areas

Coordinating Organization(s): Yellowstone to Yukon Conservation Initiative

Partners/Collaborators: Building and supporting collaborative initiatives among organizations, scientists, agencies, communities, land trusts, and businesses.

Year Completed: Ongoing

States influenced by the plan: Washington, Oregon, Idaho, Montana, and Wyoming; see Figure 4.8.

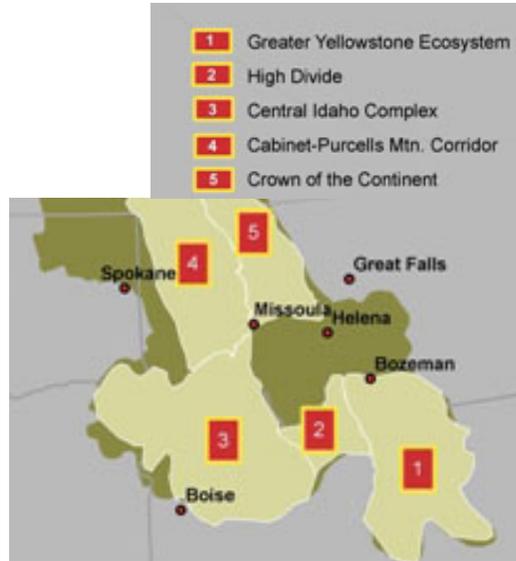


Figure 4.8 Y2Y Priority Areas (US only)

Website Link: www.y2y.net/Default.aspx?cid=14&lang=1

Primary Goal: To identify priority areas in the Y2Y region that function either as core wildlife habitat, particularly for grizzly bears, or as key corridors connecting those core areas.

General Description: The Y2Y priority areas program identifies areas for their value as large, intact watersheds. Within these areas, Y2Y strives to build and support collaborative initiatives among organizations, scientists, agencies, communities, land trusts, and progressive businesses to identify resources and implement on-the-ground actions to achieve their conservation goals.

Approach: The conservation needs of grizzly bears are used as an overall indicator of biodiversity, with a secondary focus on bird and fish conservation needs. The Y2Y region was evaluated relative to its value as core wildlife habitat or as key movement corridors connecting the core areas.

Results: Twelve priority areas are identified, five of these occurring in the US portion of the Y2Y region including the Greater Yellowstone Ecosystem, the High Divide, the Central Idaho Complex, the Cabinet-Purcell Mountain Corridor, and the Crown of the Continent.

Plan Citation: No single document is available to describe the Y2Y Priority Areas program. Please refer to the website provided above for a more complete description of the program.

4.9 Two Countries, One Forest (2C1 Forest)

Coordinating Organization(s): Two Countries, One Forest

Partners/Collaborators: Canadian-US collaborative of 50 conservation organizations, researchers, and foundations.

Year Completed: Ongoing

States influenced by the plan: New York, Vermont, New Hampshire, and Maine; see Figure 4.9.



Figure 4.9 2C1 Forest Project Area

Website Link: www.2C1forest.org

Primary Goal: To work for the transformation of parks, refuges and forests across the Northern Appalachian Acadian ecoregion into a living, breathing ecosystem for species, plant and animal, large and small.

General Description: The Two Countries, One Forest is an international collaborative of 50 organizations dedicated to using landscape conservation to protect and maintain the Northern Appalachian/Acadian ecoregion.

Approach: To realize the goals of the organization by working and thinking at an ecoregional level, and within ecological borders versus political boundaries, defining a clear framework of understanding and developing a network that facilitates and support a cross-border sharing of vital information, and using the basic principles of science-based, landscape-level conservation. 2C1 Forest will serve as a forum to enhance collaboration, harness cutting-edge science, and promote ecoregional conservation and restoration. Its priorities are to support major science/policy studies on ecological trends in the region, to map and save key habitats and corridors, and to educate people in the ecoregion on its vast ecological wealth and conservation potential.

Results: Five priority linkages have been identified, four of these occurring in the US: 1) Black River Valley (within New York state), 2) Lake Champlain Valley (Adirondacks to Vermont), 3) Green-Sutton Mountains (Vermont to Quebec), and 4) Gaspé Peninsula (Northern Maine).

Plan Citation: No single document is available to describe the entire 2C1 Forest program. However, the following report summarizes portions of the program.

Trombulak, S.C., M.G. Anderson, R.F. Baldwin, K. Beazley, J.C. Ray, C. Reining, G. Woolmer, C. Bettigole, G. Forbes, and L. Gratton. 2008. *The Northern Appalachian/Acadian Ecoregion: Priority Locations for Conservation Action*. Special Report No. 1. Toronto, ON: Two Countries, One Forest.

4.10 Wildlife Corridors Initiative

Coordinating Organization(s): Western Governors' Association

Partners/Collaborators: Multi-state, collaborative effort that includes six working groups of the Western Governors' Association: Science, Oil and Gas, Energy, Climate, Land Use, and Transportation.

Year Completed: 2008

States influenced by the plan: California, Colorado, Idaho, Montana, Oregon, Washington and Wyoming.

Website Link: www.westgov.org/index.php?option=com_wga&view=reports&Itemid=54&limitstart=4

Primary Goal: To identify key wildlife corridors and crucial wildlife habitats in the West and coordinate implementation of needed policy options and tools for preserving those landscapes.

General Description: In 2007, the Western Governors' Association unanimously approved a resolution to protect wildlife migration corridors and crucial wildlife habitat in the West. To implement this resolution, WGA launched the WGA Wildlife Corridors Initiative that identified six separate working groups charged with developing findings and recommendations on various aspects of wildlife corridors and crucial habitat.

Approach: Each of the six working groups worked independently to evaluate existing information and develop a report related to the objectives of their work group.

Results: A final report was produced by the six working groups and approved by the Governors. The following priorities were identified: 1) coordinate and implement steps that foster establishment of a "Decision Support System" within each state, 2) establish policies that ensure information from state-led Decision Support Systems is considered early in planning and decision-making process, 3) make the WGA Western Renewable Energy Zone project a model for applying the wildlife corridors recommendations, and 4) seek funding from state and local sources, and from private foundation to support the WHCC.

Plan Citation: Western Governors' Association. 2008. Western Governors' Association Wildlife Corridors Initiative.

5.0 STATE CONSERVATION PLANNING INITIATIVES

5.1 Alabama

Alabama Wildlife Action Plan

Coordinating Organization(s): Alabama Department of Conservation and Natural Resources, Division of Wildlife and Freshwater Fisheries

Partners/Collaborators: State and federal agencies, Alabama Forestry Commission, conservation organizations, and many others. Plan developed by Terwilliger Consulting, Inc., in collaboration with Conservation Southeast, Inc.

Year Completed: 2005

Area included in the plan: State of Alabama

Website Link: www.wildlifeactionplans.org/alabama.html

Primary Goal: Identify and conserve those species in greatest need for conservation action while also addressing the full array of wildlife and habitats.

General Description: The Alabama Wildlife Action Plan provides direction for and coordination of wildlife conservation efforts in Alabama for the next decade. The plan identifies conservation actions that will be an essential foundation for the future of wildlife conservation, as well as a stimulus to engage federal, state, local public, and private conservation partners to strategically coordinate their individual roles in prioritizing state wildlife conservation efforts.

Approach: Species of Greatest Conservation Need (SGCN) were developed by involving key partners and stakeholders representing a cross section of scientific expertise and land use stakeholders. Every native species was assigned a status based on expert opinion and review by the taxa committees. Key habitats were classified using the National Vegetation Classification (NVC) and 66 ecological systems were mapped using NatureServe. The identification of key habitats involved input and analysis/review by representatives, scientific advisory committees, and stakeholders. This review resulted in the grouping of the NVC ecological systems to produce key habitats.

Results: In total, 304 species were identified as SGCN: 24 mammal species, 28 birds, 40 reptiles and amphibians, 57 fishes, and 155 invertebrates. SGCN were associated with 15 key habitats and 15 river basins. These 15 key habitats included 6 forested systems, along with wetland communities and other unique habitat such as caves and coastal beaches.

Plan Citation: Wildlife and Freshwater Fisheries Division, Alabama Department of Conservation and Natural Resources. 2005. *Conserving Alabama's wildlife: A Comprehensive Strategy*. Montgomery, AL: Alabama Department of Conservation and Natural Resources. 322 pp.

Alabama Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Alabama Forestry Commission

Partners/Collaborators: Alabama Department of Conservation and Natural Resources, Alabama Department of Environmental Management, Alabama Forest Resources Center.

Year Completed: 2010

Area Included: State of Alabama

Website Link: http://www.forestry.alabama.gov/State_Assessment.aspx?bv=2&s=3

Primary Goals: The Assessment seeks to determine 1) conditions and trends of Alabama forest resources, 2) threats to forest resources, 3) areas or regions in the state that are priorities, and 4) any multi-state areas that are regional priorities. The Strategy describes 1) how to address threats to Alabama's forest resources and 2) resources needed to implement those statewide strategies.

Key Assessment Findings: The Assessment identified nine threats to forest resources that include urban growth and development, fragmentation and parcelization, invasive species, changing markets, insects and diseases, wildfire, catastrophic natural events, air quality, and climate change.

Key Strategies: The document presents multiple goals, objectives, and strategies to address the nine specific threats listed above. In addition, the following statewide goals and objectives are identified.

1. Implement an ongoing comprehensive approach where all stakeholder groups can address forest issues statewide.
 - a. Enlist a new "Statewide Multi-Agency Forest Resource Task Force" representing the full spectrum of forest stakeholders and has as its primary responsibility ensuring that this Plan is an active, living document.
 - b. Coordinate with state level stakeholder groups to ensure that this Plan is an active, living document.
 - c. Use technology, forums, and other venues to create a system of transparency, public participation, and collaboration that assures this Plan is active, being utilized, and produces results that sustains Alabama's forest resource.
2. Achieve no net loss of forested acres by the completion of the next Forest Inventory Analysis.
 - a. Improve forestland through professional forest management programs.
 - b. Increase acres converted from marginally productive lands to forestlands.
 - c. Increase silvopasture as a land management approach on Alabama farms, ranches, and forestlands.
 - d. Restore longleaf pine to a significant functioning role in Alabama's landscape.
3. Expand forest resource contribution to the Gross Domestic Product.
 - a. Increase consumption of forest related durable and non-durable goods.
 - b. Increase knowledge of the contributions working forests make to Alabama's economy.
 - c. Increase protected areas that qualify as "working forests."
 - d. Enhance the sustainability of Alabama's forest resources.
 - e. Facilitate forestry and allied professionals' adjustment to changing forest resource market opportunities.

5.2 Arkansas

Arkansas Wildlife Action Plan

Coordinating Organization(s): Arkansas Game and Fish Commission

Partners/Collaborators: State and federal agencies, conservation organizations, private industry, and academia.

Year Completed: 2005

Area included in the plan: State of Arkansas

Website Link: www.wildlifeactionplans.org/arkansas.html

Primary Goal: Develop a living planning tool that will be useful to professional partners, citizen conservationists and land managers.

General Description: Arkansas developed a science-based prioritization process to make the most efficient use of available funds. The process relies on a database framework for organizing, analyzing, storing, and retrieving data. Each step in the process receives expert input from partners and stakeholders. Monitoring and adaptive management are key elements of the conservation effort.

Approach: The Arkansas Wildlife Action Plan used an implementation process that included the following.

1. Species of Greatest Conservation Need (SGCN) were identified using Science Teams and information provided by NatureServe, and linked to ecoregion, ecobasin and habitats. These relationships were mapped and Science Teams described problems, threats, data gaps, actions and monitoring plans.
2. A ranked list of implementation priorities was generated based on three categories: 1) data gaps, 2) conservation actions, and 3) monitoring priorities.
3. A ten-year draft implementation schedule was developed.
4. The database will be updated on a two-year basis and a new “Hot List” will be developed.
5. The database will be updated continuously and strategies revised as needed to address Conservation Actions, Data Gaps, and Monitoring issues.

Results: In total, 369 species were identified as SGCN: 19 mammal species, 78 birds, 39 reptiles and amphibians, 50 fishes, and 183 invertebrates. Key terrestrial habitats were ranked by the scores of SGCN associated with each key habitat type. The resulting 45 key habitats contained approximately 24 forest dominated types, with 5 of these occurring in the top 10. Many of the high priority key habitat types were bottomland forests. Each terrestrial habitat type was assigned a “Key Factor” describing those conditions most critical for maintaining the ecological attributes (i.e., fire regime, canopy closure, composition, no-activity protection, etc.) deemed critical to the long-term integrity of a given habitat. Measurable indicators (i.e., road density, canopy closure, oak dominance, etc.) of terrestrial habitat condition were also identified for each key factor.

Plan Citation: Anderson, J.E. (Ed). 2006. *Arkansas Wildlife Action Plan*. Little Rock, AR: Arkansas Game and Fish Commission. 2028 pp.

Arkansas Wetland Conservation Plan

Coordinating Organization(s): Multi-Agency Wetland Planning Team

Partners/Collaborators: Arkansas Natural Heritage, Arkansas Soil & Water Conservation Commission, Arkansas Forestry Commission, Cooperative Extension Service – University of Arkansas, Arkansas Dept. of Pollution Control & Ecology, Arkansas Game and Fish Commission.

Year Completed: 2000

Area included in the plan: State of Arkansas

Website Link: www.mawpt.org/plan/

Primary Goal: To conserve, protect, or restore wetland resources in Arkansas.

General Description: The Arkansas Wetland Conservation Plan is a comprehensive planning document being developed by the Multi-Agency Wetlands Planning Team that combined wetland inventory information and state strategy recommendations to accomplish the following goals: 1) address wetland issues and concerns, 2) identify priority areas for restoration, protection, and enhancement through individual Wetland Planning Area reports, and 3) provide recommendations for plan implementation in a State Wetland Strategy.

Approach: The Arkansas Wetland Conservation Plan was developed using a two-pronged approach that included the development of a “State Wetland Strategy” and “Wetland Planning Area Reports.” The Strategy described a non-watershed specific evaluation of state-wide issues and objectives and recommends steps for implementation and monitoring. The Area Reports identified and prioritized “emphasis areas” within a watershed in order to focus voluntary wetland preservation, restoration, and/or enhancement efforts.

Results: Wetland Priority Area reports were produced for three regions within Arkansas: Bayou Meto, Bayou Bartholomew, and St. Francis River. Wetland Planning Area maps were developed for use by county and regional natural resource planners to identify priority areas for conservation. The Wetland Reserve Program in Arkansas currently gives extra points to projects that are within wetland priority areas.

Plan Citation: Arkansas Multi-agency Wetland Planning Team. 2000. The Arkansas Wetland Strategy.

Arkansas Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Arkansas Forestry Commission

Partners/Collaborators: U.S. Forest Service and others.

Year Completed: 2010

Area Included: State of Arkansas

Website Link: The documents are not available online. Copies may be requested by contacting the agency at (501) 296-1940 or www.arkansasforestry.org/index.html.

Primary Goals: The Assessment provides an analysis of forest conditions and trends in the state and delineates priority rural and urban forest landscape areas. The Strategy provides long-term strategies for investing state, federal, and other resources to manage priority landscapes identified in the

assessment, focusing where federal investment can most effectively stimulate or leverage desired action and engage multiple partners.

Key Assessment Findings: The Assessment identifies the following six primary threats or issues for Arkansas forests:

- Water Quality—Forests and forest cover in and around water channels and bodies buffer those areas from impacts around those waters and should be protected.
- Forest Health/Invasive Species—All forests in Arkansas are threatened by nonnative invasive species.
- Forest Fragmentation/Parcelization/ Changing Ownerships—Large amounts of forest lands in Arkansas could be affected by fragmentation.
- Increase and Enhance the Benefits of Working Forests—Forest land ownerships are becoming smaller as a result of ownership changes and management objectives.
- Climate Change—All forests in the state are potentially affected by climate change. Potential impacts to forest resources include the ability of forests to adapt to change, carbon sequestering ability, species distribution, forest regeneration and forest loss from catastrophic wildfires.
- Fire Management—All forests in the state are subject to the impacts of wildfire.

Key Strategies: The strategy identifies goals, objectives and strategies for the six primary issues. Following are the first strategies listed for each.

- Improve BMP implementation on all ownerships.
- Provide Southern Pine Beetle information to media outlets including AFC website; provide workshops for landowners and forestry professionals.
- Promote afforestation or reforestation.
- Hold annual meetings of the Forest Stewardship Committee, where issues and roles are discussed.
- Manage and restore forests to mitigate and adapt to climate change.
- Promote the development and application of the FireWise Program and FireWise strategies to fire departments.

5.3 California

California Wildlife Action Plan

Coordinating Organization(s): California Department of Fish and Game

Partners/Collaborators: Public agencies, tribes, scientists, technical experts, and interested individuals.

Year Completed: 2005

Area included in the plan: State of California

Website Link: www.wildlifeactionplans.org/california.html

Primary Goal: To identify Species of Greatest Conservation Need (SGCN) and habitats of greatest conservation need.

General Description: The California Wildlife Action Plan is a reference for conservationists and the general public alike. The plan's mission is to draw upon decades of conservation efforts and to recommend conservation actions based on sound science and stakeholder involvement. The plan identifies SGCN and habitats of greatest conservation need, the major stressors affecting native wildlife and habitats, and the actions needed to restore and conserve species and habitats of greatest conservation need.

Approach: SGCN were developed from the California Natural Diversity Special Animals List (a.k.a. species at risk or special status species). The state is organized into nine geographic regions for the purposes of this assessment. Habitat associations for the SGCN were developed from the Wildlife and Habitat Relationship Databases and mapped in a GIS.

Results: In total, 807 species were identified as SGCN: 123 mammal species, 139 birds, 82 reptiles and amphibians, 95 fishes, and 368 invertebrates. Sixty habitat types were identified and mapped by ecoregion within the state. The plan identified three primary state-wide threats: human activities, limited water resources, and invasive species. Additional major threats were also identified for each ecoregion and included forest management conflicts, altered fire regimes, watershed fragmentation, and fish barriers.

Plan Citation: Bunn, D., A. Mummert, R. Anderson, K. Gilardi, M. Hoshovsky, S. Shanks, K. Stahle, and K. Kriese. 2005. *California Wildlife: Conservation Challenges (California's Wildlife Action Plan)*. Report prepared by the UC Davis Wildlife Health Center for the California Department of Fish and Game.

California Legacy Project

Coordinating Organization(s): California Resources Agency

Partners/Collaborators: Local, state and federal agencies, conservation organizations, business groups, industry, utilities, and foundations.

Year Completed: Ongoing, with multiple reports produced

Area included in the program: State of California

Website Link: www.legacy.ca.gov/about/epl

Primary Goals: To develop a strategic context for statewide conservation investments, to build on local conservation planning efforts, to continually improve the process and basis for decision-making, to identify priority actions for conservation, to coordinate conservation actions among partners, and to increase support for expanded conservation funding.

General Description: The California Legacy Project is developing a suite of tools, reports, and maps to help Californians make important decisions about conserving and protecting the state's working lands and natural resources. The Project is needed to address concerns related to loss of natural resources, insufficient conservation funding and lack of an integrated strategy to make the best use of limited funds.

Approach: The project will consider a broad range of resources, including terrestrial biodiversity, aquatic biodiversity, watershed values, working landscapes, outdoor recreation and education lands and facilities, and urban open space. It will also use a broad range of conservation tools including stewardship incentives for private landowners, improved public land management, conservation easements, restoration, and land acquisition.

Results: The Project will assist decision makers in four ways:

1. providing better information and a more timely understanding of pending threats to natural resources;
2. providing analytical tools to all groups interested in conservation;
3. identifying a long-range strategy to conserve the most important natural resources in California; and
4. assembling a state-wide digital atlas that includes maps of key resources, and existing and future stressors on the health of resources.

Program Citation: Multiple documents and resources are available at the website link provided above.

California Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): California Department of Forestry and Fire Protection

Partners/Collaborators: U.S. Forest Service and others.

Year Completed: 2010

Area Included: State of California

Website Link: frap.fire.ca.gov/assessment2010/document.html

Primary Goals: The assessment is intended to meet both the California and federal assessment requirements and presents an analysis of trends, conditions and the development of priority landscapes. The following three general themes and related subthemes are covered in both the assessment and the strategies document: Conserve Working Forest and Range Landscapes; Protect Forests and Rangelands from Harm; and Enhance Public Benefits from Trees, Forests and Rangelands.

Key Assessment Findings: The assessment is composed of 11 chapters which contain 23 unique spatial analyses with their resultant priority landscapes and generate 150 key findings. From these key findings, the following six overarching issues are identified.

- Forest and rangelands, and urban forests, remain valued assets, critical to the economic, social, and environmental well-being of California.
- Forest and rangelands face a variety of threats, and trends indicate that these are increasing in number, extent, and severity.
- Demands on forest and rangeland resources are increasing, especially for ecosystem services. Emerging markets are placing new demands on these lands.

- A significant portion of forest and rangelands, urban forests, and the infrastructure required to meet demands from these lands, is in a degraded or undesirable condition.
- Opportunities exist to improve the quality and quantity of benefits from these lands. There are management options leading to desired future conditions to sequester more carbon, improve water quality, foster more vibrant rural economies, and make natural landscapes more resistant to threats. Reaching desired future conditions will require surmounting numerous political, social, and economic challenges.
- A great strength is its human capital. The potential to reach desired future conditions across forest and rangelands will depend in large part on taking advantage of and augmenting existing collaborative efforts and groups, initiatives, strategies, and success stories.

Key Strategies: The executive summary lists 36 strategies and the following seven key recommendations for implementing those strategies:

- Maintain and Enhance the Resilience and Health of Forest and Rangeland Ecosystems
- Investing in Forests and Rangelands
- Promote a Collaborative Science-based Approach
- Prioritize Strategies Based on Co-benefits
- Policies, Planning, and Organization
- Research, Information Needs, and Decision Support
- Public and Landowner Outreach

5.4 Colorado

Colorado Wildlife Action Plan

Coordinating Organization(s): Colorado Division of Wildlife

Partners/Collaborators: Local, state, tribal, and federal governmental agencies, state agriculture and ranching associations, non-governmental organizations, museums, zoos, biological professional societies, and the private sector (i.e., land owners, pet shops, nurseries).

Year Completed: 2006

Area included in the plan: State of Colorado

Website Link: www.wildlifeactionplans.org/colorado.html

Primary Goal: To provide a roadmap of conservation priorities that can be used by everyone in Colorado as a guide for planning, partnership building, and project design.

General Description: The Colorado Wildlife Action Plan identifies a set of conservation priorities from a statewide perspective that considers an expansive array of wildlife across the state. The plan's guiding principles are to 1) encourage and support conservation actions that meet the needs of Species of Greatest Conservation Need (SGCN); 2) manage for healthy key habitats and ecosystems to benefit SGCN; 3) create a strategy that is flexible; 4) acknowledge the role of private landowners

and local stakeholders in conservation; 5) enhance, not replace, other planning efforts; and 6) encourage cooperation among wildlife managers, landowners, and other stakeholders in implementing conservation actions.

Approach: The list of SGCN was developed by reviewing available information on wildlife species distribution and abundance, and species at risk of decline. This information included state and federal species lists, Natural Heritage ranking scores, and opinions of experts. The location and condition of habitats that are important to these species were then assessed. Land cover types from Colorado GAP analysis were used to classify habitat. Each land cover type was then assessed relative to habitat condition status (poor, good, or excellent) and trends (declining, stable, or increasing) and number of taxonomic groups affected by habitat condition status and trend.

Results: In total, 210 species were identified as SGCN, among them 26 mammal species, 87 birds, 23 reptiles and amphibians, 26 fishes, and 43 invertebrates. Forty-one land cover types were mapped, 11 of those represented by upland forested types. Nine key issues were identified as affecting the future of wildlife in Colorado with “consumptive use of biological resources” having the most direct relevance to forest management as it is described – “harvest or use of plant and animal populations usually affecting wildlife by direct negative impact, altering wildlife distribution and fitness, or ecosystem processes.”

Plan Citation: Colorado Division of Wildlife. 2006. *Colorado’s Comprehensive Wildlife Conservation Strategy and Wildlife Action Plans*. Denver, CO: Colorado Division of Wildlife.

Colorado Bat Conservation Plan

Coordinating Organization(s): Colorado Committee of the Western Bat Working Group

Partners/Collaborators: Not identified

Year Completed: 2004

Area included in the plan: State of Colorado

Website Link: www.cnhp.colostate.edu/

Primary Goal: To provide natural resource managers, researchers, and graduate students with information and direction in the conservation needs of Colorado bats.

General Description: The Colorado Bat Conservation Plan summarizes the current state of knowledge, begins to prioritize needs for various species, provides goals for species conservation, and lists management recommendations and research needs.

Approach: The plan provided a list of bat species found in Colorado by ecoregion and developed a conservation strategy that focuses on seven categories of issues that affect bat populations in the state: 1) mining; 2) cave and crevice management; 3) forest management; 4) rangeland management; 5) urban development; 6) research, inventory, and protocols; and 7) species status, population trends, and monitoring.

Results: Each of the seven categories are discussed and described relative to their effects on bats. This plan indicated that at least 10 bat species use forest ecosystems for roosting and foraging habitat within Colorado. Two specific impacts are discussed relative to forest ecosystems and their effects on bats: loss of tree roosts, and degradation of foraging habitat. Goals, objectives, management recommendations, and research needs are described relative to each of these impacts.

Plan Citation: Ellison, L.E., M.B. Wunder, C.A. Jones, C. Mosch, K.W. Navo, K. Peckham, J.E. Burghardt, J. Annear, R. West, J. Siemers, R.A. Adams, and E. Brekke. 2003. *Colorado Bat Conservation Plan*. Colorado Committee of the Western Bat Working Group.

Colorado Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Colorado State Forest Service

Partners/Collaborators: Colorado Chapter of The Nature Conservancy, Colorado Natural Heritage Program, U.S. Forest Service, U.S. Geological Survey.

Year Completed: 2010

Area Included: State of Colorado

Website Link: csfs.colostate.edu/pages/statewide-forest-assessment.html

Primary Goals: The objective of the assessment is to provide a spatial overview of forests and display areas in the state where resources are best focused to achieve desired future conditions. The strategy provides a platform for the CSFS and its partners to focus efforts on important forest landscapes and leverage limited resources to achieve positive and significant results on all types of forest lands.

Key Assessment Findings: Colorado's forests are at risk from threats that include fragmentation of forest landscapes, decline in businesses that harvest and manufacture forest products, insect and disease activity in forests at levels unprecedented in recorded history, wildfire in the wildland-urban interface, wildfire outside the wildland-urban interface, community forests at risk to insects and diseases, impacts of climatic conditions on forest resiliency and adaptability, watersheds at risk from forest conditions, decline of riparian ecosystems, and air quality issues.

Key Strategies: Ten overarching strategies are identified.

- Manage forests using appropriate science-based information to enhance resource values.
- Promote active forest management to achieve desired short- and long-term conditions that provide for and enhance species, age class and structural diversity to improve resiliency and adaptability as climatic conditions change.
- Develop a strategic marketing and communications plan to promote the benefits of managing forest resources.
- Create, promote, and sustain a viable forest products industry by ensuring a predictable, dependable timber supply.
- Use collaborative processes to coordinate planning and implementation of forest management across ownerships to protect communities, natural resources and important infrastructure.
- Utilize the Colorado Statewide Forest Resource Assessment to support planning and implementation of forest management.
- Focus on-the-ground efforts to leverage resources.
- Work with neighboring states to conserve working forest lands.
- Restore ecosystem function at an appropriate scale to achieve desired future conditions.
- Reduce process impediments that hinder the implementation of forest management and drive up costs.

5.5 Connecticut

Connecticut Wildlife Action Plan

Coordinating Organization(s): Department of Environmental Protection Bureau of Natural Resources

Partners/Collaborators: Local, state and federal agencies, tribal governments, academia, and non-governmental organizations.

Year Completed: 2005

Area included in the plan: State of Connecticut

Website Link: www.ct.gov/dep/cwp/view.asp?a=2723&q=329520&depNav_GID=1719

Primary Goal: To help reverse the decline of wildlife populations and the loss of key habitats, with the goal of keeping common species common and minimizing the need to list additional species as endangered or threatened.

General Description: The Connecticut Wildlife Action Plan presents the Species of Greatest Conservation Need (SGCN), their key habitats, problems, research needs, and conservation actions. It also addresses how to monitor the plan's effectiveness, coordinate with conservation partners, periodically review and update the plan, and foster public participation.

Approach: The following approach was used in the development of the plan.

- Step 1: Identify SGCN - developed using existing priority listings and quantitative and qualitative input from representatives and stakeholders.
- Step 2: Identify key habitats – developed using input and analysis by representatives, the Endangered Species Scientific Advisory Committee, and stakeholders.
- Step 3: Identify threats affecting SGCN or their habitats – evaluated and prioritized by DEP representatives.
- Step 4: Identify conservation actions for 12 key habitats and SGCN.

Results: In total, 475 species were identified as SGCN: 27 mammal species, 148 birds, 30 reptiles and amphibians, 74 fishes, and 196 invertebrates. The plan identified that these SGCN are supported throughout the state by 12 different types of key habitats and 43 sub-habitats. Six of these 12 key habitats were most relevant to forest management and include upland forest, upland woodland and shrub, forested inland wetland, shrub inland wetland, large rivers and their riparian zones, and intensively managed forests.

Plan Citation: Connecticut Department of Environmental Protection Bureau of Natural Resources, in consultation with Terwilliger Consulting. 2005. Connecticut's Comprehensive Wildlife Conservation Strategy.

Connecticut Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Connecticut Dept. of Environmental Protection, Division of Forestry

Partners/Collaborators: Connecticut Forest and Park Association, Salmon Brook Associates, University of Connecticut Cooperative Extension System, Connecticut Department of Environmental Protection Division of Wildlife and Bureau of Outdoor Recreation.

Year Completed: 2010

Area Included: State of Connecticut

Website Link: www.ct.gov/dep/cwp/view.asp?a=2697&q=454164&depNav_GID=1631

Primary Goals: Three purposes drive the Strategy in Connecticut: conserve working forest lands, protect forests from harm, and enhance public benefits from trees and forests.

Key Assessment Findings: Assessment findings are organized using the seven criteria of sustainability in the Montreal Process framework. An example finding for each criterion is as follows:

- Criterion 1 Propagate more of an ecosystem balance within the forestlands of Connecticut by promoting size and age diversity.
- Criterion 2 Maintain productive capacity of forest ecosystems. Track other industries often associated with timber removals.
- Criterion 3 Expand responsible hunting to stabilize and reduce an excessive deer population.
- Criterion 4 Work with NRSC to develop forest soil indicators for Connecticut.
- Criterion 5 Educate and encourage landowners on the total values associated with forestland.
- Criterion 6 Opportunities exist to list recreational opportunities in town plans.
- Criterion 7 Complete management plans for each State Forest management unit.

Key Strategies: The following “Connecticut’s Forest Vision Statements” were identified in a series of public roundtable meetings and used as a foundation for the Strategy. “In the future...”

- The fact that all forests provide important public benefits will guide forest and land use policies.
- The amount of forest protected from development will increase following priority criteria based on core forest areas, forest legacy potential, and vulnerability.
- Forests will contain healthy and sustainable populations of native plants and animals.
- Public agencies will manage Connecticut’s public forestlands to enhance public benefits.
- Policies will fully support and encourage private forest owners.
- People will understand and value urban forests as essential parts of healthy urban ecosystems.
- Forests will support a broad spectrum of appropriate recreational activities that attract users.
- Forests will stimulate learning about nature/ecology and demonstrate sustainable management strategies.
- Connecticut’s forests will support a viable forest products industry that provides marketable products from renewable and diverse forest resources.

- Management of Connecticut's forests will use the best available scientific information and the best available data as the basis for sound conservation and management decisions.

5.6 Delaware

Delaware Wildlife Action Plan

Coordinating Organization(s): Delaware Department of Natural Resources and Environmental Control, Division of Fish and Wildlife

Partners/Collaborators: State and federal agencies, conservation organizations, academia, and professional societies.

Year Completed: 2006

Area included in the plan: State of Delaware

Website Link: www.fw.delaware.gov/dwap/Pages/default.aspx

Primary Goal: Provide strategic direction and an information and logistical framework for conserving Delaware's native wildlife and habitats as vital components of the state's natural resources.

General Description: The Delaware Wildlife Action Plan is a comprehensive strategy for conserving the full array of native wildlife and habitats – common and uncommon – as vital components of the state's natural resources. The plan is intended for all who are actively engaged in conservation efforts.

Approach: Species of Greatest Conservation Need (SGCN) were determined by assigning Natural Heritage methodology (i.e., S1, S2, etc.) to all species recognized to occur in Delaware. Species-habitat associations were then developed for all priority species and mapped accordingly. Wildlife habitat classification was based on The National Vegetation Classification System. Key Wildlife Habitats were developed based on several criteria: 1) mapped extents of SGCN occurrences, where available; 2) habitats that are rare, and/or have special significance in Delaware, and/or are particularly sensitive to disturbance, and/or have a high diversity of rare plants; or 3) large blocks of unfragmented forests and wetlands (minimum size 250 acres).

Results: In total, 457 species were identified as SGCN: 18 mammal species, 146 birds, 33 reptiles and amphibians, 23 fishes, and 237 invertebrates. Over 25 key habitats were identified with two of these being forested wetland types and three being coastal plain upland forest types. Nearly 90 different conservation issues affecting SGCN or habitats of conservation concern were identified in this plan, representing 16 different categories of issues that included habitat loss and fragmentation, forestry operations, invasive species, changes in fire regimes, resource management, and industrial operations. To address these issues and impacts, more than 230 different conservation actions were developed.

Plan Citation: Allen, O., B. Barkus, and K. Bennet. 2006. Delaware Wildlife Action Plan: 2007-2017. Dover, DE: Delaware Natural Heritage and Endangered Species Program, Delaware Division of Fish and Wildlife.

Delaware Statewide Forest Resource Assessment and Strategy**Coordinating Organization(s):** The Delaware Forest Service**Partners/Collaborators:** U.S. Forest Service and others.**Year Completed:** 2010**Area Included:** State of Delaware**Website Link:** dda.delaware.gov/forestry/061810_DFS_ResourceAssessment.pdf and dda.delaware.gov/forestry/061810_DFS_Strategy.pdf**Primary Goals:** The Assessment provides an overview of the status of Delaware's forests as well as the many benefits they provide. It identifies conditions and trends, benefits and services, issues, threats, and opportunities and priority forest landscape areas.**Key Assessment Findings:** The Assessment identifies four issues facing Delaware's forests and forest landowners, and identifies threats to forests if these issues are not addressed.

- Forest Health and Functionality
- Forest Markets
- Sustainable Forest Management
- Public Awareness and Appreciation of Forests

Key Strategies: Following are examples of strategies discussed to address priority issues.

- Reduce Forest Loss, Fragmentation, and Parcelization
- Improve the Diversity of Forest Types
- Control Native Pest and Non-Native Invasive
- Reduce Wildfire
- Accurate Forest/Wood Inventories
- Improve Traditional Forest Markets
- Non-Wood/Ecosystem Services Markets
- Rural Forest Management and Assistance
- Urban Forest Management and Assistance
- Provide Educational Opportunities for Students, Teachers/Educators, Forest Landowners, Leaders of Communities and Municipalities and the General Public

5.7 Florida

Florida Wildlife Action Plan

Coordinating Organization(s): Florida Fish and Wildlife Conservation Commission

Partners/Collaborators: State and federal agencies, organizations, businesses, and individuals.

Year Completed: 2005

Area included in the plan: State of Florida

Website Link: www.wildlifeactionplans.org/florida.html

Primary Goal: To build a blueprint and action plan for conserving the vast array of wildlife that makes Florida such a unique place to live and visit.

General Description: The Florida Wildlife Action Plan builds upon existing wildlife resource management tools and programs in a cumulative manner, while identifying gaps and further needs and creating a comprehensive vision for coordinating efforts across the state.

Approach: The plan used a habitat category approach to arrange wildlife species and habitats, and the conservation threats and actions needed to conserve them, into meaningful and manageable categories. Conservation actions were identified that will sustain the health and integrity of these habitat categories to benefit the broad array of wildlife that lives within each will be conserved and maintained. Species of Greatest Conservation Need (SGCN) were developed from existing federal and state species lists, Natural Heritage rankings, and FWC Species Ranking biological score, and input from over 900 technical experts knowledgeable about species and habitat within the state. Several different habitat classification systems were used to represent and describe all of the habitat categories including Florida Natural Areas Inventory Natural Communities, Water Management District Land Use Land Cover, Florida Vegetation and Land Cover 2003, as well as numerous other GIS data sources. Threat analysis and identification was developed using The Nature Conservancy's 5-S Process.

Results: In total, 974 species were identified as SGCN: 56 mammal species, 104 birds, 67 reptiles and amphibians, 378 fishes, and 369 invertebrates. Forty-five habitat categories were delineated, with nine representing freshwater systems, 22 representing terrestrial systems, and 12 representing marine systems. Some of the threats identified for the terrestrial systems included altered community structure, altered landscape mosaic or context, altered fire regimes, altered species composition/dominance, habitat fragmentation, habitat degradation/disturbance, habitat destruction/conversion, insufficient size/extent of characteristic communities or ecosystems, and missing key communities/guilds/seral stages.

Plan Citation: Florida Fish and Wildlife Conservation Commission. 2005. Florida's Wildlife Legacy Initiative. Florida's Comprehensive Wildlife Conservation Strategy. Tallahassee, Florida, USA.

Florida Closing the Gaps Project

Coordinating Organization(s): Florida Game and Fresh Water Fish Commission, Office of Environmental Services

Partners/Collaborators: Technical information and review was provided by state and federal agencies and university representatives.

Year Completed: 1994

Area included in the plan: State of Florida

Website Link: research.myfwc.com/features/view_article.asp?id=29815

Primary Goal: To identify lands in Florida that, at a minimum, must be conserved and managed in order to ensure the long-term survival of key components of Florida's biological diversity.

General Description: The document identifies habitat areas that are essential to the survival of rare and declining species not adequately protected by the current systems of conservation areas. It also identifies areas important to several globally endangered species of plants and rare animal and plant communities and identifies areas of high biological diversity ("hotspots") to assist in land use planning.

Approach: Forty-four focal species were selected to serve as "umbrella" or "indicator" species of biological diversity. An assessment of existing protected areas was undertaken and 30 species were determined to be underrepresented in existing protected areas at this time. Additional key components of biological diversity, such as rare plants, invertebrates, and natural communities, were reviewed and Strategic Habitat Conservation Areas were added as appropriate. "Hotspot" analysis was also conducted to identify other natural areas that might warrant conservation based on their importance to local populations of rare species or other natural resources.

Results: Species conservation plans were developed for the 44 focal species that identified and mapped strategic habitat areas (outside existing protected areas) and habitat conservation areas were identified for other elements of biodiversity. A final aggregate map of strategic habitat conservation areas was produced from this information. The area defined by these proposed Strategic Habitat Conservation Areas is 4.82 million acres, or approximately 13.8% of the state. In addition, Regional Hot Spots maps were developed to convey more detailed information on the known locations of as many components of biological diversity as possible, regardless of whether they fall within the proposed Strategic Habitat Conservation Areas, to help meet the need for conservation information at regional and local levels.

Plan Citation: Cox, J., R. Kautz, M. MacLaughlin, and T. Gilbert. 1994. Closing the Gaps in Florida's Wildlife Habitat Conservation System. Tallahassee, FL: Office of Environmental Services, Florida Game and Fresh Water Fish Commission. 239 pp.

Florida Greenways/Ecological Network Project

Coordinating Organization(s): Florida Department of Environmental Protection

Partners/Collaborators: Florida Department of Environmental Protection, Florida Greenways Commission, Florida Greenways Coordination Council, Florida Greenways and Trails Council

Year Completed: 1999

Area included in the program: State of Florida

Website Link: www.greeninfrastructure.net/content/project/floridas-ecological-network

Primary Goal: To design an ecologically functional statewide greenways network that conserves critical elements of native ecosystems and landscapes and restores or maintains connectivity among native ecological systems and processes.

General Description: The Florida Ecological Network Project provides an ecological assessment and strategy to conserve the most ecologically significant areas in Florida. The Project identifies, evaluates, and integrates large areas of high ecological value (hubs) and develops linkages to create a map of connected statewide reserves.

Approach: The primary data sources used were GIS layers such as ecological communities, Strategic Habitat Conservation Areas (see Closing the Gaps), biodiversity hot spots (see Closing the Gaps), areas of conservation interest, potential natural areas, land use, existing and proposed conservation lands, roadless areas, road densities, aquatic preserves, outstanding Florida waters, shellfish harvesting waters, SPOT (Système Pour d'Observation de la Terre) imagery, etc. These layers were prioritized and combined to identify areas of ecological significance. Ecological hubs were selected from within the areas of ecological significance based on their high ecological integrity potential such as no intensive land uses, low road densities, low potential for edge effects, and \geq 6,900 acres in size. Linkages were then identified that connect the ecological hubs.

Results: The resulting network represents approximately 23 million acres, or 58% of the state. Existing conservation areas make up approximately 12 million acres and 52% of the network. Approximately 11% of the network is privately owned.

Program Citation: Multiple documents and resources are available at the website link provided above.

Florida Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Florida Department of Agriculture and Consumer Services, Division of Forestry

Partners/Collaborators: U.S. Forest Service and others.

Year Completed: 2010

Area Included: State of Florida

Website Link: The documents have not been made available for online access. Copies may be requested by contacting the agency at (850) 488-4274 or <http://www.fl-dof.com/index.html>.

Primary Goals: To be used as a tool to create viable strategies to address issues that have been identified as impacting the integrity of working forest landscapes and improve the economic and ecosystem benefits that forests provide to all residents and visitors.

Key Assessment Findings: The Assessment identified the following seven key issues:

- Wildfire Threat/Use of Prescribed Fire
- Forest Fragmentation
- Forest Health: Insects, Diseases, and Non-Native Pest Plants
- Meeting the Challenges of Climate Change
- Economic Viability of Forests

- Water Quality and Quantity
- Longleaf Pine Ecosystems

Key Strategies: The following are examples of strategies given for each of the issues named above.

- Use latest technology to model and track smoke plumes and monitor visibility in smoke sensitive areas.
- Develop a unique message to reach urban and exurban dwellers regarding the connection of forest management practices to their daily quality of life.
- Continue educational venues for forest health issues across the state.
- Develop or compile climate change models specifically for Florida.
- Support increased funding for conservation easement programs.
- Extend the time frame for the current research and monitoring project involving forest fertilization, to better characterize nutrient input and export scenarios.
- Survey public land managing agencies in Florida to determine whether Longleaf Pine Ecosystems have been identified and inventoried.

5.8 Georgia

Georgia Wildlife Action Plan

Coordinating Organization(s): Georgia Department of Natural Resource, Wildlife Resources Division

Partners/Collaborators: Private and public conservation organizations, landowners and managers, state and federal agencies, academia, private industry, and various stakeholders.

Year Completed: 2005

Area included in the plan: State of Georgia

Website Link: www.wildlifeactionplans.org/georgia.html

Primary Goal: Identify the suite of conservation sites and strategies that ensure the long-term survival of all viable native plant and animal species and natural communities in Georgia.

General Description: The Georgia Wildlife Action Plan assesses habitats required by species of concern, as well as problems affecting these habitats. The plan also addresses research and survey needs, habitat restoration needs, and monitoring needs, and includes an evaluation of existing programs and policies for wildlife conservation in Georgia and recommendations for improvements in these areas. Coordination with other organizations that manage land or administer conservation programs in Georgia is a key component of this effort.

Approach: The approach used in this planning effort included 1) development of databases on rare species and natural communities; 2) identification of high priority species and habitats; 3) identification of high priority research and biological inventory needs; 4) surveys for rare species on public and private lands; 5) development of databases of conservation lands and high priority

watersheds and landscapes; 6) prioritization of conservation, education, and habitat protection needs; 7) collaboration with state and federal agencies on habitat protection/restoration plans; 8) technical assistance to private conservation organizations and local governments; 9) review of existing conservation laws, rules, and policies; and 10) public input and educational outreach. Species of concern were identified using species currently protected by state or federal law as well as species considered imperiled at the state or global level. High priority habitat descriptions were developed by species technical teams. High priority species were then assigned to one or more habitat associations using a hierarchical classification system contained in Biotics, the biodiversity database system used by Georgia Natural Heritage Program. The goal was to conserve viable examples of all representative natural habitats in an ecoregion. In addition, high priority conservation actions were identified. High priority conservation areas were identified previously through ecoregion-based conservation planning projects coordinated by The Nature Conservancy with assistance from Wildlife Resource Division and other organizations.

Results: A list of 296 high-priority animal species and 323 high-priority plant species was developed. High priority habitat was identified for each of the five defined ecoregions.

Plan Citation: Georgia Department of Natural Resources Wildlife Resources Division. 2005. *A Comprehensive Wildlife Conservation Strategy for Georgia*. Georgia Department of Natural Resources.

Georgia Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Georgia Forestry Commission

Partners/Collaborators: Urban Forest Council, Georgia Department of Natural Resources and U.S. Forest Service.

Year Completed: 2010

Area Included: State of Georgia

Website Link: www.gfc.state.ga.us/ForestManagement/GAForestResourceAssessmentStrategy.cfm

Primary Goals: The Assessment provides a science-based foundation that analyzes forest conditions and trends in the state and delineates priority rural and urban forest landscape areas, in an approach consistent with the 2008 Farm Bill national priorities. The Strategy addresses priority issues identified by the Assessment and will serve as the basis for formulating the GFC's five-year strategic plan.

Key Assessment Findings: The following are eight pressing forest issues and threats identified by stakeholders.

- Water quality and quantity
- Urbanization
- Forest health
- Biodiversity
- Air quality
- Fire management
- Fragmentation and parcelization
- Economics and changing markets

Key Strategies: An extensive list of strategies is organized under goals related to the eight priority issues listed above. The following are some examples of goals.

- Protect water quality during silvicultural operations in water supply watersheds and in biota and dissolved oxygen impaired watersheds especially those listed for TMDL reductions.
- Enhance environmental services provided by trees and forests in urban and interface areas.
- Minimize negative environmental and economic impacts of cogongrass in Georgia.
- Protect, conserve and enhance ecological functions of isolated wetlands.
- Restore American chestnuts in Georgia.
- Develop and enhance value-capture activity for carbon sequestration in forests.
- Implement the Prescribed Fire Strategic Plan.
- Conserve working forest landscapes for multiple values and uses.
- Increase the total value of wood products delivered to mills.

5.9 Idaho

Idaho Wildlife Action Plan

Coordinating Organization(s): Idaho Department of Fish and Game

Partners/Collaborators: Leadership committee composed of local, state, and federal agencies, academia, forest industry, ranchers, and non-government organizations.

Year Completed: 2005

Area included in the plan: State of Idaho

Website Link: www.wildlifeactionplans.org/idaho.html

Primary Goal: To provide a common framework that will enable conservation partners to jointly implement a long-term approach for the benefit of Species of Greatest Conservation Need (SGCN).

General Description: The Idaho Wildlife Action Plan identifies SGCN and associated habitats while providing an ecological, habitat-based framework and aid in the conservation and management of these species. It recommends actions to improve the population status and habitat conditions of SGCN and describes an approach for long-term monitoring to assess the success of conservation efforts and to integrate new information as it becomes available.

Approach: The approach used was an ecologically based landscape approach combined with a fine scale to identifying species-level issues and conservation needs. The approach used to identify SGCN was an objective rule-based process (Natural Heritage rank methodology) to evaluate all animals thought by experts to be candidates for SGCN status. Factors included in the assessment were population size, trend, viability, environmental specificity, threats, and protection status. NatureServe's vegetation classification system was used to develop GIS coverage of 55 ecological systems. These 55 systems were then aggregated into 18 spatially exclusive habitats covering the entire state. Species-habitat relationships were then inferred by examining the distribution of SGCN and ecological systems/habitats. Priority habitats were selected by evaluating the importance of a

habitat type within an ecological region and the value of a habitat type to SGCN within an ecological region.

Results: In total, 229 species were identified as SGCN: 33 mammal species, 54 birds, 59 reptiles and amphibians, 27 fishes, and 56 invertebrates. Fourteen ecological sections were delineated within the state and priority habitats are identified for each ecological section.

Plan Citation: Idaho Department of Fish and Game. 2005. Idaho Comprehensive Wildlife Conservation Strategy. Boise, ID: Idaho Conservation Data Center, Idaho Department of Fish and Game.

Old Growth Ponderosa Pine in Idaho

Coordinating Organization(s): Idaho Department of Fish and Game

Partners/Collaborators: State and federal agencies, forest industry, university, conservation organizations, and business.

Year Completed: 2003

Area included in the plan: State of Idaho

Website Link: www.emri.org/PIPO.html

Primary Goals: 1) Identify, locate, and map the remaining old-growth ponderosa pine ecosystems for potential restoration in Idaho. 2) Conduct a priority assessment to evaluate the quality of the remaining stands, their immediate threats, the potential for restoration, and their size and spatial distribution.

General Description: Idaho Partners in Flight has identified old-growth ponderosa pine as a priority habitat and set a goal of restoring 100,000 acres over the next 25 years. This project attempts to identify and prioritize sites with the greatest potential for contributing to ponderosa pine restoration within the next five years.

Approach: The historical extent of ponderosa pine forests in Idaho was determined from existing maps or data for potential natural vegetation. Existing data and maps were used to develop a map of forest stands that were likely to still contain large ponderosa pine. Point locations obtained from the Idaho Natural Heritage Program were also used to identify potential restoration stands. Stands were evaluated for restoration potential based on the stand data and given priority rankings of A for excellent conditions and need for restoration/maintenance, B for very good conditions for restoration/maintenance, and C for stands with some potential for restoration but lacking desired size/density of ponderosa pine at present. Field surveys were then conducted on the stands with the greatest likelihood of containing large ponderosa pine based on stand data. High priority sites were then evaluated by a field crew to determine restoration potential and existing threats to the stand.

Results: In total, < 5% of the stands identified using stand data and verified in the field were completely rejected. Of the 203 stands visited and 15,091 acres surveyed, 80% of the stands and 85% of the acres were ranked in the A and B priority levels. If these percentages are applied to all 1,564 stands and 83,852 acres that met the composition, structure, and size criteria for selection, 1,251 stands and 71,274 acres should contain large ponderosa pine suitable for restoration within Idaho.

Plan Citation: Mehl, C.A., and J.B. Haufler. 2003. *Preserving and Restoring the Old-Growth Ponderosa Pine Ecosystem in Idaho*. WCRP Project R-1-6-0203. Boise, ID: Idaho Fish and Game.

Idaho Statewide Forest Resource Assessment and Strategy**Coordinating Organization(s):** Idaho Department of Lands**Partners/Collaborators:** USDA Forest Service and others.**Year Completed:** 2010**Area Included:** State of Idaho**Website Links:** www.idl.idaho.gov/bureau/ForestAssist/safr/final/061410-ID-SAFR-FINAL.pdf and www.idl.idaho.gov/bureau/ForestAssist/isrs/final/061710-ID-SFRS-Final.pdf**Primary Goals:** The Assessment and Strategy identify opportunities for willing partners to align their plans, leverage resources, and work together within the Priority Landscape Areas to gain the greatest value from limited resources in areas where multiple issues of statewide importance are found.**Key Assessment Findings:** The Assessment identifies the following seven issues affecting Idaho forestlands: forest health decline; uncharacteristic wildfire; development pressure and recreation in undesignated areas; sustainable wood-based forest resource markets; water quality and quantity; air quality; and wildlife habitat and biodiversity.**Key Strategies:** Goals to address the seven main issues, and an example strategy for each goal, follow.

1. Idaho's forests are diverse and resilient to climatic changes and other natural and unique stresses. *Inventory & Analysis:* Assess and monitor conditions of forest systems on a landscape scale for sustainability and resilience.
2. The ecosystem benefits that Idaho forests provide are identified, maintained and enhanced. *Planning:* Identify actions that maximize ecosystem services from forest.
3. Forestlands with the highest benefits are identified, protected and enhanced. *Forest Conservation Incentives:* Use conservation actions to effectively protect and enhance high priority forestlands.
4. Forest ecosystems are resilient to human activities (development, recreation, forest practices, noxious weeds, etc.). *Treatments:* Implement urban and rural forest practices to mitigate adverse impacts to forest systems and monitor/adapt.
5. Forest-based wood products markets are economically vibrant and sustainable. *Marketing:* Develop diverse markets, labor, and product lines (Idaho brand) to ensure competitiveness and resiliency to global markets.
6. Idaho has an integrated framework for implementing the Idaho Statewide Forest Resource Strategy, which guides project development and legislative/policy actions. The framework will promote cohesive management of Idaho's urban and rural forests. *Inventory & Analysis:* Improve information, identify and fill data gaps, and explore/develop new tools and strategies for assessing conditions and implementing projects.

5.10 Indiana

Indiana Wildlife Action Plan

Coordinating Organization(s): Indiana Department of Natural Resources

Partners/Collaborators: Conservation organizations, professional societies, universities, federal, state, and local agencies, individuals and major landholders.

Year Completed: 2006

Area included in the plan: State of Indiana

Website Link: www.wildlifeactionplans.org/indiana.html

Primary Goal: To protect and conserve habitats and associated wildlife at a landscape scale.

General Description: The Indiana Wildlife Action Plan provides a comprehensive overview of conservation in Indiana and identifies needs and opportunities for helping prevent species from becoming threatened or endangered in the future. It identifies conservation needs, organizations working in those arenas and areas where interests overlap.

Approach: Species of Greatest Conservation Need (SGCN) were identified using the most current published list of federally endangered, threatened or candidate species and Indiana's list of endangered species and species of special concern. An information system was used to link SGCN to all wildlife species and the habitats on which they depend. This was done using a set of representative species as surrogates for guilds including the SGCN and which were reflective of habitat needs for all wildlife species. Habitat types were developed by Indiana State University using GIS databases. Distribution maps were developed showing changes in these habitats since presettlement times. Technical experts, conservation organizations, and the general public, provided input at relevant stages of the plan's development.

Results: In total, 163 species were identified as SGCN: 7 mammal species, 28 birds, 21 reptiles and amphibians, 10 fishes, and 97 invertebrates. More than 60 specific habitat types were generalized into nine habitat type groups that included forested lands as one category. Top ranking threats to habitats included habitat degradation, commercial or residential development, agricultural or forestry practices, and habitat fragmentation.

Plan Citation: Case, D. J. and Associates. 2006. *Indiana Wildlife Conservation Strategy*. Indianapolis, IN: Indiana Department of Natural Resources. 154 pp.

Indiana Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Indiana Department of Natural Resources, Division of Forestry

Partners/Collaborators:

Year Completed: 2010

Area Included: State of Indiana

Website Link: www.in.gov/dnr/forestry/5436.htm

Primary Goals: The Assessment characterizes Indiana's forests and analyzes the sustainability of forested ecosystems on a statewide or landscape level. The Strategy is premised on cooperation and coordinated partnerships that will focus resources toward the most pressing issues and in the areas where they will do the most good.

Key Assessment Findings: The Assessment identifies the following issues for forests.

- Fragmentation and/or conversion of forests to another land use
- Conservation and maintenance of soil and water resources
- The spread and control of invasive species
- Conservation of biodiversity
- Counterproductive government forest conservation related policies
- Availability of land for public recreation
- High cost of forest ownership and low incentives to retain
- Conservation of forests that protect drinking water supplies
- Overpopulation of white-tailed deer
- Inadequate public education about forests
- Sustaining Indiana's forest product industry
- Lack of active management on forests
- Sustainable regeneration of oak woodlands
- Inadequate youth education about forests
- Lack of healthy woodlands and trees in urban areas
- The control of forest fires
- The loss of fire dependent plant communities and habitats
- Forests not managed for carbon storage

Key Strategies: The document is organized around the following strategies.

- Conserve, manage, and protect existing forests, especially large forest patches.
- Restore and connect forests, especially in riparian areas.
- Expand Best Management Practices, with special attention to invasive species.
- Coordinate education, training, and technical assistance, especially to develop strategic partnerships with land-use decision makers.
- Maintain and expand markets for Indiana hardwoods, especially those that are sustainably certified and for local use.

5.11 Kentucky

Kentucky Wildlife Action Plan

Coordinating Organization(s): Kentucky Department of Fish and Wildlife Resources

Partners/Collaborators: State and federal agencies, academia, and conservation organizations.

Year Completed: 2005

Area included in the plan: State of Kentucky

Website Link: www.wildlifeactionplans.org/kentucky.html

Primary Goal: To identify and conserve Kentucky's Species of Greatest Conservation Need (SGCN).

General Description: The Kentucky Wildlife Action Plan represents a proactive plan for sustaining the diversity of species and habitats found in Kentucky.

Approach: SGCN were identified based on their NatureServe ranking of G1 to G3 or S1 or S2. Additional species were added to the list based on additional information (i.e., Partners in Flight priority species, etc.) and expert opinion. Priority Conservation Areas were identified using a bottom-up approach that used species occurrence maps as the base to build the analysis. Taxonomic experts examined these maps to identify important conservation areas for each taxonomic group. These areas were then analyzed and mapped to identify areas within the state where greatest overlap occurred between groups. Regions of highest overlap were identified as Priority Conservation Areas for terrestrial or aquatic systems.

Results: In total, 251 species were identified as SGCN: 16 mammal species, 81 birds, 49 reptiles and amphibians, 59 fishes, and 46 invertebrates. Three primary Priority Conservation Areas were identified, representing 3.7 million acres and approximately 14% of Kentucky's total land base. These areas were expected to provide habitat for up to 91% of the SGCN.

Plan Citation: Kentucky Department of Fish and Wildlife Resources. 2005. *Kentucky's Comprehensive Wildlife Conservation Strategy*. Frankfort, KY: Kentucky Department of Fish and Wildlife Resources.

Kentucky Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Kentucky Department of Natural Resources, Division of Forestry

Partners/Collaborators: U.S. Forest Service and others.

Year Completed: 2010

Area Included: State of Kentucky

Website Link: forestry.ky.gov/LandownerServices/Pages/ForestlandAssessment.aspx

Primary Goals: The Kentucky Statewide Assessment of Forest Resources and Strategy document identifies key forest-related issues and priorities to support development of a long-term resource strategy specific to Kentucky's forest needs.

Key Assessment Findings: The following top five issues were identified by participants.

- Forest Health
- Water Quality and Quantity
- Forest Loss and Fragmentation
- Forest Management
- Funding

Key Strategies: For each of the five issues listed above, the Strategy provides goals, objectives, and tactics. Following are examples of some goals.

- Reduce the spread of invasive plants, insects, and diseases through improved monitoring, management, and education.
- Decrease the impacts on forests due to improper trail use, management, and design.
- Ensure timber harvest operations employ measures to maximize water quality protection.
- Improve Kentucky water quality through the protection, enhancement, and restoration of forested riparian areas.
- Reduce or minimize the impact of forest loss from urban development.
- Enhance and protect existing forested areas in the urban landscape.
- Publicize the value of Kentucky's forest resources and the benefits of proper management.
- Promote the efficient, sustainable, and environmentally sound economic utilization of Kentucky's forest resources for forest products and environmental services.

5.12 Louisiana

Louisiana Wildlife Action Plan

Coordinating Organization(s): Louisiana Department of Wildlife and Fisheries

Partners/Collaborators: State and federal agencies, conservation organizations, industry, and academia.

Year Completed: 2005

Area included in the plan: State of Louisiana

Website Link: www.wildlifeactionplans.org/louisiana.html

Primary Goal: To develop a blueprint for guiding the development of management actions for Louisiana's fish and wildlife species with emphasis on Species of Greatest Conservation Need (SGCN) and associated habitats they depend upon.

General Description: The Louisiana Wildlife Action Plan conducts a comprehensive review of the current status of all wildlife in Louisiana with a focus on SGCN and develops management strategies to benefit these species and their associated habitats. The plan identifies habitat types which are important to the conservation of SGCN and evaluates the status of these habitats to direct

conservation and restoration efforts. The plan also identifies threats and conservation initiatives to restore habitats which are a priority for the continued survival of SGCN.

Approach: The SGCN list was based on the Natural Heritage methodology (i.e., S1 to S5, G1 to G5). Priority was given to those species experiencing population declines in Louisiana, species that are locally endemic, and migratory species that use habitat within Louisiana during some part of their life cycle. The resulting list was distributed to seven technical committees. Terrestrial habitat types were based on the National Vegetation Classification. Aquatic habitat types were based on stream type designations and geomorphic features. An assessment of habitat viabilities and threats was conducted using The Nature Conservancy's Site Conservation/Measures of Success Workbook software (2000) and from expert input.

Results: In total, 240 species were identified as SGCN: 18 mammal species, 69 birds, 45 reptiles and amphibians, 41 fishes, and 67 invertebrates. In total, 55 Conservation Habitats were identified, representing 38 terrestrial types and 17 aquatic types. Statewide threats to key habitat included habitat destruction, conversion, fragmentation, and disturbance, as well as altered habitat composition and structure. Of the 38 terrestrial Conservation Habitats, four forest types were identified as S1 priority and were described as primary threats due to incompatible forestry practices.

Plan Citation: Lester, G.D., S.G. Sorensen, P.L. Faulkner, C.S. Reid, and I.E. Maxit. 2005. *Louisiana Comprehensive Wildlife Conservation Strategy (Wildlife Action Plan)*. Baton Rouge, LA: Louisiana Department of Wildlife and Fisheries. 455 pp.

Louisiana Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Louisiana Department of Agriculture and Forestry, Office of Forestry

Partners/Collaborators: U.S. Forest Service and others.

Year Completed: 2010

Area Included: State of Louisiana

Website Link:

webshare.ldaf.state.la.us/gis/State%20Assessment/Louisiana%20Statewide%20Forest%20Resource%20Assessment%20and%20Strategy.pdf

Primary Goals: To incorporate three national priorities, as designated by the Farm Bill.

- Conserving working forest landscapes
- Protecting forests from threats
- Enhancing public benefits from trees and forests

Key Assessment Findings: The following eight primary issues are identified.

- Wildfire & Protection
- Longleaf Regeneration
- Cogongrass
- Urban Sprawl and WUI (Wildland Urban Interface)

- Insects, Disease, and Forest Health
- Cypress-Tupelo Management
- Gulf Storms and Climate
- Hardwood Regeneration

Key Strategies: The document lists goals, objectives, strategies and resources needed to address the issues named above. The following strategies are the first listed for each of the eight issues.

- Maintain rapid response times through aerial detection and education of dispatchers in GIS techniques.
- Continuing growing bare root and containerized longleaf in our nurseries.
- Promote education of the public about the threats of Cogongrass through literature.
- Use cost-share and non-cost share programs to maintain larger tracks of land.
- Use aerial detection and reconnaissance to observe where the landscape is being impacted by insects or disease.
- Use public outreach opportunities to promote the ideals and results of responsible management of cypress and tupelo stands.
- Use early aerial detection to determine the degree of damage following a storm.
- Coordinate cost-share programs: Conservation Reserve Program, Wetland Reserve Program and Lower Mississippi Alluvial Valley.

5.13 Maine

Maine Wildlife Action Plan

Coordinating Organization(s): Maine Department of Inland Fisheries and Wildlife

Partners/Collaborators: Local, state, tribal, and federal agencies, non-governmental organizations, industry groups, sportsmen's groups, business groups.

Year Completed: 2005

Area included in the plan: State of Maine

Website Link: www.wildlifeactionplans.org/maine.html

Primary Goal: To supplement, not duplicate, existing fish and wildlife programs and to target Species of Greatest Conservation Need (SGCN)— species that are indicative of the diversity and health of wildlife in the state— while keeping common species common.

General Description: The Maine Wildlife Action Plan addresses the full array of wildlife and their habitats in Maine including vertebrates and invertebrates in aquatic and terrestrial habitats. This plan builds on a species planning effort ongoing in Maine since 1968; a landscape approach to habitat

conservation initiated in 2000; and a long history of public involvement and collaboration among conservation partners. This plan is meant to be dynamic, responsive, and adaptive.

Approach: Species were prioritized based on a number of criteria but primarily conservation need and risk of extirpation. All species assigned a priority rank of 1 or 2 were considered SGCN. SGCN were further prioritized based on the existing knowledge about the species and readiness to achieve results with adequate funding. Key habitats were developed using Maine's existing ecological classification system and cross-walked with the National Vegetation Classification and NatureServe ecological systems for regional and national consistency as well as Maine Natural Areas Program's Ecosystem and Natural Community classifications.

Results: In total, 213 species were identified as SGCN: 19 mammal species, 103 birds, 7 reptiles and amphibians, 12 inland fishes, and 72 invertebrates. In total, 21 key habitat types were identified for conservation purposes with 5 coastal types, 6 freshwater wetland types, and 10 upland types. Six key habitats were identified as forested types.

Plan Citation: Maine Department of Inland Fisheries and Wildlife. 2005. *Maine's Comprehensive Wildlife Conservation Strategy*. Augusta, ME: Maine Department of Inland Fisheries and Wildlife.

Maine's Beginning with Habitat Program

Coordinating Organization(s): Maine Department of Inland Fisheries and Wildlife, Beginning with Habitat Program

Partners/Collaborators: Department of Inland Fisheries and Wildlife, Maine Natural Areas Program, Maine Audubon Society, Maine State Planning Office, U.S. Fish and Wildlife Service, Maine Cooperative Fish and Wildlife Research Unit, Southern Maine Regional Planning Commission, The Nature Conservancy and Wells National Estuarine Research Reserve.

Year Completed: Ongoing

Area included in the program: State of Maine

Website Link: www.beginningwithhabitat.org/

Primary Goal: To maintain sufficient habitat to support all native plant and animal species currently breeding in Maine.

General Description: The Maine Beginning with Habitat Program is a habitat-based approach to assessing wildlife and plant conservation needs and opportunities. Information developed from the assessment will be provided to each Maine town with a collection of maps and accompanying information depicting and describing various habitats of statewide and national significance found in the town. This information will provide communities with guidance on conserving valuable habitats in their area.

Approach: Maps of habitat needs of all Maine's vertebrate species were overlain with maps of land cover types (forests, fields, wetlands) in a GIS. By protecting riparian habitats, high value animal habitats, and large habitat blocks, it is expected that 80 to 95% of all Maine's terrestrial vertebrate species would likely be maintained in the landscape.

Results: Regional maps of riparian habitat, high value animal habitats, and large habitat blocks were produced and provided to local communities for land use consideration and planning. Additional recommendations included maintaining a 75-foot buffer around second order and larger streams and a 250-foot buffer around rivers, lakes, ponds, and non-forested wetlands > 10 acres.

Program Citation: No single document is available to describe the Maine Beginning with Habitat program. However, many tools and resources have been developed to support the Program and are available at the website link provided above.

Maine Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Maine Department of Conservation, Forest Service

Partners/Collaborators:

Year Completed: 2010

Area Included: State of Maine

Website Link: www.maine.gov/doc/mfs/mfs/state_assessment/index.html

Primary Goals: Maine's statewide forest strategy outlines long-term efforts to address priority landscapes identified in the forest resource assessment as well as the national themes and their associated management objectives.

Key Assessment Findings: Following are some of the 21 major issues, threats, and opportunities identified in the Assessment.

- Keeping forests as forests
- Maintaining a diverse, robust forest products industry
- Maintaining the forest land base, conversion, and parcelization
- Making good forestry pay
- Informing family forest owners of the benefits of sustainable forest management
- Maintaining the capacity of the Maine Forest Service as an institution to serve the citizens of Maine
- Markets for biomass, biofuels, engineered wood and ecosystem services
- Large scale land conservation

Key Strategies: The following strategies are the first listed for seven key forest goals/themes.

- Keeping forests as forests. Continuing efforts to establish working forest conservation easements.
- Improving and diversifying markets. Improving the relationship between Maine's forest products industry and state government.
- Protecting forests from harm. Supporting efforts to reduce atmospheric greenhouse gas levels, and hence, the damage to forests.
- Maintaining healthy trees and woodlands in urban and community areas. Encouraging proactive efforts at municipal level to maintain healthy urban and community forests.
- Maintaining the capacity of the Maine Forest Service as an institution to serve the citizens of Maine. Advocating for effective levels of staffing, programs, and services.

- Increasing the environmental literacy of Maine citizens. Creating and distributing this resource assessment and other similar publications.
- Maintaining and enhancing forest biodiversity. Supporting research that addresses this issue.

5.14 Maryland

Maryland Wildlife Action Plan

Coordinating Organization(s): Maryland Department of Natural Resources

Partners/Collaborators: Local, state, tribal, and federal agencies, non-governmental organizations, academia, and professional societies.

Year Completed: 2005

Area included in the plan: State of Maryland

Website Link: www.wildlifeactionplans.org/maryland.html

Primary Goal: Provide the framework and overall direction for wildlife diversity conservation efforts in Maryland.

General Description: The Maryland Wildlife Action Plan identifies those Species of Greatest Conservation Need (SGCN) and their habitats within the context of the full array of wildlife and habitats in Maryland. This document provides the blueprint from which to further develop, refine, and implement an effective, coordinated approach to statewide wildlife diversity conservation. It represents the results of a broad and inclusive approach to compile and present the best available current information on the status of wildlife conservation in the state while involving the diversity of Maryland's public and private stakeholders.

Approach: The best available information and research from existing plans, programs and priorities were used to identify SGCN and the key habitats they depend upon. The results were then coordinated with local, state, and federal agencies and NGO conservation partners for input and collaboration to refine and finalize the lists. Threats were identified and conservation actions developed to address threats to the SGCN and their key habitats using a similar process.

Results: In total, 502 species were identified as SGCN: 34 mammal species, 141 birds, 42 reptiles and amphibians, 40 fishes, and 245 invertebrates. In total, 35 key habitats were identified that encompass forest, wetland, and open terrestrial habitats, as well as streams, rivers, estuaries, and the ocean. Nine of the key habitats included forested types. Each key habitat is described and a list of associated SGCN is identified. Threats to key habitats and conservation actions to address these threats are also identified. Ten statewide threats were identified that included pesticide and herbicide use (such as gypsy moth control) that directly or indirectly affect SGCN, and incompatible forestry practices that result in habitat loss, fragmentation, degradation, or imbalances vegetation structure and species composition.

Plan Citation: Maryland Department of Natural Resources. 2005. *Maryland Wildlife Diversity Conservation Plan*. Annapolis, MD: Maryland Department of Natural Resources.

Maryland GreenPrint and Green Infrastructure Programs

Coordinating Organization(s): Maryland Department of Natural Resources

Partners/Collaborators: Local government or private land trusts.

Year Completed: Ongoing

Area included in the programs: State of Maryland

Website Link: www.greenprint.maryland.gov

Primary Goal: To protect lands critical to the state's long-term ecological health.

General Description: Saving Maryland's diverse and ecologically precious natural resources is the basis for Maryland's GreenPrint and GreenInfrastructure Programs. These programs will allow the state to preserve an extensive, intertwined network of land vital to the long-term survival of its native plants and wildlife, and certain industries which can rely on a clean, healthy environment and abundant natural resources. To that end, the program has produced multiple reports, maps, and supporting documentation to support this effort.

Approach: Maryland's green infrastructure was mapped using satellite imagery, and the results reviewed by scientists, local government officials, and conservation groups. This information was used to develop "green hubs" that are typically hundreds of acres in size and are vital to maintaining the state unique ecology. The imagery was further reviewed for connectivity or "green links" between the green hubs that may have included stream valleys or mountain ridges that function as "habitat highways."

Results: The green infrastructure network represents approximately 1.8 million acres of green hubs and 253,000 acres of green links and 33% of Maryland's total land area. Forest types represent 1.8 million of these acres and 63% of Maryland's forest land, including 90% of the interior forest.

Program Citation: Weber, T. 2003. *Maryland's Green Infrastructure Assessment: A Comprehensive Strategy for Land Conservation and Restoration*. Annapolis, MD: Maryland Department of Natural Resources.

See above website link for a detailed description of the GreenPrint program.

Maryland Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Maryland Department of Natural Resources, Forest Service

Partners/Collaborators: U.S. Forest Service and others.

Year Completed: 2010

Area Included: State of Maryland

Website Link: www.dnr.state.md.us/forests/sas.asp

Primary Goals: The assessment describes forest conditions on all ownerships in the state, identifies forest-related benefits and services, highlights issues and trends of concern as well as opportunities for positive action, delineates high priority landscapes to be addressed and outlines broad strategies for addressing the national priorities, critical issues, and landscapes identified by the assessment.

Key Assessment Findings: Assessment findings are organized using the seven criteria of sustainability in the Montreal Process framework. The first finding for each criterion follows.

- Criterion 1 - Loss of forest land to development, 151,500 acres between 1986 and 2008, and fragmentation of existing forests are among the most widespread threats to biodiversity.
- Criterion 2 - The proportion of sawtimber-sized trees (76%) is increasing as forests mature.
- Criterion 3 - As with biodiversity, the greatest threat to forest health is considered to be conversion to development, anticipated to increase 48% between 1990 and 2015.
- Criterion 4- Forests are the most protective land use for water quality, so the conversion of forests to other land uses is one of the most significant threats to Maryland's water quality.
- Criterion 5 - Maryland's forests are contributing an increasing amount to sequestration of carbon, tied to the greater size of trees in the maturing forest landscape.
- Criterion 6 - Forest industry is a significant economic engine, a \$4+ billion industry and the fifth largest economic sector. The greatest influence is in the rural areas, Eastern Shore, western Maryland, and southern Maryland.
- Criterion 7 - Maryland has a robust suite of laws for protecting forests, as well as sediment and erosion control requirements, and local government comprehensive plans.

Key Strategies: The Strategy describes multiple goals, strategies, and tactics organized around the following five major issues. One strategy is presented as an example for each issue.

- Restore and Sustain Forest Landscapes - Improve the economics of private forest management and promote sustainable forest management through the Forest Stewardship Program.
- Ensure Healthy and Resilient Forests - Provide timely and effective fire suppression for wildland fires, maintaining skills for an incident command system.
- Ensure Clean and Abundant Water - Collaborate with local partners to use forests to improve watershed conditions, meet TMDL requirements, and bolster watershed efforts.
- Create Jobs and Sustainable Communities - Aid communities in developing diverse natural resource-based economies centered on forest ecosystem restoration, renewable energy, and sustainable forest and agroforestry products.
- Make Landscapes More Resilient to Climate Change - Develop and improve strategies for forest mitigation and adaptation, supporting Maryland's Climate Action Plan.

5.15 Massachusetts

Massachusetts Wildlife Action Plan

Coordinating organizations: Massachusetts Division of Fisheries and Wildlife, Department of Fish and Game, and Executive Office of Environmental Affairs

Partners/Collaborators: Local, state, and federal agencies, and non-profit organizations.

Year Completed: 2005, Revised 2006

Area included in the plan: State of Massachusetts

Website Link: www.wildlifeactionplans.org/massachusetts.html

Primary Goal: To conserve the wildlife biodiversity of Massachusetts.

General Description: The Massachusetts Wildlife Action Plan uses three previous efforts as the basis for identifying a broader list of Species of Greatest Conservation Need (SGCN), highlighting the habitats they require, identifying threats to the species and their habitats, listing additional information needs through survey and research, and finally, developing conservation strategies and monitoring efforts which will ensure their continued existence. Those previous efforts included the documents titled *Our Irreplaceable Heritage* (Massachusetts Division of Fisheries and Wildlife and The Nature Conservancy), *BioMap* (Natural Heritage and Endangered Species Program), *Living Waters* (Natural Heritage and Division of Fisheries and Wildlife).

Approach: The following steps were used in the development of the plan.

Step 1: Identify the SGCN and their habitats – existing species prioritization lists were consolidated.

Step 2: Identify habitats in SGCN – developed by combining functionally similar community types where possible.

Step 3: Link SGCN to habitats.

Step 4: Identify threats/research needs and associated conservation strategies.

Results: In total, 253 species were identified as SGCN: 20 mammal species, 19 birds, 70 reptiles and amphibians, 27 fishes, and 117 invertebrates. Twenty two priority habitats were identified and include three large-scale habitats of relevance to forest management—Upland Forest, Large Unfragmented Landscape Mosaics, and Pitch Pin/Scrub Oak; three medium-scale habitats—Forested Swamps, Young Forests and Shrublands, and Riparian Forest; and one small-scale habitat—Peatlands and Associated Habitats.

Plan Citation: Massachusetts Division of Fisheries and Wildlife. 2005. *Massachusetts Comprehensive Wildlife Conservation Strategy*. Boston, MA: Massachusetts Division of Fisheries and Wildlife, Department of Fish and Game, Executive Office of Environmental Affairs.

Massachusetts BioMap

Coordinating Organization(s): Massachusetts Division of Fisheries and Wildlife, Natural Heritage and Endangered Species Program

Partners/Collaborators: State and federal agencies and non-governmental organizations.

Year Completed: 2005

Area included in the plan: State of Massachusetts

Website Link: www.mass.gov/dfwele/dfw/nhosp/land_protection/biomap/biomap_home.htm

Primary Goal: To promote strategic land protection by producing a map showing areas, that if protected, would provide suitable habitat over the long term for the maximum number of Massachusetts' terrestrial and wetland plant and animal species and natural communities.

General Description: The Massachusetts BioMap program identifies areas most in need of protection in order to protect the native biodiversity of the state. BioMap focuses primarily on state-listed rare species and exemplary natural communities but also includes the full breath of the State's biological diversity.

Approach: Two land protection categories were identified: Core Habitat and Supporting Natural Landscape. Core Habitat corresponds to actual locations where suitable habitat exists to support viable populations of target species. Supporting Natural Landscape corresponds to undeveloped areas that are not recognized as Core Habitat.

Results: This effort identified 1) Plant Core Habitat, which targets 1,681 rare plant populations and 246 rare species; 2) Animal Core Habitat, which targets 87 invertebrate species, 21 bird species, 4 mammal species, and 17 reptiles and amphibians; and 3) Natural Communities, which targets 43 terrestrial types, 4 palustrine types, and 8 estuarine types. Overall, the BioMap program identified approximately 1.2 million acres of Core Habitat and nearly 1 million acres of Supporting Natural Landscape. This effort identified that only 39% of Core Habitat and 22% of Supporting Natural Habitat is currently protected.

Plan Citation: Massachusetts Division of Fisheries and Wildlife, Natural Heritage and Endangered Species Program. 2001. *BioMap: Guiding Land Conservation for Biodiversity in Massachusetts*. Westborough, MA: Massachusetts Division of Fisheries and Wildlife, Natural Heritage and Endangered Species Program.

5.16 Michigan

Michigan Wildlife Action Plan

Coordinating Organization(s): Michigan Department of Natural Resources, Wildlife Division

Partners/Collaborators: Local, state and federal agencies, tribes, and non-governmental organizations.

Year Completed: 2005

Area included in the plan: State of Michigan

Website Link: www.michigan.gov/dnr/0,1607,7-153-10370_30909---,00.html

Primary Goal: Provide a common strategic framework that will enable Michigan's conservation partners to jointly implement a long-term holistic approach for the conservation of all wildlife species.

General Description: The Michigan Wildlife Action Plan provides an ecological, habitat-based framework to aid in the conservation and management of wildlife. It identifies and recommends actions to improve habitat conditions and population status of Species of Greatest Conservation Need (SGCN), as well as actions that will keep common species common. It prioritizes conservation actions, research and survey needs, and long-term monitoring to assess the success of conservation

efforts. Further, the plan complements other conservation strategies, funding sources, planning initiatives, and legally mandated activities.

Approach: The plan primarily used a coarse-filter approach based on the habitat needs of wildlife but also used a species-based fine-filter approach to address SGCN. The coarse-filter was based on landscape features that may represent a single ecosystem or multiple ecosystems. Landscape features were based on existing ecological classification systems for Michigan. SGCN were determined using species already identified as special concern within the state and more species were added that exhibited declining populations or other characteristics that may make them vulnerable. This list was submitted to an expert panel for review and revisions, as appropriate. SGCN were then evaluated for their habitat association with Landscape Features. Threats and priority conservation actions were described and identified.

Results: In total, 404 species were identified as SGCN: 27 mammal species, 99 birds, 30 reptiles and amphibians, 44 fishes, and 204 invertebrates. The plan identified 43 terrestrial and 48 aquatic landscape features. Each landscape feature was summarized by priority species, significant threats to the feature, and conservation actions needed to address the threats. Priority statewide threats identified in this plan that have relevancy to forest management include invasive species, fragmentation, habitat conversion, sedimentation, altered hydrologic regime, altered fire regime, and ecosystem restoration.

Plan Citation: Eagle, A.C., E.M. Hay-Chmielewski, K.T. Cleveland, A.L. Derosier, M.E. Herbert, and R.A. Rustem, eds. 2005. *Michigan's Wildlife Action Plan*. Lansing, MI: Michigan Department of Natural Resources. 1592 pp.

Michigan Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Michigan Department of Natural Resources and Environment, Forest Management Division

Partners/Collaborators:

Year Completed: 2010

Area Included: State of Michigan

Website Link: www.michigan.gov/dnr/0,1607,7-153-30301_30505---,00.html

Primary Goals: To strategically assess forest resources, areas and conditions and frame or identify rural and urban forest issues and landscapes while considering state, federal and private lands and incorporate existing forest management plans including state wildlife action plans and community wildfire protection plans and to support integrated investments that promote sustainable forest management and produce significant benefits for current and future generations.

Key Assessment Findings: The following 16 priority issues were identified by the Assessment.

- Promote Sustainable Active Management of Private Forests
- Reduce Divestiture, Parcelization and Conversion of Private Forestlands
- Reduce the High Cost of Owning Private Forestland
- Maintain and Restore Aquatic Ecosystems and Watersheds

- Reduce Threats from Invasive Species, Pests and Disease
- Reduce Wildfire Risk and Improve Public Safety
- Reduce the Impact of Recreational Activities on Forest Resources
- Maintain Markets for Utilization of Forest Products
- Maintain Ecosystem Services from Private Forestlands
- Provide Effective Conservation Outreach for Private Forestlands
- Build Local Community Capacity to Manage Urban Forest Resources
- Maintain Community Quality of Life and Economic Resiliency
- Maintain and Enhance Scenic and Cultural Quality on Private Forestland
- Maintain Forested Ecosystems for Biodiversity and Wildlife Habitat
- Maintain and Enhance Access to Recreational Activities on Private Forestlands
- Reforestation of Urban and Ex-Urban Areas

Key Strategies: The document identifies strategies and resources needed to address each priority issue listed above and performance measures to assess progress.

5.17 Minnesota

Minnesota Wildlife Action Plan

Coordinating Organization(s): Minnesota Department of Natural Resources, Division of Ecological Services

Partners/Collaborators: State and federal agencies, non-governmental organizations, and academia.

Year Completed: 2006

Area included in the plan: State of Minnesota

Website Link: www.wildlifeactionplans.org/minnesota.html

Primary Goal: To conserve key habitats used by Minnesota's Species of Greatest Conservation Need (SGCN) in order to conserve the majority of Minnesota's wildlife.

General Description: The Minnesota Wildlife Action Plan is a strategic framework designed to guide natural resource managers in their efforts to ensure a sustainable future for all wildlife. The plan provides information on Minnesota's natural landscapes, key habitats, and wildlife resources. It is a conservation tool that can be applied at multiple scales: species, habitat, and ecological landscapes.

Approach: The process used to select SGCN included reviewing existing species lists and assessments, seeking input from individual species experts, Technical Team review, Feedback Team review, and developing a finalized list of SGCN from the reviews. Species-habitat relationships and species distributions were determined using an approach developed by the Minnesota GAP Analysis Program for terrestrial vertebrates. GAP Level 4 land cover types (with slight modifications) were

identified and GIS models were developed to determine presence/absence in the primary habitat used by a species for breeding. With the development of presence/absence scores for habitat and distribution, the number of species in each habitat by each ecoregional subsection was summed to develop a 'species use value' for each habitat (land cover type). The species use value was used to guide selection of key habitats.

Results: In total, 292 species were identified as SGCN: 22 mammal species, 97 birds, 23 reptiles and amphibians, 47 fishes, and 103 invertebrates. Sixteen key habitats were identified within three major groups: forests, open landscape, and aquatic. The forest group represented 5 of the 16 key habitats. Primary Conservation Actions identified in this plan include addressing invasive species, using prescribed fire where appropriate, encouraging habitat restoration efforts, incorporating SGCN habitat concerns in existing forest management planning, and providing technical assistance to interested individuals and organizations.

Plan Citation: Minnesota Department of Natural Resources. 2006. *Tomorrow's Habitat for the Wild and Rare: An Action Plan for Minnesota Wildlife, Comprehensive Wildlife Conservation Strategy*. St. Paul, MN: Division of Ecological Services, Minnesota Department of Natural Resources.

Minnesota Forest Resources Council Landscape Program

Coordinating Organization(s): Minnesota Forest Resources Council (state agency)

Partners/Collaborators: Regionally developed but generally includes representatives of state and federal agencies, private industry, conservation organizations, non-industrial private landowners, as well as various other interested groups.

Year Completed: Ongoing

Area included in the program: State of Minnesota

Website Link: www.frc.state.mn.us/initiatives_llm_landscapes.html

Primary Goal: To identify desired conditions for a region's forested landscape and encourage stakeholder involvement over the long term.

General Description: The Minnesota Forest Resources Council Landscape Program was developed as a result of Minnesota's Sustainable Forest Resources Act. The program provides a mechanism to assess and promote forest resource sustainability across large forested landscapes. It provides a forum for forest landowners and stakeholders to collaborate on forest resource issues and conduct long-range forest planning across ownerships and forest types.

Approach: The planning process used by the Landscape Program contains five primary steps.

Step 1: Prepare an assessment that provides information on the landscape region's existing and potential ecological, social, and economic conditions.

Step 2: Determine a desired future forest condition, goals and issues that address existing and potential conditions considered desirable for the region.

Step 3: Develop strategies to achieve goals and resolve issues for the region.

Step 4: Encourage voluntary implementation of the strategies by facilitating coordination between public and private landowners.

Step 5: Conduct an evaluation to determine whether the strategies accomplish the goals and resolve issues.

Results: Six landscape regions were delineated across the state. Each of the six landscape regions are in varying stages of the five step process. An example of desired conditions for the northeast region includes

- moving the forested conditions within the landscape toward the range of variability (i.e., the spectrum of conditions possible in ecosystem composition, structure, and function) for plant communities;
- providing spatial patterns (i.e., size and location of openings) in the landscape that are consistent with the ecology of Minnesota;
- providing diverse habitat to maintain natural communities and viable populations for plant and animal species.

Program Citation: Not available

Minnesota's Habitat Conservation Partnership

Coordinating Organization(s): Minnesota's Habitat Conservation Partnership

Partners/Collaborators: Ducks Unlimited, Fond du Lac Reservation, Friends of the Detroit Lakes Wetland Management District, Leech Lake Band of Ojibwe, Minnesota Board of Water and Soil Resources, Minnesota Deer Hunters Association, Minnesota Department of Natural Resources, Minnesota Land Trust, Minnesota Valley National Wildlife Refuge Trust, Inc., National Wild Turkey Federation, Pheasants Forever, Red Lake Band of Chippewa, The Nature Conservancy, Trust for Public Land, U.S. Fish and Wildlife Service, and U.S. Natural Resources Conservation Service.

Year Completed: Ongoing

Area included in the program: State of Minnesota

Website Link: www.mnhabitatcorridors.org/Default.aspx

Primary Goal: To restore, enhance, and conserve habitat for the purpose of sustaining fish, wildlife, and native plant communities for all generations.

General Description: The Partnership was formed and funded by the 2001 Minnesota legislature to work to restore fragmented landscapes and connect high quality habitat for the purpose of sustaining fish, wildlife, and plant populations. The Partnership provides for a statewide coordination of existing federal, state, and private land and water conservation programs. These programs and resources are focused on project areas that have high potential for restoring and enhancing functional habitats.

Approach: A GIS was used to map important aspects of the existing resource base. The basic elements of the map were forests, grasslands, water, and land use. Data layers were obtained from existing programs of state and federal agencies, examples include wildlife management areas, RIM easements, the Minnesota Natural Heritage Database, rivers, and shallow lakes. Additional information was gathered through regional meetings with natural resource personnel throughout the state. This information was then further refined during meeting with individual partners.

Results: Three basic geographic concepts were created during these meetings: Spatial Corridors, Linear Corridors, and Project Areas. Project areas included spatial and linear corridors but were

driven by organization resource considerations. Eleven project areas were identified as priority areas by the Partnership.

Program Citation: Not available

Minnesota Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Minnesota Department of Natural Resources, Division of Forestry

Partners/Collaborators: U.S. Forest Service and others.

Year Completed: 2010

Area Included: State of Minnesota

Website Link: files.dnr.state.mn.us/forestry/subsection/mnForestResourceAssessment.pdf and files.dnr.state.mn.us/forestry/subsection/mnForestResourceStrategies.pdf

Primary Goals: To identify forest-related conditions, trends, threats and opportunities in Minnesota.

Key Assessment Findings: Ten priority issues are identified.

- Maintenance of Minnesota's forest land base: increasing threats of forest fragmentation and parcelization
- Maintenance and protection of water quality and quantity
- Forest health and productivity
- Reducing wildfire risks
- Mitigation and adaptation to climate change
- Support of a healthy forest products industry
- Use of woody biomass for energy
- Maintenance and enhancement of rare ecological features
- Recreational use of forest lands
- Urban and community forestry

Key Strategies: Multiple strategies are identified for each of the 10 priority issues. Following is an example strategy for each issue.

- Work with partners to identify opportunities for forest protection, enhancement, restoration.
- Protect and manage forests and wetlands in forested areas under identified MPCA watersheds with partners and stakeholders to ensure high-quality aquatic habitats and healthy ecosystems.
- Identify high-risk, low-volume stands and create prescriptions to increase stocking and health.
- Develop and maintain an interagency workforce capacity to meet the wildfire needs of all cooperating agencies and tribes.

- Develop methods for quantifying and monitoring forest carbon pools.
- Provide marketing assistance to private landowners in order to improve management, increase wood supply for industry, and improve landowner income.
- Through active industry engagement, facilitate the emerging woody biomass industry synergistically “fitting” existing industry and resources.
- Develop, maintain and continually improve tools necessary to identify where rare ecological features and resources are located to help forest landowners manage for them.
- Ensure that Forest Legacy Easement and Minnesota Forests for the Future Programs consider recreational access when ranking and scoring potential acquisitions.
- Involve more statewide organizations to improve coordination with the MDA in monitoring and planning for greater state investments in exotic invasive pest control (Gypsy moth, EAB, etc.).

5.18 Mississippi

Mississippi Wildlife Action Plan

Coordinating Organization(s): Mississippi Department of Wildlife, Fish, and Parks

Partners/Collaborators: An advisory committee made up of 179 members from state and federal natural resource agencies, conservation organizations, agriculture and forest products industries, technical experts, conservation educators and academics, and individuals.

Year Completed: 2005

Area included in the plan: State of Mississippi

Website Link: home.mdwfp.com/ContentManagement/Html/htmldownload.aspx?id=281#strategy

Primary Goal: To provide a guide to effective and efficient long-term conservation of Mississippi’s biological diversity.

General Description: The Mississippi Wildlife Action Plan is a blueprint for conserving wild species and their habitat based on the best currently available data. The plan assesses the extent and condition of habitats required by these species, as well as existing potential threats and conservation opportunities for these habitats. The plan addresses research and survey needs as well as monitoring needs, and provides a plan for MDWFP and its partners to review and revise the plan every ten years.

Approach: Species of Greatest Conservation Need (SGCN) were prioritized and ranked according to the number of occurrences, population trends, and threats within the state. The resulting list was presented to the Expert Team and Technical Committee for evaluation. Seventeen broad habitat types and 64 subtypes were identified for the entire state. Experts then identified and prioritized habitats and ecological communities relative to SGCN. Threats to wildlife and wildlife habitats were developed by the Technical Committee using the Proposed Taxonomy of Direct Threats developed by the Conservation Measures Partnership in 2004. Existing Conservation Area Plans developed by The Nature Conservancy were also used to identify threats and conservation strategies where available. Twenty-three general threat categories that included forestry conversion, altered fire regimes, and incompatible forestry practices, were identified.

Results: In total, 297 species were identified as SGCN: 17 mammal species, 70 birds, 53 reptiles and amphibians, 74 fishes, and 83 invertebrates. Twenty-nine Terrestrial Habitat Types were identified and all of the top priority 10 sites were represented by forested types. Each of the 29 habitat types were discussed relative to location, size, condition, and conservation status. Threats and priority conservation actions were also identified for each habitat type.

Plan Citation: Mississippi Museum of Natural Science. 2005. *Mississippi's Comprehensive Wildlife Conservation Strategy*. Jackson, MS: Mississippi Department of Wildlife, Fisheries and Parks, Mississippi Museum of Natural Science.

Mississippi Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Mississippi Forestry Commission

Partners/Collaborators: U.S. Forest Service and others.

Year Completed: 2010

Area Included: State of Mississippi

Website Link: www.mfc.ms.gov/fars_input.htm

Primary Goals: The Assessment provides a comprehensive analysis of the forest-related conditions, trends, threats and opportunities within the state with the goal to ensure that federal and state resources are being focused on important landscape areas with the greatest opportunity to address shared management priorities and achieve measurable outcomes.

Key Assessment Findings: Eight key issues are identified.

- Forest Sustainability
- Resource Markets
- Land Ownership Policies
- Forest Health
- Stewardship Education
- Wildfire Fuel Reduction
- Climate Change
- Wildlife

Key Strategies: Multiple strategies are identified to address each of the eight issues. The first strategies identified for each issue follow.

- *Forest Sustainability.* Promote reforestation and afforestation of longleaf pine on appropriate sites within its natural range.
- *Resource Markets.* Develop and maintain wood using directory of timber products outputs and consumption and trends.

- *Land Ownership Policies.* Create public policy designed to maintain, improve, and protect favorable tax policies in regard to forestry and land ownership (including capital gains, inheritance tax, severance tax, etc.).
- *Forest Health.* Protect and conserve natural forest communities/ecosystems from non-native, invasive plants through elimination/suppression of invasives (plants).
- *Stewardship Education.* Coordinate with partners to continue the delivery of current stewardship education efforts with emphasis on the delivery of issue specific information in priority areas for key issues.
- *Wildfire Fuel Reduction.* Increase the number of Certified Prescribed Burn Managers.
- *Climate Change.* Encourage afforestation of agriculture, pasture, and open fields.
- *Wildlife.* Encourage and improve management of forested habitat by controlled burning at necessary frequencies and seasons.

5.19 Missouri

Missouri Wildlife Action Plan

Coordinating Organization(s): Missouri Department of Conservation

Partners/Collaborators: State and federal government agencies, non-governmental organizations, and professional organizations.

Year Completed: 2005

Area included in the plan: State of Missouri

Website Link: www.fws.gov/midwest/FederalAid/documents/03MOWAP06Dmjs.pdf

Primary Goal: Promote management that benefits all wildlife rather than targeting single species, by outlining a framework of Conservation Opportunity Areas to focus conservation action.

General Description: The actual Missouri Wildlife Action Plan was not available for review. All information included in this section was developed from summarized descriptions of the plan from the Missouri Department of Conservation website.

Approach: The Missouri Wildlife Action Plan identified Conservation Opportunity Areas in which management strategies will conserve both wildlife populations and the natural systems on which they depend. The Missouri Department of Conservation worked with selected conservation partners to develop criteria for evaluating and identifying priority conservation opportunities. A broad coalition of conservation partners participated in a Conservation Landscapes Meeting to identify and select Conservation Opportunity Areas. In total, 37 stakeholder meetings were held across the state.

Results: In total, 1003 species were identified as Species of Greatest Conservation Need (SGCN), among them 25 mammal species, 50 birds, 34 reptiles and amphibians, 68 fishes, 187 invertebrates, and 635 plants. Thirty-three Conservation Opportunity Areas were identified, mapped, and described relative to management actions and species benefits.

Plan Citation: Missouri Department of Conservation. 2005. *Missouri's Comprehensive Wildlife Conservation Strategy*. Jefferson City, MO: Missouri Department of Conservation.

Missouri Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Missouri Department of Conservation, Forestry Division

Partners/Collaborators: U.S. Forest Service.

Year Completed: 2010

Area Included: State of Missouri

Website Link: mdc.mo.gov/landwater-care/plant-management/forest-and-tree-management/resource/missouri-forest-resource-assessm

Primary Goals: To assess current and future expectations for trees, woodlands and forests, analyze challenges and opportunities for achieving these expectations and serve as a blueprint for maintaining and enhancing the health and benefits of forest resources.

Key Assessment Findings: Eleven key issue themes were identified.

- Private forest landowner demographic trends and corresponding land use changes
- Challenges and opportunities for private forest landowners
- Climate change
- Maintaining high quality soil and water resources
- The role of fire in Missouri's forests – past, present and future
- Missouri's growth, harvest and consumption of forest products
- Forest health threats: plants, animals, diseases and weather
- The role of trees in improving quality of life and sustainability in cities
- Public lands which are managed for the greatest public good
- Maintaining biodiversity (a.k.a. wildlife diversity)
- Logistical framework for sustainability

Key Strategies: Assessment findings were used to develop a list of 77 individual strategies. Below are example strategies for each of the 11 themes.

- Provide successional planning information to landowners to help facilitate the smooth and sustainable transition of property to the next generation of landowners.
- Increase the availability and credibility of quality foresters, loggers, and contractors to help landowners achieve personal objectives through sustainable forest management practices.
- Increase the adaptability of Missouri's forests to uncertain changes in climate.
- Increase and improve the use of forestry Best Management Practices.

- Minimize the occurrence and impact of wildfire through the use of prevention efforts.
- Promote certified forests and products as a means of encouraging sustainable management on private lands and to maintain Missouri's market share in the forest products industry.
- Monitor the current and potential range and extent of new and existing insect and disease threats and strive for early detection of new forest health threats.
- Increase awareness of the general public and local decision makers regarding the benefits of urban trees and forests so they are willing to pay for it.
- Maintain recreational facilities to provide public recreational opportunities.
- Maintain and restore forests, woodlands, glades and savannas.
- Develop Priority Forest Landscape and Urban Forest Opportunity Area groups.

5.20 Montana

Montana Wildlife Action Plan

Coordinating Organization(s): Montana Fish, Wildlife, and Parks (FWP)

Partners/Collaborators: Advisory committee was developed with members from state and federal agencies, non-governmental organizations, and industry organizations.

Year Completed: 2005

Area included in the plan: State of Montana

Website Link: fwp.mt.gov/wildthings/conservationInAction/fullplan.html

Primary Goal: Describe those species and their related habitats that are in greatest conservation need.

General Description: The Montana Wildlife Action Plan 1) identifies all fish and wildlife and related habitats in greatest need of conservation, 2) identifies management strategies to conserve fish and wildlife and related habitats in greatest need, 3) works independently and in partnership to conserve, enhance, and protect Montana's diverse fish and wildlife resources, 4) improves FWP's ability to address present and future funding challenges and opportunities, and 5) integrates monitoring and management of game and nongame fish and wildlife species.

Approach: Development of the plan was guided by a steering committee and a technical committee that served in an advisory capacity to the steering committee. The plan was organized into four components.

Component 1: Focus Areas – guides attention to specific geographical areas in need of conservation.

Component 2: Community Types – identifies habitats along with their related fish and wildlife that are in greatest need of conservation.

Component 3: Fish and Wildlife Species of Greatest Conservation Need (SGCN) – addressed specifically through focus areas, community types, or individual actions.

Component 4: Species and groups of species to be targeted for inventory.

Each component was prioritized into four tiers: Tier 1 – greatest conservation need; Tier 2 – moderate conservation need; Tier 3 – lower conservation need; and Tier 4 – non-native, incidental, or periphery of their range species.

Results: In total, 60 species were identified as SGCN: 15 mammal species, 19 birds, 8 reptiles and amphibians, 17 fishes, and 1 invertebrate. Of the 30 focus areas, only the Mission-Swan Valley and Mountains represented a forested region. Seven community types were identified and two of these were characterized by the forest types mixed broadleaf forest and riparian.

Plan Citation: Montana Fish, Wildlife and Parks. 2005. *Montana's Comprehensive Fish and Wildlife Conservation Strategy*. Helena, MT: Montana Fish, Wildlife and Parks.

Priority Linkage Assessments

Coordinating Organization(s): American Wildlands

Partners/Collaborators: All organizations and biologists that contribute to the report are identified.

Year Completed: 2009

Area included in the plan: Four regions in western Montana, including Cabinet-Purcell region, Crown of the Continent region, Hub region, and High Divide region.

Website Link: wildlands.org/programs/corridors/pla

Primary Goal: Protect important wildlife linkages and help create a network of connected, protected core habitats extending from the Canadian border to the Greater Yellowstone Ecosystem.

General Description: The Priority Linkage Assessment was developed to 1) update and broaden our understanding of wildlife linkage areas in the US Northern Rockies, 2) determine the highest priority connections in the US Northern Rockies so that we can apply our resources toward conservation of those linkage areas, and 3) provide information to our conservation partners.

Approach: The assessment focused on the movement needs of wide-ranging carnivore species including grizzly bear, wolf, wolverine and lynx, as well as wide-ranging ungulate species including elk, moose, pronghorn, and bighorn sheep. Additional information about other locally significant species was also collected. The assessments were collected relative to four regional conservation areas - the Cabinet-Purcell, Crown of the Continent, Hub, and High Divide. The assessment is described as an “expert-opinion driven model that captures the extensive field knowledge and wildlife movement information of biologists in the region's linkage areas, coupled with literature review of peer-reviewed habitat connectivity models and research papers addressing wildlife linkage.”

Results: Four separate reports were produced for each of the four regions that identify the linkage areas by all targeted species and by each individual target species.

Plan Citation: American Wildlands. 2009.

Priority Linkage Assessment: The Crown of the Continent Conservation Area.

Priority Linkage Assessment: The Cabinet-Purcell Conservation Area.

Priority Linkage Assessment: The Hub Conservation Area.

Priority Linkage Assessment: The Divide Conservation Area.

Technical Reports. Version 1.0.

Montana Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Montana Department of Natural Resources and Conservation, Forestry Division

Partners/Collaborators: U.S. Forest Service and others.

Year Completed: 2010

Area Included: State of Montana

Website Link: The Forestry Division has not yet provided a public link to the documents. Copies may be requested from the agency at <http://dnrc.mt.gov/forestry/default.asp> or (406) 542-4300.

Primary Goals: To provide a foundation to assist the Montana Department of Natural Resources and Conservation in prioritizing forested areas of greatest need and opportunity for stewardship and sustainable management, and develop a comprehensive long term strategy to address these needs and opportunities.

Key Assessment Findings: The Assessment characterizes forest history, conditions, trends, and management in Montana, human population growth, and challenges facing Montana's forest resources. Perhaps the most significant challenge facing Montana is the threat of development, fragmentation, and conversion on Montana forest lands.

Key Strategies: The Strategy identifies 15 goals organized around five focus areas.

- Forest Biodiversity and Resiliency
- Wildfire and Public Safety
- Forest Products and Biomass Utilization
- Sustainable Urban Forest Landscapes
- Changing Forest Ownership Patterns

5.21 New Hampshire

New Hampshire Wildlife Action Plan

Coordinating Organization(s): New Hampshire Fish and Game Department

Partners/Collaborators: Academia, non-governmental organizations, government agencies, and private organizations.

Year Completed: 2005

Area included in the plan: State of New Hampshire

Website Link: www.wildlifeactionplans.org/new_hampshire.html

Primary Goal: To provide important tools for restoring and maintaining critical habitats and populations of the State's Species of Greatest Conservation Need (SGCN).

General Description: The New Hampshire Wildlife Action Plan is a proactive effort to define and implement a strategy that will help keep species lists, in the process saving taxpayers millions of dollars.

Approach: The strategy used to address challenges to New Hampshire's wildlife included:

- Step 1: Identify SGCN – developed from existing priority lists and were reviewed by taxonomic experts.
- Step 2: Identify and map key wildlife habitat – developed based on habitat requirements of associated species of concern and mapped using GIS computer analyses.
- Step 3: Evaluate risk factors – panel of experts used to identify risk factors associated with each issue associated with a target species or habitat.
- Step 4: Develop strategies – based on input from wildlife management experts.
- Step 5: Integrate monitoring, performance, and adaptive management – uses measurable indicators of change.
- Step 6: Plan for implementation – describes plan for coordinating, reviewing, and revising the Wildlife Action Plan during the implementation phase.

Results: In total, 123 species were identified as SGCN: 13 mammal species, 52 birds, 15 reptiles and amphibians, 24 fishes, and 19 invertebrates. Key habitat was characterized by three variables: Large-Scale Habitats, Watershed Groupings, and Medium and Small-Scale Habitats. Large-Scale Habitats relevant to forest management included the matrix forest types Appalachian Oak-Pine Forest, High-Elevation Spruce-Fir Forest, Lowland Spruce-Fir Forests, Northern Hardwood-Conifer Forest, Hemlock-Hardwood-Pine Forest. Watershed Groupings targeted aquatic ecosystems. Medium and Small-Scale Habitats relevant to forest management included floodplain forests, peatlands, pine barrens, and shrublands.

Plan Citation: New Hampshire Fish and Game Department. 2005. *New Hampshire Wildlife Action Plan*. Concord, NH: New Hampshire Fish and Game Department.

New Hampshire Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Department of Resources and Economic Development, Division of Forests and Lands

Partners/Collaborators: New Hampshire Forest Advisory Board

Year Completed: 2010

Area Included: State of New Hampshire

Website Link: www.nhdf.org/about-forests-and-lands/bureaus/sars.aspx

Primary Goals: The Assessment was designed to provide the best available information about the status of New Hampshire's forests. The goal of the New Hampshire Forest Resource Plan process was to engage New Hampshire people to identify issues; state desired outcomes; and develop strategies for the New Hampshire natural resource community to implement to reach their desired outcomes.

Key Assessment Findings: Assessment findings are organized using the seven criteria for sustainability in the Montreal Process framework.

- Criterion 1: Conservation of Biological Diversity
- Criterion 2: Maintenance of Productive Capacity of Forest Ecosystems
- Criterion 3: Maintenance of Forest Ecosystem Health and Vitality
- Criterion 4: Conservation and Maintenance of Soil and Water Resources
- Criterion 5: Maintenance of Forest Contribution to Global Carbon Cycles
- Criterion 6: Maintenance and Enhancement of Long-Term Multiple Socio-Economic Benefits to Meet the Needs of Societies
- Criterion 7: Legal, Institutional, and Economic Framework for Forest Conservation and Sustainable Management

Key Strategies: The document identifies 145 individual strategies organized under eight focus areas and the three national priorities of the USDA for the Statewide Assessment process.

- Priority I: Conserve New Hampshire’s Forested Landscape
 - Focus Area A: Good Forest Stewardship in New Hampshire’s Forests
 - Focus Area B: Enhancing Urban and Community Forestry
 - Focus Area C: Sustainable Forest Based Economy
- Priority II: Protect New Hampshire’s Forests from Harm
 - Focus Area A: Protect Forest from Threats
 - Focus Area B: Maintain Ecosystem Health
 - Focus Area C: Response to Forest Damage
- Priority III: Enhance Benefits from New Hampshire’s Trees and Forests
 - Focus Area A: Sustaining Economic Benefits from New Hampshire Forests
 - Focus Area B: Sustaining Environmental Services from New Hampshire Forests

5.22 New York

New York Wildlife Action Plan

Coordinating Organization(s): New York State Department of Environmental Conservation

Partners/Collaborators: Statewide conservation organizations, local government, tribal organizations, state and federal agencies, non-profit organizations, and other interested parties.

Year Completed: 2005

Area included in the plan: State of New York

Website Link: www.wildlifeactionplans.org/new_york.html

Primary Goals: To utilize the best available data on the status of fish and wildlife species to define a vision and establish a strategy for state wildlife conservation and funding.

General Description: The New York Wildlife Action Plan was developed to help the Department of Environmental Conservation achieve its wildlife conservation mission and several goals. Those goals include developing a plan that 1) will be implemented by all segments of New York government, all conservation organizations, and any individual stakeholder, 2) stimulates synergy between an ecosystem approach to conservation and a sense of place, 3) conserves Species of Greatest Conservation Need (SGCN), 4) fosters the application of good science, and 5) sets bench marks for success.

Approach: The plan identified three steps in their approach.

Step 1: Identify SGCN – developed in consultation with species experts and scientists.

Step 2: Identify and describe critical habitat for priority species – reports were reviewed by peers and species experts.

Step 3: Organize species and their habitats by the major watershed basins of the state.

Results: In total, 537 species were identified as SGCN, among them 22 mammal species, 118 birds, 44 reptiles and amphibians, 99 fishes, and 75 invertebrates. The plan also identified critical habitats for each of the 10 watershed basins.

Plan Citation: New York State Department of Environmental Conservation. 2005. *New York State Comprehensive Wildlife Conservation Strategy: A Strategy for Conserving New York's Fish and Wildlife Resources*. Albany, NY: New York State Department of Environmental Conservation.

New York Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Department of Environmental Conservation, Division of Lands and Forests

Partners/Collaborators:

Year Completed: 2010

Area Included: State of New York

Website Link: www.dec.ny.gov/lands/60829.html

Primary Goals: To assess the status of New York's forest land, and provide practical recommendations on how landowners, forest stakeholders and federal, state and local governments can work together to sustain the many benefits and ecosystem services our forests provide to our society.

Key Assessment Findings: Assessment findings are organized using the seven criteria for sustainability in the Montreal Process framework. In addition, the following 10 priority issues are identified and provide the background and context for strategies and actions.

- “Keeping forests as forests”: Retention of trees and forest land across New York State
- “Sustaining working landscapes”: Working to provide all forest benefits and services
- Promoting and applying Best Management Practices to ensure sustainability on the land

- Sustainable markets for timber products
- Water quality and supply
- Biodiversity
- Forest health
- Climate change
- Urban tree canopy and green infrastructure
- Connections between people and the outdoors

Key Strategies: The following strategies are the first identified for each of the ten priority issues.

- Retain forests across the state.
- Provide legal, economic and social mechanisms to ensure forest landowners have the ability to continue to practice active, sustainable forest management.
- Cultivate a long-term “Forest Stewardship Ethic.”
- Increase availability, diversity and economic viability of markets for sustainable state forest products & services.
- Protect high quality watersheds, shorelines and riparian areas.
- Provide guidance and assistance to local governments for incorporating biodiversity principles in planning and zoning decisions.
- Fight invasive pests and diseases.
- Recognize the role of forests to mitigate & adapt to climate change.
- Engage & educate communities on the importance of urban forestry and green infrastructure.
- Support “Smart Growth” and sustainable community development principles.

5.23 North Carolina

North Carolina Wildlife Action Plan

Coordinating Organization(s): North Carolina Wildlife Resources Commission

Partners/Collaborators: State and federal agencies, non-governmental organizations, academia, general public, and private landowners.

Year Completed: 2005

Area included in the plan: State of North Carolina

Website Link: www.wildlifeactionplans.org/north_carolina.html

Primary Goals: 1) Improve understanding of species diversity in North Carolina and enhance the North Carolina Wildlife Resources Commission’s ability to make conservation or management

decisions for all species; 2) conserve and enhance habitats and the communities they support; 3) foster partnerships and cooperative efforts among natural resource agencies, organizations, academia and private industry; 4) support educational efforts to improve understanding of wildlife resources among the general public and conservation stakeholders; and 5) support or improve regulations and programs aimed at conserving habitats and communities.

General Description: The Wildlife Action Plan is a guide to the North Carolina Wildlife Resources Commission and to their partners in conservation for sound management of North Carolina's fish and wildlife resources into the future. The plan provides critical direction and serves as a blueprint for fish and wildlife conservation activities in state. Significant wildlife resource and critical habitats across the state, as well as priorities for conserving those resources, are identified.

Approach: A fine-filter/coarse-filter approach was used. A list of Species of Greatest Conservation Need (SGCN) was developed using 10 criteria that included current protection status and state rank, exploitation, current/previous funding, feasibility, population information and distribution, and other criteria. Taxonomic committees were developed to review the draft list of SGCN and these reviews were then evaluated relative to a scoring system appropriate to the criteria. The final selection of SGCN was developed as a result of the final scores. Experts from each taxonomic committee were asked to supply habitat association or river basin distribution information for each SGCN. Terrestrial habitat associations were developed from previously identified and described natural communities in North Carolina. These designations were then cross-walked with North Carolina Georgia land cover classifications and linked to Bailey's ecoregions.

Results: In total, 368 species were identified as SGCN: 38 mammal species, 92 birds, 84 reptiles, 83 fishes, and 71 invertebrates. Of these, 168 species currently had protection status at the state or federal level. Habitat associations were developed for three primary systems by ecoregion: Terrestrial, River Basin, and Coastal. The plan identified 23 habitat associations within terrestrial systems.

Plan Citation: North Carolina Wildlife Resources Commission. 2005. North Carolina Wildlife Action Plan. Raleigh, NC.

Little River Riparian Corridor Conservation Plan

Coordinating organizations: Eno River Association and Conservation Trust of North Carolina

Partners/Collaborators: Eno River Association and Conservation Trust, Upper Neuse River Basin Association, and Triangle J Council of Governments.

Year Completed: 2005

Area included in the plan: 105 square miles

Website Link: www.unrba.org/littleriv/

Primary Goal: Identify and prioritize the most ecologically valuable properties.

General Description: The Little River Riparian Corridor Conservation Plan identifies the most valuable sites for protecting water quality, aquatic habitat, and riparian habitat in the watershed.

Approach: Applied a five step process – 1) Establish criteria to guide the landscape and restoration hot spot analysis, and assess opportunities with any given tract in the watershed. 2) Perform landscape analysis and identify protection “hot spots,” 3) Perform restoration “hot spots” analysis, 4) Perform parcel-level analysis, and 5) Conduct final prioritization and mapping.

Results: The plan resulted in prioritization of 181 tracts for land protection and identification of 56 potential stream, wetland, and buffer restoration sites. (Note: Map of priority sites not available on the Internet.)

Plan Citation: Upper Neuse River Basin Association and Triangle J Council of Governments. 2005. Little River Riparian Corridor Conservation Plan. Conservation Trust for North Carolina and North Carolina Clean Water Management Trust Fund.

North Carolina Sandhills Conservation Partnership

Coordinating Organizations: The Nature Conservancy and the U.S. Fish and Wildlife Service

Partners/Collaborators: U.S. Fish and Wildlife Service, U.S. Army at Fort Bragg, U.S. Army Environmental Command, North Carolina Wildlife Resources Commission, North Carolina Division of Parks and Recreation, North Carolina Division of Forest Resources, North Carolina Division of Natural Resources Planning and Conservation, The Nature Conservancy, Sandhills Area Land Trust and the Sandhills Ecological Institute. The NCSCP also seeks input from over 18 stakeholder organizations.

Year Completed: 2004

Area Included in the Partnership: 1 million acres in south-central North Carolina

Website Link: www.ncscp.org/

Primary Goal: The mission of the NCSCP is to coordinate the development and implementation of conservation strategies for the red-cockaded woodpecker (*Picoides borealis*), other native biota, longleaf pine and other ecosystems in the Sandhills of North Carolina. The NCSCP has developed a Site Conservation Plan for the North Carolina Sandhills.

General Description: The Site Conservation Plan for the North Carolina Sandhills is based on the Nature Conservancy's 5-S Framework, which seeks to identify systems, stresses, sources of stress, strategies, and measures of success for the project areas. The Partnership was developed to implement conservation strategies to protect the biodiversity of the Sandhills.

Approach: The 5-S Framework was used to identify conservation targets, i.e., species, community types, or spatial arrangement of communities that, together, account for over 95% of the biodiversity of the Sandhills. A biodiversity health assessment was then conducted for each of the targets to establish baseline conditions relative to the area of a target's occurrence, current status, and landscape context. Threats to conservation targets are described relative to types of stress and sources of stress. An Action Plan Framework was then developed that directly or indirectly abates threats that are currently weakening the biodiversity health of Sandhill's conservation targets.

Results: Five conservation targets were identified for the project area by the plan participants.

1. Red Cockaded Woodpecker
2. Longleaf Pine Mosaic Streambed Pocosins/Seep
3. Blackwater Streams
4. Upland Depressional Wetland

The Action Plan Framework outlined 37 strategic actions that are expected to directly or indirectly abate the threats that are weakening the biodiversity health of the conservation targets.

Plan Citation: Nelson, L. 2004. *Site conservation plan for the North Carolina Sandhills*. U.S. Fish and Wildlife Service and The Nature Conservancy. <http://www.denix.osd.mil/nr/upload/report-all-elements.pdf>

North Carolina Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): North Carolina Department of Environment and Natural Resources, Division of Forest Resources

Partners/Collaborators: U.S. Forest Service and others.

Year Completed: 2010

Area Included: State of North Carolina

Website Link: www.ncforestassessment.com/index.htm

Primary Goals: To provide a comprehensive analysis of forest-related conditions, trends, threats, and opportunities and define long-term plans for investing state, federal, and other resources where they can most effectively stimulate or leverage desired action and engage multiple partners.

Key Assessment Findings: Following are examples of the 92 key findings identified in the assessment.

- In 2007, North Carolina had 18 million acres of timberland—a gain of 362,000 acres since 2002.
- The volume and extent of longleaf pine, Atlantic white cedar, and shortleaf pine, species with ecological and economic importance, has significantly declined in North Carolina.
- The majority of family forests and farms are small. Almost 90% of family forests are less than 50 acres with the majority less than 10 acres. Nearly seven of 10 family farms are less than 100 acres, while most are less than 50 acres.
- Major forest pests and non-native invasive (NNI) plants significantly damage the ecological and economic vitality of North Carolina's forests.
- Fire exclusion contributes to the decline or loss of fire-dependent ecosystems and species, and creates fuel conditions that produce destructive wildfires.
- Though not fully understood, climate change and atmospheric conditions may differentially impact North Carolina forests' composition and resilience.
- Even as the number of manufacturing sector jobs increased and wage growth improved in North Carolina between 2000 and 2008, forest industry related jobs and wage growth declined.
- Former industry timberlands are now owned primarily by TIMOs and REITs, and not by vertically integrated forest product companies.
- Pine sawtimber prices have been declining since 2000, largely due to declines in eastern North Carolina pine sawtimber stumpage values.

Key Strategies: The plan is organized by seven global goals that narrow to specific strategies.

- Goal 1: Increase the sustainable management and conservation of forest lands in NC.
- Goal 2: Reduce negative impacts from forest threats.
- Goal 3: Increase the restoration, maintenance, and management of fire adapted species and ecosystems.
- Goal 4: Maintain or increase the viability and sustainability of existing and emerging markets.
- Goal 5: Increase and enhance fish and wildlife habitat on North Carolina's forests
- Goal 6: Manage, conserve, restore, and enhance forestlands important to current and future supplies of clean water for economic, social, and ecological uses.
- Goal 7: Enhance the benefits and sustainable management of urban forests.

5.24 Ohio

Ohio Wildlife Action Plan

Coordinating organizations: Ohio Department of Natural Resources Division of Wildlife

Partners/Collaborators: Conservation organizations, constituent leaders, academic professionals, federal and state agencies.

Year Completed: 2005

Area included in the plan: State of Ohio

Website Link: www.wildlifeactionplans.org/ohio.html

Primary Goal: To provide tactical direction for conserving wildlife diversity in Ohio.

General Description: The Ohio Wildlife Action Plan focuses on wildlife, their habitat, and people of the state. The plan approaches fish and wildlife conservation with diverse strategies that involve not only the Division of Wildlife, but also private landowners, conservation organizations, and other governmental agencies.

Approach: Ohio has operated under a comprehensive management system for more than 15 years. The plan is an extension of this larger planning system, which includes a long-term strategic plan to address the threats and opportunities for Ohio's fish and wildlife resources. The plan is broadly divided into two areas of concern, terrestrial wildlife conservation and aquatic wildlife conservation. The terrestrial information is categorized by habitat tactical plans and focus area plans representing forestland, wetland, grassland, and unique habitats. The terrestrial tactical plans directly address the issues, direction, and strategies related to the habitat type, while the strategies identified in the focus area plans are designed to provide sufficient habitat for viable populations of species of concern. The aquatic strategy is divided into 11 watershed plans that represent the principal watersheds of Ohio. Each watershed plan identifies watershed characteristics, aquatic species, conservation issues, and proposed actions and monitoring plans.

Results: In total, 240 species were identified as SGCN: 25 mammal species, 89 birds, 32 reptiles and amphibians, 40 fishes, and 54 invertebrates. For terrestrial conservation, 5 habitat tactical plans and 8 focus area plans are identified. For aquatic conservation, 11 watershed plans are identified.

Plan Citation: Ohio Department of Natural Resources Division of Wildlife. 2005. *Ohio Comprehensive Wildlife Conservation Strategy*. Columbus, OH: Ohio Department of Natural Resources.

Ohio Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Ohio Department of Natural Resources, Division of Forestry

Partners/Collaborators: U.S. Forest Service and others.

Year Completed: 2010

Area Included: State of Ohio

Website Link: <http://www.ohiodnr.com/default/tabid/22674/Default.aspx>

Primary Goals: To provide a basis upon which future strategic directions and actions can be evaluated and selected. To marshal limited resources toward addressing identified forest issues and threats.

Key Assessment Findings: Issues identified in the assessment were grouped together under seven broad categories. Following are examples from each category.

- Eighty-eight percent of Ohio's forests are privately owned, and 73% are family forests.
- For removals, 65% are from timber harvesting and 32% are conversion to non-forest land. Three percent is conversion to reserved forests.
- The mortality rate in Ohio's forests increased slightly from 0.6 to 0.9% of inventory volume. This trend is consistent with the overall maturing of Ohio's forests.
- Riparian forest cover is relatively stable, although of concern, perennial streams are declining in cover, with the southeastern part of the state showing much of that decline.
- The greatest stores of carbon in forests are in southeast and northeast Ohio, with most of the carbon in live trees and soil.
- The Gross Domestic Product (GDP) for wood-related industries in Ohio has been relatively stable over the past decade, with furniture prices showing a gradual increase. Timber prices in Ohio, however, have declined significantly since 2005.
- In general, forest management standards in Ohio are voluntary. Some programs provide incentives for landowners to encourage good management, such as the Ohio Forest Tax Law program and the USDA Environmental Quality Incentive Program.

Key Strategies: Strategies were grouped under six categories. Following are examples from each category.

- Manage public forests to ensure the health and sustainability of forest systems.
- Increase public awareness of forest benefits and services and major forest threats.

- Expand riparian forest buffers in agricultural areas and urban tree canopy in urban areas.
- Promote regeneration of oak-hickory forests.
- Monitor existing forest health threats and mitigate their impact.
- Maintain economic benefits and ecological values of working forests through landowner incentives, conservation easements, and property tax programs.

5.25 Oregon

Oregon Wildlife Action Plan

Coordinating Organization(s): Oregon Department of Fish and Wildlife

Partners/Collaborators: Local, state, tribal, and federal government agencies, non-government organizations, industry, business, professional organizations, academia, and private citizens.

Year Completed: 2006

Area included in the plan: State of Oregon

Website Link: www.wildlifeactionplans.org/oregon.html

Primary Goal: Maintain healthy fish and wildlife populations by maintaining and restoring functioning habitats, prevent declines of Species of Greatest Conservation Need (SGCN), and reverse any declines in these resources where possible.

General Description: The Oregon Wildlife Action Plan builds on existing efforts to provide a framework for a cohesive, statewide, non-regulatory approach to habitat and species conservation. Implementation of the plan will require coordination between state and federal agencies, as well as between varieties of groups that implement plans.

Approach: The plan used a coarse-filter (habitat) – fine filter (species) approach to conservation planning. Strategy habitats were defined as the coarse-filter and were determined by comparing current vegetation maps to those of 1850 to determine vegetation types that had a high degree of loss.

Results: In total, 286 species were identified as SGCN: 18 mammal species, 62 birds, 22 reptiles and amphibians, 65 fishes, 59 invertebrates, and 60 plants. Key habitats identified in this plan that are of relevance to forest management include: Aspen Woodlands, Late Successional Conifer Forests, Ponderosa Pine Woodlands, Oak Woodlands, Riparian Habitats, and Wetlands.

Plan Citation: Oregon Department of Fish and Wildlife. 2006. *Oregon Conservation Strategy*. Salem, OR: Oregon Department of Fish and Wildlife.

Willamette Restoration Strategy

Coordinating Organization(s): Willamette Restoration Initiative

Partners/Collaborators: Local, state, and federal governments, businesses, utilities, tribes, academia, watershed groups, soil and water conservation districts, agriculture, forestry, and environmental groups.

Year Completed: 2001

Area included in the plan: Willamette Basin

Website Link: ir.library.oregonstate.edu/jspui/bitstream/1957/58/1/WRS_OVER.pdf

Primary Goal: To provide a restoration vision and framework for the entire Willamette Basin.

General Description: The Willamette Restoration Strategy recommends appropriate efforts to restore the health of the Willamette Basin. It identifies needed and effective actions that must be taken to safeguard driver resources. The Strategy is a product of the Willamette Restoration Initiative which was established by State Executive Order to develop a basin-wide strategy to protect and restore fish and wildlife habitat, increase populations of declining species, enhance water quality, and properly manage floodplain areas.

Approach: The Habitat Conservation and Restoration Opportunities map was based on the Pacific Northwest Ecosystem Research Consortium's scientific analysis of past habitat location and current land cover.

Results: The strategy identified 27 critical actions necessary to restore the health of the Basin. These actions fell into four restoration focus areas: clean water, water quantity, habitats and hydrologic processes, and institutions and policies. In addition, four key recommendations were also outlined: 1) use the Habitat Conservation and Opportunities map as a tool to guide restoration decisions in the basin, 2) use environmental indicators from the *Oregon State of the Environment Report 2000* to guide development of basin-specific restoration targets, 3) establish a sound restoration investment plan by identifying existing assets and future needs and funding sources, and 4) continue refinement of the strategy.

Plan Citation: Jerrick, N. 2001. *Restoring a River of Life: The Willamette Restoration Strategy*. Willamette Restoration Initiative.

Oregon Biodiversity Project – Oregon's Living Landscape

Coordinating organizations: Defenders of Wildlife, The Nature Conservancy, and Oregon Natural Heritage Program

Partners/Collaborators: State and federal government agencies, conservation organizations, businesses, and academia.

Year Completed: 1998

Area included in the plan: State of Oregon

Website Link:

www.defenders.org/programs_and_policy/habitat_conservation/habitat_conservation_basics/sprawl/programs_at_work/oregon_biodiversity_project.php

Primary Goal: To develop a statewide strategy to conserve Oregon's natural biological diversity.

General Description: The Oregon Biodiversity Project is a private sector-based collaborative effort that produced a statewide biodiversity analysis and outlined a broad conservation strategy to guide future action. That strategy is described in the document *Oregon's Living Landscape: Strategies and Opportunities to Conserve Biodiversity* (1999).

Approach: Conservation opportunity areas were identified in a process that began with a landscape assessment using various GIS data layers (existing vegetation, historical vegetation, aquatic diversity areas, at-risk plant and animals, salmon core areas, wilderness study areas, existing conservation areas) to determine gaps in the existing conservation network, as well as assess changes to historic vegetation patterns and areas having significant biodiversity values. The results of this assessment were further evaluated for ability to address ecoregional and statewide conservation priorities by looking for large blocks of native habitat, vegetation or habitat that have declined significantly from historic levels, vegetation types that are not well represented in conservation areas, at-risk species, and potential to connect existing conservation areas. Finally, these results were reviewed for their potential to address conservation priorities. Factors considered included land ownership, current management, potential future threats, etc.

Results: In total, 42 conservation opportunity areas were identified across the state. The vegetation analysis conducted as part of the strategy identified 46 native vegetation types out of 67 that may be considered vulnerable or at risk. These 46 represented vegetation types that have < 15% of their distribution within existing conservation areas. Thirty of the 67 native types had < 5% within current conservation areas.

Plan Citation: Oregon Biodiversity Project. 1998. *Oregon's Living Landscape: Strategies and Opportunities to Conserve Biodiversity*. A Defenders of Wildlife Publication.

Oregon's Greatest Wetlands

Coordinating Organization(s): The Wetlands Conservancy

Partners/Collaborators: Local communities, land trusts, watershed councils, state resource managers, and landowners.

Year Completed: Ongoing

Area included in the plan: State of Oregon

Website Link: <http://www.oregonwetlands.net/index.php/current-projects/ogw>

Primary Goal: To coordinate statewide conservation efforts for biologically important wetlands.

General Description: The state of Oregon does not have a statewide strategy for identifying and protecting its biologically important wetlands. This project was envisioned as a comprehensive Oregon wetland conservation concept that creates a vehicle for better collaborations, partnerships, and information exchanges, as well as assures conservation of important wetland resources, and creates a stronger position for increased funding.

Approach: The project identifies, maps, and gathers information on the state's most valuable wetlands. Conservation and restoration plans are being developed for regional wetland resources.

Results: A statewide map of Oregon's Greatest Wetlands has been developed. Conservation and restoration plans have been developed for four regions to date: the Deschutes, Scappoose Bay Bottomlands, Youngs Bay Bottomlands, and Youngs Bay areas.

Plan Citation: No single citation is available for this project. Please see website link above for more information.

Oregon Plan for Salmon and Watersheds

Coordinating Organization(s): Oregon Watershed Enhancement Board

Partners/Collaborators: State, federal, and tribal agencies, non-governmental organizations, and watershed councils.

Year Completed: 1997

Area included in the plan: State of Oregon

Website Link: www.oregon-plan.org/OPSW/

Primary Goal: To restore salmon runs, improve water quality, and achieve healthy watersheds and strong communities throughout the state.

General Description: The Oregon Plan engages communities in the restoration and long-term stewardship of their watersheds by encouraging local partnerships and voluntary actions to improve the conditions of watersheds.

Approach: The Oregon Plan involves four essential elements: 1) coordination of effort by all parties, 2) development of action plans with relevance and ownership at the local level, 3) monitoring progress, and 4) making appropriate corrective changes in the future.

Results: Immediate steps identified included continuing leadership and coordination, active participation by the Oregon Legislature, independent scientific assessment team appointed and established, and providing support and technical assistance to watershed councils, soil and water conservation districts, and other grassroots organizations. More recently, this program has produced species-level conservation plans such as the Oregon Coast Coho Conservation Plan (www.oregon.gov/OPSW/cohoproject/PDFs/November2007_pdfs/Coho_Plan.pdf) that identifies biological objectives and site-level actions that can be implemented.

Plan Citation: Oregon Coastal Salmon Restoration Initiative. 1997. *The Oregon Plan: Restoring an Oregon Legacy through Cooperative Efforts*. Coastal Salmon Restoration Initiative.

Oregon Statewide Forest Assessment and Resource Strategy

Coordinating Organization(s): Oregon Department of Forestry

Partners/Collaborators: Oregon Forest Stewardship Coordinating Committee, the Nature Conservancy of Oregon, the American Forest Resource Council, Oregon Forest Industries Council, the Western Governors Association, and the West Wide [Fire] Risk Assessment Project.

Year Completed: 2010

Area Included: State of Oregon

Website Link: www.oregon.gov/ODF/RESOURCE_PLANNING/2010fars.shtml

Primary Goals: To coordinate the investment of USDA Forest Service State and Private Forestry programs with other federal, state and non-governmental programs so as to leverage their combined effectiveness in addressing priority forestry issues.

Key Assessment Findings: The assessment identifies four main threats and five priority issues. Threats to Oregon's forests include development, loss of forest products industry, tree mortality, and

wildfire and wildfire risk. Priority issues are communities at risk of wildfire, maintaining the forestland base, diversity of upland and aquatic habitats, invasive species, and water quality.

Key Strategies: The following are example strategies for the five priority issues.

- Provide financial, technical, and other assistance to State Foresters to organize, train and equip rural fire departments to prevent and suppress wildfires.
- Explore and pursue significant improvements to the structure and funding of the Oregon Department of Forestry's budget.
- Ensure active management of urban forests through inventory, planning, tree care, management and monitoring.
- Provide technical and financial assistance in forest management planning.
- Promote voluntary incentive programs and tools to conserve *Oregon Conservation Strategy* "Strategy Habitats" on private forestlands within Conservation Opportunity Areas.
- Effective administration, educational assistance, enforcement and landowner recognition of Oregon Forest Practices Act resource protection measures.
- Program development in forest invasive species education and outreach, prevention, early detection, rapid response, eradication, risk assessment, survey and monitoring, containment and restoration.
- Detection, eradication and post-treatment monitoring of all sites infested with *Phytophthora ramorum*.
- Ensure active management of urban and urban-rural forests to maintain tree canopy cover, parks and open space to reduce impervious surface area and intercept stormwater run-off.
- Compliance auditing and effectiveness monitoring of the Oregon Forest Practices Act water protection rules with respect to their role as best management practices designed to meet Oregon's water quality standards for temperature, sediment and toxicity.

5.26 Pennsylvania

Pennsylvania Wildlife Action Plan

Coordinating Organization(s): Pennsylvania Game Commission

Partners/Collaborators: Agencies, non-governmental organizations, and individuals.

Year Completed: 2005

Area included in the plan: State of Pennsylvania

Website Link: www.wildlifeactionplans.org/pennsylvania.html

Primary Goal: To conserve Pennsylvania's diverse wildlife to maintain its role in ecological processes, and to protect and enhance Species of Greatest Conservation Need (SGCN).

General Description: The Pennsylvania Wildlife Action Plan will improve the scientific basis for making conservation decisions for wildlife, with special emphasis on SGCN. It will plan, prioritize, and implement actions that will conserve the state's diversity of wildlife and its habitat and ensure that the necessary resources are available to conserve Pennsylvania's wildlife. It will also expand and improve coordination of the public agencies and other partners in wildlife conservation planning and implementation.

Approach: The plan outlined the following approach.

Step 1: Identify SGCN – developed by technical committees made up of taxonomic specialists from various universities, conservation organizations, and resource agencies. Each species was placed in one of five tiers: Tier 1 – Immediate Concern; Tier 2 – High-Level Concern; Tier 3 – Responsibility Species; Tier 4 – Pennsylvania Vulnerable; and Tier 5 – Maintenance Concern.

Step 2: Determine distribution and abundance of SGCN.

Step 3: Identify key habitats for SGCN.

Step 4: Describe problems that adversely affect SGCN.

Step 5: Develop and prioritize conservation actions.

Step 6: Determine monitoring needs.

Results: In total, 573 species were identified as SGCN: 14 mammal species, 44 birds, 37 reptiles and amphibians, 69 fishes, and 409 invertebrates. Key habitats of relevance to forest management identified in this plan include Deciduous/Mixed Forests, Coniferous Forests, Wetlands, Thicket/Shrub Habitats, and Riparian Thickets/Forests.

Plan Citation: Pennsylvania Game and Fish Commission and Fish and Boat Commission. 2005. *Pennsylvania Comprehensive Wildlife Conservation Strategy*.

Pennsylvania Biodiversity Conservation Plan (Draft)

Coordinating Organization(s): Pennsylvania Biodiversity Partnership

Partners/Collaborators: State and federal agencies, non-governmental organizations, industry, academia and professional societies.

Year Completed: In progress

Area included in the plan: State of Pennsylvania

Website Link: www.pabiodiversity.org/conservation.html

Primary Goal: To provide recommendation and strategies for the long-term sustainability of biodiversity in Pennsylvania.

General Description: The Pennsylvania Biodiversity Conservation Plan is a non-regulatory effort designed to identify needs, to encourage cooperation and collaboration, and to implement actions at state, regional, and local levels throughout Pennsylvania. The plan strives to conserve Pennsylvania's biodiversity through proactive measures emphasizing voluntary and incentive-based programs.

Approach: The plan calls for developing a cooperative framework of ongoing scientific research and resources to support biodiversity management. A draft document outlining this framework is available for comment at this time.

Results: Incomplete

Plan Citation: Not available

Pennsylvania Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Pennsylvania Department of Conservation and Natural Resources, Bureau of Forestry

Partners/Collaborators: U.S. Forest Service and others.

Year Completed: 2010

Area Included: State of Pennsylvania

Website Link: www.dcnr.state.pa.us/forestry/farbill/index.html

Primary Goals: To describe current forest conditions and trends, identify priority issues, delineate important landscapes across the Commonwealth, and propose long-term strategies for achieving sustainability.

Key Assessment Findings: The Assessment concludes that Pennsylvania's forests tend toward a sustainable condition, but with some areas of concern. Eight priority issues are land use, forest health, forest management, climate change, communicating natural resource values, energy development, wildland fire and public safety, and plant and animal habitat.

Key Strategies: Strategies were developed for the eight priority issues above and an additional issue, "Recreation and Quality of Life." The following strategies are the first listed for these nine issues.

- Promote acquisition of priority forestland in fee or through permanent easements by leveraging existing private, state, local and federal funding sources.
- Develop and implement integrated pest management strategies and plans, and provide management recommendations for significant forest damage causing agents.
- Effective and innovative use of communication tools, venues, and opportunities throughout the urban to rural continuum.
- Identify climate change impacts and prioritize research and survey efforts: consider both direct and indirect impacts of climate change; identify and execute research in partnership with other conservation organizations, and state and federal agencies to gain economy of scale and consider climate change as an additional "layer" of threats added to existing threats.
- Develop a statewide interpretive plan for state forest land to engage/connect people with resource values and benefits.
- Continue careful permitting and environmental review processes.
- Maintain capacity within the Bureau of Forestry to engage in safe and effective wildfire suppression activities.

- Identify plant and wildlife taxa and habitats of special concern that rely on private and state forest land. Identify forest species and habitats considered to be at-risk based upon the *State Wildlife Action Plan* (SWAP) and recommendations of the Pennsylvania Biological Survey (PBS) and Pennsylvania Natural Heritage Program (PNHP). Work with state and federal agencies, nongovernmental organizations (NGO) and private landowners to identify critical habitat.
- Implement visitor use monitoring program for state forest system; and incorporate visitor use monitoring data into Recreation Opportunity Spectrum (ROS) process to improve visitor experience management.

5.27 Rhode Island

Rhode Island Wildlife Action Plan

Coordinating Organization(s): State of Rhode Island Department of Environmental Management Division of Fish and Wildlife

Partners/Collaborators: State and federal agencies, non-governmental organizations, professional associations, academia, and tribes.

Year Completed: 2005

Area included in the plan: State of Rhode Island

Website Link: www.wildlifeactionplans.org/rhode_island.html

Primary Goal: To provide the Division of Fish and Wildlife and its conservation partners with direction and coordination of wildlife conservation efforts for the next decade.

General Description: The Rhode Island Wildlife Action Plan identifies threats to important species and their habitats, and identifies habitat loss and degradation from human population growth with its associated impacts as high on the list of threats. The plan outlines a series of actions prescribed for the next decade to address these threats and to effectively conserve Rhode Island's important wildlife resources.

Approach: The steps used to develop the plan follow.

- Step 1: Identify Species of Greatest Conservation Need – compiled using the best available quantitative and qualitative information from representatives, internal and external experts, and stakeholders.
- Step 2: Identify key habitats – involved input and analysis/review by representatives, scientific experts, and stakeholders.
- Step 3: Identify problems affecting Species of Greatest Conservation Need and their habitats in Rhode Island.
- Step 4: Identify actions to conserve Species of Greatest Conservation Need and Key Habitats.

Results: In total, 364 species were identified as SGCN: 23 mammal species, 129 birds, 21 reptiles and amphibians, 34 fishes, and 157 invertebrates. This plan identified that these species are supported

throughout the state by 64 different types of key habitats. Fifteen of these key habitats are upland forest habitats.

Plan Citation: Rhode Island Department of Environmental Management, Division of Fish and Wildlife. 2005. *Rhode Island's Comprehensive Wildlife Conservation Strategy*. Wakefield, RI: Rhode Island Department of Environmental Management. 340 pp.

Rhode Island Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Rhode Island Department of Environmental Management Division of Forest Environment

Partners/Collaborators: U.S. Forest Service and others.

Year Completed: 2010

Area Included: State of Rhode Island

Website Link: <http://www.dem.ri.gov/programs/bnatres/forest/pdf/assestra.pdf>

Primary Goals: To protect and conserve Rhode Island's forest resources and the many associated attributes.

Key Assessment Findings: Examples of findings are as follows:

- Since the first assessment by the U.S. Forest Service in 1952, the ownership of forest acreage owned by state and local municipalities increased 13.7%, from 69,700 to 80,800 acres.
- Approximately 52% of Rhode Island is covered with forest.
- Private individuals still own most of Rhode Island's forestland.
- Issues affecting water quality are at the forefront of public concern.
- The USDA Forest Service reports 1.3 billion board feet of sawtimber in Rhode Island, an increase of almost 23% since the previous forest inventory.
- The forest products industry in Rhode Island is an important component of the economy, representing approximately 3.3% of all manufacturing jobs in the state.
- The ability of the Division of Forest Environment to carry out program needs is at an all time low with only 15 full-time employees and five professional foresters.

Key Strategies: Key issues addressed by the Strategy and an example strategy for each are as follows:

- *Forest Resource Management Statewide.* Seek increased and sustainable funding for management and improvements to access in State management areas.
- *Sustainability.* Maintain diverse forests.
- *Information and Education.* Expand educational opportunities and use electronic media to provide more information about forest resources.
- *Forest Health.* Continue to evaluate aspects of forest health conditions in Rhode Island's forests.

- *Forest Products Marketing.* Promote the wood and paper industry as a significant economic resource to the state, using forest products that focus on renewable resources and promote carbon sequestration.
- *Water Resources.* Increase public awareness about the role forests play in protecting water quantity and quality.
- *Recreation and Tourism.* Inventory, map, and classify forested recreation areas.
- *Fragmentation.* Identify critical areas of rapid forest conversion and fragmentation.

5.28 South Carolina

South Carolina Wildlife Action Plan

Coordinating Organization(s): South Carolina Department of Natural Resources

Partners/Collaborators: Federal and state agencies, non-governmental organizations, developers, local and county planners, professional foresters and agricultural representatives.

Year Completed: 2004

Area included in the plan: State of South Carolina

Website Link: www.wildlifeactionplans.org/south_carolina.html

Primary Goal: To emphasize a cooperative, proactive approach to conservation while working with federal, state, and local governments, local businesses, and conservation-minded individuals to join in the effort to maintaining the fish and wildlife resources of South Carolina.

General Description: The South Carolina Wildlife Action Plan is the first step toward instituting the following actions: 1) increased baseline biological inventories with emphasis on natural history, distribution and status of native species; 2) increased commitment by natural resource agencies, conservation organizations and academia toward establishing effective conservation strategies; 3) increased financial support and technological resources for planning and implementation of these strategies; and 4) creating public-private partnerships and educational outreach programs for broad-scale conservation efforts.

Approach: Species of Greatest Conservation Need (SGCN) were selected using eight criteria that incorporated existing state, federal, or other (i.e., Partners In Flight) priority designations and expert opinion on population status and distribution, as well as other criteria. Conservation strategies were developed based on eight Conservation Action Areas that addressed one or more species needs: 1) Education and Outreach, 2) Habitat Protection, 3) Invasive and Non-Native Species, 4) Private Land Cooperation, 5) Public Land Management, 6) Regulatory Actions, 7) Survey and Research Needs, and 8) Urban and Developing Lands. Each of the Conservation Action Areas was prioritized (highest, high, and moderate) and measures of the success of implementing the action were also identified.

Results: The plan identified 1,240 SGCN: 24 mammal species, 111 birds, 52 reptiles and amphibians, 225 fishes, and 828 invertebrates. Sixty-two conservation actions were identified across the eight Conservation Action Areas. Of these, 27 were ranked as highest priority, 17 were ranked as high priority, and 18 were ranked as moderate priority. The Habitat Protection Conservation Action Area had the largest number of highest priority actions (9 out of a total of 12).

Plan Citation: South Carolina Department of Natural Resources. 2005. *South Carolina Comprehensive Wildlife Conservation Strategy - 2005-2010*. Columbia, SC: South Carolina Department of Natural Resources.

South Carolina Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): South Carolina Forestry Commission

Partners/Collaborators: U.S. Forest Service and others.

Year Completed: 2010

Area Included: State of South Carolina

Website Link: www.state.sc.us/forest/scfra.htm

Primary Goals: To provide an analysis of the benefits that the forests of South Carolina provide as well as an examination of the forces that threaten them along with strategies ways to address these issues.

Key Assessment Findings: The benefits and threats to South Carolina forests can be summarized by the following 13 issues, listed in order of their priority ranking: water quality and quantity; stormwater management; prescribed burning; emerging markets; wildfire risk, forest regulation; forest health threats; air quality; fragmentation and parcelization; population growth; climate change; public perceptions about forestry; and community forests in South Carolina.

Key Strategies: The following are examples of strategies to address the 13 priority issues.

- Continue to develop Harbison State Forest and Piedmont Forestry Center for forestry education centers, and expand programs to other suitable Forestry Commission properties.
- Encourage active participation in forestry issues at all organizational levels. Identify specific audiences to be reached by each program and/or operating segment of the SC Forestry Commission.
- Research potential audiences for which to develop targeted information and/or education campaigns.
- Provide leadership in the identification, marketing, and development of appropriate primary and secondary forest industries.
- Maintain funds and personnel to re-measure the state's Forest Inventory and Analysis (FIA) plots on a five-year cycle.
- Collaborate with other natural resource organizations to identify and conserve high quality forest ecosystems and landscapes.
- Serve as a primary point of contact for 9-1-1 centers, fire departments, and the public.
- Redefine and strengthen the cooperative relationship with local fire departments as urban development expands into forested areas.
- Provide forest product theft awareness and prevention training to SCFC personnel, landowners, and cooperators.

- Improve delivery of pre-harvest planning and BMP recommendations through the Courtesy Exam Program to protect water quality and site productivity during forestry operations.
- Meet with local government personnel, advocacy groups, professional organizations and natural resource associations to provide technical assistance in the development and management of sustainable community tree/forest programs.
- Continue to monitor and research smoke management guidelines to maintain air quality standards.

5.29 South Dakota

South Dakota Wildlife Action Plan

Coordinating Organization(s): South Dakota Fish, Wildlife and Parks

Partners/Collaborators: Local, state, tribal and federal agencies, conservation organizations, agricultural and grazing organizations.

Year Completed: 2006

Area included in the plan: State of South Dakota

Website Link: gfp.sd.gov/wildlife/management/plans/wildlife-action-plan.aspx

Primary Goal: To serve as a strategic vision and plan of action for statewide wildlife conservation and funding.

General Description: The South Dakota Wildlife Action Plan identifies a strategy and actions that can be implemented by any landowner, agency, partnership, or private organization to conserve biological diversity in South Dakota. It places emphasis on ecosystem diversity and Species of Greatest Conservation Need (SGCN) while describing the full array of ecosystems possible within South Dakota. It initiates a process for identifying and monitoring the status of biological diversity. It identifies threats to biological diversity and establishes a conservation action process for ecosystems and species of concern.

Approach: The South Dakota Wildlife Action Plan incorporated a combined coarse-filter and fine-filter strategy for conservation of biological diversity. A description of ecosystem diversity based on the historical references for ecological community compositions, structures, and dynamic process represents the coarse filter. A description of problems and habitat needs for individual wildlife SGCN represents the fine filter component. SGCN were identified using existing state and federal species of concern lists with input from technical experts within the state to expand or reduce the list as appropriate.

Results: In total, 90 species were identified as SGCN: 10 mammal species, 28 birds, 12 reptiles and amphibians, 20 fishes, and 20 invertebrate species. Ecosystem diversity was described for each of the five ecoregions/subregions within South Dakota that represents the historical reference or coarse filter for ecological communities. Quantitative goals were identified for representation of historical conditions within each of the ecoregions. SGCN were linked to historical ecosystem diversity and amounts of habitat were quantified, if goals for representation were achieved. Forest systems were primarily addressed in the Black Hills ecoregion.

Plan Citation: South Dakota Department of Game, Fish, and Parks. 2006. *South Dakota Comprehensive Wildlife Conservation Plan*. Wildlife Division Report 2006-08. Pierre, SD: South Dakota Department of Game, Fish, and Parks.

South Dakota Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): South Dakota Department of Agriculture, Resource Conservation and Forestry Division

Partners/Collaborators: RESPEC Consulting, South Dakota Dept. of Agriculture, and U.S. Forest Service.

Year Completed: 2010

Area Included: State of South Dakota

Website Link: sdda.sd.gov/Forestry/Current-News/Assessment.aspx

Primary Goals: To serve as an assessment of forest resources for the entire state of South Dakota and provide a comprehensive management plan for priority areas and a long-term, comprehensive, coordinated strategy for investing state, federal, and partner resources.

Key Assessment Findings: This document reviews the major forest types in the state, including coniferous, upland hardwood, bottomland, shelterbelts, and community forests. Included for each of these forest types is a summary of the extent and condition, values, threats, ownership, needs, problems, and opportunities.

Key Strategies: A total of 70 strategies are identified and organized under 14 key threats. Following are example strategies for each threat.

- Fragmentation - Maintain productive forest land in agricultural property tax classification.
- Forest Health - Monitor forest insect and disease outbreaks.
- Wildfire - Mitigate the potential for catastrophic fires;.
- Weeds and Invasive Species - Track insect, disease, and invasive species outbreaks.
- Water Quantity and Quality - Educate forest landowners and forest workers about forestry BMPs and provide resources to implement BMPs for riparian areas.
- Climate Change - Provide guidance to help forest landowners implement forest climate adaptation and mitigation practices based on the best available science and practices.
- Loss of Urban Trees to Development - Provide technical assistance to conservation districts, landowners, and communities.
- Lack of Species Diversity - Promote natural species diversity within native forest lands, and encourage the planting of a diverse mix of tree species.
- Poor Survival and Maintenance of Planted Trees - Promote research into new cultivars and species that are adapted to South Dakota.
- Over Mature/Dying Trees - Work with communities to develop planting plans and species lists.

- Livestock Grazing - Promote grazing management techniques and BMPs.
- Inadequate Forest Inventory Information - Intensify forest inventory and analysis sampling of the prairie portion of South Dakota.
- Underutilization of Woody Biomass - Promote a predictable, dependable supply of raw material (woody biomass) from all ownerships
- Loss or Degradation of Wildlife Habitat - Develop a geospatial map of past, present, and potential forested habitats important to species of greatest conservation need as identified in South Dakota's State Wildlife Action Plan.

5.30 Tennessee

Tennessee Wildlife Action Plan

Coordinating organizations: Tennessee Wildlife Resources Agency and The Nature Conservancy – Tennessee Chapter

Partners/Collaborators: The Nature Conservancy and Tennessee Wildlife Resources Agency.

Year Completed: 2005

Area included in the plan: State of Tennessee

Website Link: www.wildlifeactionplans.org/tennessee.html

Primary Goal: Provide a workable conservation tool for agencies, organizations, industries, and academics across the state to apply sound science in the conservation of nongame wildlife species.

General Description: The Tennessee Wildlife Action Plan is the result of the most comprehensive analysis of the state's wildlife conservation needs to date. The plan was produced with assistance from The Nature Conservancy (TNC) and other partners such as the Tennessee Wildlife Federation, Tennessee Ornithological Society, World Wildlife Fund, and other state and federal agencies. The plan utilizes species occurrences with information about rarity, viability, mobility, and habitat preference to evaluate habitat across the state.

Approach: The foundation of Tennessee's Plan was an integrated GIS model based on the best available wildlife distribution data and comprehensive habitat classification system and maps. The key components of the GIS model are

1. a comprehensive database of selected Species of Greatest Conservation Need (SGCN) that is spatially relevant – mapped to individual species occurrence level;
2. a terrestrial habitat hierarchy based on the NatureServe ecological systems that can be mapped to various spatial scales;
3. aquatic habitats based on TNC's Freshwater Initiative aquatic system classifications that can be mapped to various spatial scales;
4. subterranean habitats based on known cave locations and surrounding terrestrial habitat units;
5. a database of species–habitat preferences (preferred, suitable, marginal, and unsuitable) evaluated for individual species;

6. a stress/source of stress hierarchy based on TNC's 5-S system of conservation planning; and
7. a hierarchy of terrestrial, aquatic, and subterranean conservation actions.

Results: In total, 664 species were identified as SGCN: 238 mammal species, 247 aquatic, and 179 subterranean. Additionally, priority habitat types and their stressors are identified and discussed for each of the six ecoregions.

Plan Citation: Not available

Tennessee Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Tennessee Department of Agriculture Division of Forestry

Partners/Collaborators: U.S. Forest Service and others.

Year Completed: 2010

Area Included: State of Tennessee

Website Link: <http://www.state.tn.us/agriculture/forestry/sustainability.html>

Primary Goals: To identify the highest priority areas where professionals and stakeholders can implement the most efficient and effective response to forest resource issues.

Key Assessment Findings: Issues identified in the assessment are grouped under seven broad categories. Following is an example from each category:

- **Forest Health** - In 1999, an estimated 45% of Tennessee's forestlands were more than 50 years old. By 2007 58% of Tennessee's forestlands were more than 50 years old. With continued aging, Tennessee's forests will be more susceptible to native and non-native forest pests.
- **Public Benefits** - Forests provide multiple recreation outlets. The importance of scenic areas like forests increases dramatically as cities spread outwards into the landscape.
- **Private Lands** - General forest condition trends on Tennessee's private forestlands include these: forests are aging; pine forest types have decreased; acreage of sawtimber-sized stands is increasing; hardwood tree volume inventory is increasing; softwood tree volume has decreased; hardwood sawtimber quality is decreasing.
- **Urban Forestry** - Tree canopy has proven to be beneficial to cities and towns by mitigating stormwater, air quality improvements, and energy savings.
- **Forest Industry** - The Tennessee forest products industry is vital to the state's economy.
- **Education and Outreach** - Many private forest landowners do not seek professional natural resource advice about managing their forests.
- **Wildlife and Natural Heritage** - Intensively managed pine plantations often exclude non-game wildlife species that typically would be present in mixed hardwood stands.

Key Strategies: Following are an example strategy for each category of issues in the assessment:

- **Forest Health** - Diversify the age structure and species composition of the forest by utilizing science-based forest stand regeneration practices.

- Public Benefits - Support initiatives to provide readily available access to public and private forest lands for recreation purposes.
- Private Lands - Increase the capacity to provide forest landowners with comprehensive, multi-resource forest management planning.
- Urban Forestry - Make urban communities more energy efficient through maintaining/increasing tree canopy.
- Forest Industry - Expand markets for hardwood forest products, including biomass, biofuels, and urban waste wood.
- Education and Outreach - Expand and support targeted educational opportunities, such as Tennessee Healthy Hardwoods field days, for forest landowners.
- Wildlife and Natural Heritage - Develop a set of silvicultural practice modifications (pine and hardwood) that provide opportunities to improve non-game wildlife habitat.

5.31 Texas

Texas Wildlife Action Plan

Coordinating Organization(s): Texas Parks and Wildlife Department

Partners/Collaborators: State and federal agencies, non-governmental organizations, academia, and private individuals.

Year Completed: 2005

Area included in the plan: State of Texas

Website Link: www.tpwd.state.tx.us/publications/pwdpubs/pwd_pl_w7000_1187a/

Primary Goal: To develop a strategy that will assist Texas Parks and Wildlife Department and its partners with the development of nongame initiatives and goals that will address the needs of animal species and habitats.

General Description: The Texas Wildlife Action Plan is a guide for future non-game and even some game species efforts. It will help Texas Parks and Wildlife and its partners prioritize, evaluate, and reevaluate priorities over the next five to 10 years.

Approach: The strategy was developed with input from many groups and individuals. Species-based working groups were developed to determine a list of Species of Greatest Conservation Need (SGCN), as well as information on those species and their habitats. Broad scale habitat information was compiled based on the major ecoregions of Texas. More detailed information was compiled on habitat types within those ecoregions. Conservation actions associated with those habitat types were developed. Two prior reports, *Texas Land and Water Conservation and Recreation Plan* and *Texas Wetland Conservation Plan* (see below) were used as foundation information for this Plan.

Results: In total, 669 species were identified as SGCN: 53 mammal species, 163 birds, 34 reptiles and amphibians, 104 fishes, and 315 invertebrates. This plan identified that 124 of these species were associated with the Pineywoods Ecoregion of eastern Texas. The Pineywoods Ecoregion ranked medium in preserved status because of the relatively high percentage of publicly owned land. This

plan also suggested that longleaf pine savannahs and other unique plant communities, including bogs, hardwood slope forests, bottomland hardwoods, and baygalls, should be preserved and restored wherever possible.

Plan Citation: Bender, S., S. Shelton, K. Conrad Bender, A. Kalmbach, eds. 2005. *Texas Comprehensive Wildlife Conservation Strategy*. Austin, TX: Texas Parks and Wildlife Department.

Texas Land and Water Resources Conservation and Recreation Plan

Coordinating Organization(s): Texas Parks and Wildlife Department

Partners/Collaborators: Not indicated

Year Completed: 2010

Area included in the plan: State of Texas

Website Link: www.tpwd.state.tx.us/publications/nonpwdpubs/land_and_water_plan/

Primary Goal: The Land and Water Plan is a guiding document which describes how the Texas Parks and Wildlife Department (TPWD) will accomplish its mission in the years ahead. The Plan is arranged into four goals: 1) practice, encourage and enable science-based stewardship of natural and cultural resources; 2) increase access to and participation in the outdoors; 3) educate, inform and engage Texas citizens in support of conservation and recreation; and 4) employ efficient, sustainable and sound business practices.

General Description: The goals and objectives are intended to promote stewardship on public and private lands and waters; protect our unique natural and cultural resources; encourage partnerships with all stakeholders; utilize science as the backbone of decision-making; promote participation in the outdoors; instill appreciation of nature in our citizens, young and old; and promote business approaches that leverage industry standards and best practices to support the TPWD mission.

Approach: Arranged into four goals, the Plan will direct the agency's division operating plans and decisions regarding the state's conservation and recreation needs.

Results: Each TPWD division will create specific goals and objectives that are supported by its annual budget, program plans and individual performance plans. Progress toward these goals and objectives will be regularly reported to the Texas Parks and Wildlife Commission.

Plan Citation: Texas Parks and Wildlife Department. 2010. *Land and Water Resources Conservation and Recreation Plan*. Austin, TX: Texas Parks and Wildlife Department. 62 pp.

Texas Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Texas Forest Service

Partners/Collaborators: National Association of State Foresters, Southern Group of State Foresters.

Year Completed: 2010

Area Included: State of Texas

Website Links:

Assessment:

texasforests.tamu.edu/uploadedFiles/Sustainable/assessment/Texas%20State%20Assessment.pdf

Strategy:

texasforests.tamu.edu/uploadedFiles/Sustainable/assessment/Texas%20Forest%20Resource%20Strategy.pdf

Primary Goals: To provide a comprehensive analysis and strategic plan to address forest-related conditions, trends, threats, and opportunities

Key Assessment Findings: The Assessment identifies six primary issues: population growth and urbanization; central Texas woodlands conservation; sustainability of forest resources in east Texas; water quality and quantity; wildfire and public safety; and urban forest sustainability.

Key Strategies: Twenty-one goals and 120 strategies are organized under the six primary issues identified by the Assessment. Following are examples of strategies or objectives listed for the six issues.

- Program Analysis: Utilize GIS Technology to Identify Emerging Communities in Texas.
- Create network of cooperating natural resource agencies and organizations
- Develop WUI change maps for rapidly developing areas of Central Texas.
- Expand and diversify program delivery responsibilities of TFS-FRDSF program staff located in Central and West Texas.
- Evaluate how new mills will impact long-term timber supply of Southeast Texas forests.
- Analyze how improved regeneration scenarios can impact the sustainability of Northeast Texas forests.
- Encourage BMP implementation on forestry operations.
- Protect aquifer recharge zones.
- Develop and maintain remote automated weather station (RAWS) networks and interagency relationships with the USFS, National Weather Service, and other cooperators.
- Wildfire risk mitigation programs that provides employees, communities, and cooperators a broad selection of options that most appropriately reduce the risk to lives and property.
- Identify emerging communities where land-use change and urbanization are occurring at the most rapid pace.
- Assist vulnerable communities with inventory and plan writing for emergency routes; pre-locate debris holding or processing sites.

5.32 Vermont

Vermont Wildlife Action Plan

Coordinating Organization(s): Vermont Fish and Wildlife Department

Partners/Collaborators: Local, state, and federal government agencies, non-governmental organizations, businesses, industry, associations, and academia.

Year Completed: 2005

Area included in the plan: State of Vermont

Website Link: www.wildlifeactionplans.org/vermont.html

Primary Goal: Prevent Vermont's wildlife from becoming endangered through early, strategic efforts to conserve wildlife and their habitat.

General Description: Vermont's Wildlife Action Plan is a proactive examination of the health of Vermont's wildlife. It identifies prescribed actions to conserve wildlife and vital habitat before they become rarer and more costly to protect. The plan is Vermont's first statewide all-species Action Plan.

Approach: The plan emphasized a species action approach rather than trying to construct a habitat conservation plan, because of the lack of comprehensive information to support a habitat approach. The plan was developed through the following steps.

Step 1: Identify Species of Greatest Conservation Need (SGCN) – developed using species teams that reviewed existing information, published literature, and consulted technical experts.

Step 2: Species reports were developed that identified SGCN distribution by biophysical region, habitat needs, problems affecting species and their habitats, research and monitoring needs.

Step 3: Species specific conservation strategies were developed by Species Teams and assigned either medium or high priority status.

Step 4: SGCN were assigned to at least one of more than 100 natural communities, cultural habitats, and/or landscapes.

Results: In total, 913 species were identified as SGCN: 144 vertebrate species, 192 invertebrate species or groups, and 577 plant species. Relative to landscape level forests of northern hardwood, spruce-fir-northern hardwood, and oak-pine-northern hardwood habitats, this plan identified two species as high priority and seven as medium priority.

Plan Citation: Kart, J., R. Regan, S.R. Darling, C. Alexander, K. Cox, M. Ferguson, S. Parren, K. Royar, B. Popp, eds. 2005. *Vermont's Wildlife Action Plan*. Waterbury, VT: Vermont Fish and Wildlife Department.

Vermont's Natural Heritage

Coordinating Organization(s): Vermont Biodiversity Project

Partners/Collaborators: The Nature Conservancy, Vermont Land Trust, USEPA, USFWS, NRCS, USFS, Vermont Agency of Natural Resources, Middlebury College, University of Vermont, The Orton Family Foundation, and Sweetwater Trust.

Year Completed: 2002

Area included in the plan: State of Vermont

Website Link: www.uvm.edu/envnr/sal/vbp/

Primary Goal: To maintain ecological integrity in a manner that insures the long-term viability of all native species and natural community types in Vermont within their natural range.

General Description: The Vermont Biodiversity Project establishes specific conservation goals for biological diversity in the state at three levels: enduring features, natural communities, and native species. The report lays out these goals in detail, while summarizing conservation successes and needs for each.

Approach: Three levels of analysis were conducted to develop conservation goals, map biodiversity, and evaluate conservation successes. The first level of analysis identified enduring features. Enduring features were assessed using four components of the landscape: elevation zone (i.e., climate), bedrock geology, surface geology, and topography. The second level of analysis identified natural communities and ranked them relative to their rarity, geographical distribution, and normal size. The third level of analysis identified native species and assessed their rarity.

Results: Lands identified as enduring features were mapped and documented. The plan indicates those areas not currently protected should be given higher priority for protection, particularly those in lower elevation zones. This effort identified that more than 900 of the known sites for significant natural communities are not conserved and nearly 2,300 sites for rare plants and animals are not protected. In addition, this effort suggested that for some species, maintaining large forested areas and connections among them should also be a priority.

Plan Citation: Thompson, E. H. 2002. *Vermont's Natural Heritage: Conserving Biodiversity in the Green Mountain State: A Report from the Vermont Biodiversity Project*. Montpelier, VT: The Nature Conservancy. 48 pp.

Vermont Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Vermont Department of Forests, Parks and Recreation

Partners/Collaborators: National Association of State Foresters, U.S. Forest Service and others.

Year Completed: 2010

Area Included: State of Vermont

Website Link: www.vtfpr.org/htm/for_resourcesplan.cfm

Primary Goals: To provide an assessment of conditions and trends of forest resources, discuss threats to them, identify priority areas to focus resources, and identify long-term strategies for assuring that forests are healthy and providing ecological services while meeting the economic needs of the citizens of Vermont

Key Assessment Findings: The Assessment identifies 11 key priority areas and issues.

- Multi-state landscape scale initiatives; in particular, the Northern Forest Lands, Connecticut River Valley and Lake Champlain Basin.

- State and multi-state priority issues; in particular, invasive species, water quality, forest habitats and diversity, renewable energy and biomass, and maintaining and diversifying markets.
- Communities with less than average urban tree cover (UTC) but more than average population and impervious surfaces; ranking high for UTC enhancements.
- Communities ranking high and medium for UTC enhancements and not attaining US Forest Service criteria for sustainable urban forestry programs.
- Forest buffers along riparian corridors and their associated wetlands.
- Non-conserved forest blocks associated with public water supply, source protection and recharge areas.
- Non-conserved land identified as high priority habitat blocks and travel corridors.
- Forests at risk from invasive or cyclic forest insects, plants and diseases.
- Lands important in maintaining Vermont's statewide recreation trail network.
- Habitats at risk from atmospheric pollution or climate change factors.
- Forest land eligible and not enrolled in the Use Value Appraisal Program.

Key Strategies: The document presents 65 strategies organized by five desired future conditions.

- Biological Diversity
- Forest Health and Productivity
- Forest Products and Ecosystem Services
- Land Ethic
- Legal, Institutional and Economic Framework

5.33 Virginia

Virginia Wildlife Action Plan

Coordinating Organization(s): Virginia Department of Game and Inland Fisheries

Partners/Collaborators: Other governmental agencies, recreation and conservation organizations, private industry, and academia.

Year Completed: 2005

Area included in the plan: State of Virginia

Website Link: www.wildlifeactionplans.org/virginia.html

Primary Goal: Provide a blueprint and vision for effective and efficient wildlife conservation while drawing on the strengths of existing efforts and partnerships in Virginia.

General Description: Virginia's Wildlife Action Plan unites natural resource agencies, sportsmen, conservationists, and citizens in a common vision for the conservation of the Commonwealth's wildlife and habitats in which they live. The plan is a science-based dynamic document representing a plan of action to conserve Virginia's wildlife resources.

Approach: The plan emphasized a species action approach rather a habitat conservation plan, because of the lack of information to support a habitat approach. It was developed using the following steps.

Step 1: Identify Species of Greatest Conservation Need (SGCN) – a matrix of all species and their conservation ranks was created, prioritized by level of imperilment, and then submitted to Taxonomic Advisory Committees for review.

Step 2: Virginia was delineated into six ecoregions using Bailey's ecoregional boundaries.

Step 3: A species' potential habitat was mapped using range information, habitat data layers and habitat parameters.

Step 4: Relative habitat quality was assessed using existing literature, Taxonomic Advisor Committees, or other observations.

Step 5: Threats, trends, and conservation actions were assessed for each species and their habitats using expert opinion, analysis of data, review of the literature, and trends in the human population.

Results: In total, 925 species were identified as SGCN, with 60% of these being aquatic species and 70% being invertebrates. These species were grouped into four tiers of relative conservation need: critical, very high, high, and moderate. Threats, trends, and conservation actions were summarized at the statewide level and for each of the six ecoregions. The plan identified seven of the "Top 10" threats faced by terrestrial wildlife included habitat destruction or fragmentation from various sources including development and some agricultural and forestry practices. Eight of the "Top 10" aquatic threats related to water quality, including pollution and sedimentation, were from such sources as development, industrial activities and some agricultural and forestry practices.

Plan Citation: Virginia Department of Game and Inland Fisheries. 2005. *Virginia's Comprehensive Wildlife Conservation Strategy*. Richmond, VA: Virginia Department of Game and Inland Fisheries.

Virginia Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Virginia Department of Forestry

Partners/Collaborators: U.S. Forest Service and others.

Year Completed: 2010

Area Included: State of Virginia

Website Link: www.dof.virginia.gov/info/index-forms-docs.htm

Primary Goals: To gather a snapshot of the current condition of the forests in Virginia and articulate some desired outcomes for forests of the future.

Key Assessment Findings: The Assessment identified 15 key issues.

- Restoration of the Chesapeake Bay.

- Forest health issues, including Southern Pine Beetle mitigation and Emerald Ash Borer eradication.
- Diminished species restoration for Atlantic white-cedar, longleaf pine, shortleaf pine and the American chestnut.
- Land conservation in the New River Valley (southwest Virginia) and the Chowan River basin (southeast Virginia).
- Restoration of the Appalachian forest.
- Conserve the forestland base.
- Promote a larger, connected forest landscape.
- Ensure the sustainable use of woody biomass.
- Protect woodland homes communities from fire.
- Protect forests from invasive species.
- Conserve and restore diminished species.
- Enhance the role of forests in maintaining water quantity and quality.
- Promote initiatives for ecosystem services.
- Expand and improve urban and community forests.
- Facilitate opportunities for forest certification among landowners.

Key Strategies: The Strategy lists 106 strategies organized by eight goals.

- Goal 1: Protect the citizens, their property, and the forest resource from wildfire.
- Goal 2: Protect, promote, and enhance watersheds, non-tidal wetlands and riparian areas.
- Goal 3: Improve the stewardship, health and diversity of forest resources.
- Goal 4: Conserve the forestland base.
- Goal 5: Promote forest industry and diversified markets for forest landowners, including ecosystem service markets.
- Goal 6: Collect, maintain, and disseminate forest resource in inventory information and applied research.
- Goal 7: Manage resources to effectively and efficiently accomplish the strategic initiatives.
- Goal 8: Strengthen culture of preparedness across agencies, their employees and customers.

5.34 Washington

Washington Wildlife Action Plan

Coordinating Organization(s): Washington Department of Fish and Wildlife

Partners/Collaborators: Washington Department of Fish and Wildlife, as well as other state and federal agencies, private conservation organizations and business organizations.

Year Completed: 2005

Area included in the plan: State of Washington

Website Link: www.wildlifeactionplans.org/washington.html

Primary Goal: To create a new management framework for the protection of Washington's species and habitats in greatest need of conservation.

General Description: The Washington Wildlife Action Plan was established with several guiding principles, including conservation of species and habitat with greatest conservation need while recognizing the importance of keeping common species common, and to build and strengthen conservation partnerships with other conservation groups, tribes, local governments, and non-governmental organizations.

Approach: The approach and methods used in developing the plan were determined or influenced by a number of factors including Congressional appropriations language, Association of Fish and Wildlife Agencies guiding principles, National Advisory and Acceptance Team instructions, and the Departments own guiding principles. The steps used in the approach include:

- Step 1: Identify Species of Greatest Conservation Need (SGCN) – developed by agency representatives in consultation with public and private conservation partners using developed criteria for selection.
- Step 2: Identify habitats of conservation concern – developed using Wildlife-Habitat Relationships of Washington and Oregon (O'Neil and Johnson 2001).
- Step 3: Conduct ecoregional assessments to identify major habitat types – expert technical teams were assembled to collaborate on a series of analyses based on methods developed by The Nature Conservancy, NatureServe, and other conservation organizations.
- Step 4: Identify major problems and conservation strategies for species, habitats, and ecoregions.

Results: In total, 193 species were identified as Species of Greatest Conservation Need (SGCN). Twenty habitats were identified for conservation concern in this plan with ten of these habitats having direct relevance to forest management. These ten habitats include Westside lowlands conifer-hardwood forest, Westside oak and dry Douglas-fir forest and woodlands, montane mixed-conifer forest, Eastside (interior) mixed-conifer forest, lodgepole pine forest and woodlands, ponderosa pine and Eastside white oak forest and woodlands, upland aspen forest, westside riparian-wetlands, montane coniferous wetlands, and Eastside (interior) riparian-wetlands.

Plan Citation: Washington Department of Fish and Wildlife. 2005. *Washington's Comprehensive Wildlife Conservation Strategy*. Olympia, WA: Washington Department of Fish and Wildlife.

Reference: Johnson, D.H. and T.A. O'Neil, eds. 2001. *Wildlife-habitat relationships in Oregon and Washington*. Corvallis, OR: Oregon State University Press.

Washington Natural Heritage Plan

Coordinating Organization(s): Washington State Department of Natural Resources

Partners/Collaborators: Not indicated

Year Completed: 2009

Area included in the plan: State of Washington

Website Link: www1.dnr.wa.gov/nhp/refdesk/plan/index.html

Primary Goal: To provide a framework for the establishment of a statewide system of natural areas.

General Description: The Natural Areas Preserves Act requires that the Washington Department of Natural Resources prepare a Natural Heritage Plan and update it biennially. The plan identifies the criteria and processes by which natural areas are selected, prioritizes ecosystems and species for protection, outlines methods of protection, and identifies the roles of agencies and organizations in natural area protection.

Approach: The objective methodology used by the Natural Heritage Program was developed by The Nature Conservancy. Natural Heritage methodology includes three primary steps: classification, inventory, and conservation planning. A coarse filter/fine filter approach was used to accomplish this. The coarse filter consists of all of the ecosystems (terrestrial and aquatic) occurring within the state. The fine filter consists of identifying all of the priority species (species of concern) within the state. Priority species were determined using the global and state ranking system used by NatureServe and its member Natural Heritage programs. These ranks were assigned using a collaborative process. Ecosystem priorities were assigned according to the number of occurrences and the total acreage occupied by the ecosystem type. Additional ecosystem priority considerations were given to long-term trends and threats to the ecosystem.

Results: A list of priority species and ecosystems was updated in 2009. The full list of priority species and ecosystems, their current priority status and details of the 2009 changes to the list can be found on the Natural Heritage Program website (www.dnr.wa.gov). The full 2007 plan can be accessed at www1.dnr.wa.gov/nhp/refdesk/plan/index.html.

Plan Citation: Washington Department of Natural Resources. 2009. *State of Washington Natural Heritage Plan 2009 Update*. 8 pp. Olympia, WA: Washington Department of Natural Resources.

Forest Practices Habitat Conservation Plan

Coordinating Organization(s): Washington State Department of Natural Resources

Partners/Collaborators: Not indicated.

Year Completed: 2005

Area included in the plan: State of Washington

Website Link: www.dnr.wa.gov/BusinessPermits/Topics/ForestPracticesHCP/Pages/fp_hcp.aspx

Primary Goal: To provide compliance with the Endangered Species Act for aquatic and riparian-dependent species on non-Federal and non-tribal forestlands.

General Description: The State of Washington applied to the NOAA Fisheries Service and U.S. Fish and Wildlife Service for permits to authorize the incidental take of covered species so that all forest practice activities in compliance with the state forest practice rules and administrative program will satisfy federal requirements under the Endangered Species Act for aquatic species. The state is seeking to provide protection of aquatic species to the maximum extent practicable while allowing for commercial forest management and land use and to create a more friendly regulatory environment that encourages landowners to participate in forest management rather than converting lands to other uses. The state is seeking assurances for 50 years. Without these assurances, each individual landowner would be responsible for meeting the requirements of the federal agencies on a case by case basis.

Approach: The Forest Practices Habitat Conservation Plan was developed as a programmatic plan. It was based on Washington's Forest Practices program and consists of two parts: 1) an administrative framework, and 2) protection measures. The administrative framework supports the development, implementation, and refinement of the Forest Practices program. Protection measures included all forest practices laws, rules, and guidance designed to minimize and mitigate forestry-related impacts and conserve habitat for covered species. The protection measures were presented as two separate but interrelated strategies: 1) Riparian Conservation Strategy, and 2) Upland Conservation Strategy.

Results: Four alternatives were developed and submitted to the Services to consider: Alternative 1, Scenario 1 – Current Forest Practices Program; Alternative 1, Scenario 2 – Forest Practice Rules in Place before January 1, 1999; Alternative 3 – Implement a conservation plan with a NOAA Fisheries 4(d) Limit 13 Approval and USFWS Take Exemption; Alternative 4 – Increased Protections Compared to Alternative 2 or Alternative 3.

Plan Citation: Washington State Department of Natural Resources. 2005. *Forest Practices Habitat Conservation Plan*. Olympia, WA: Washington State Department of Natural Resources.

Lake Washington/Cedar/Sammamish Watershed Chinook Salmon Conservation Plan

Coordinating Organization(s): King County Department of Natural Resources

Partners/Collaborators: Citizens, scientists, community groups, businesses, environmental groups, public agencies and elected officials, and local governments.

Year Completed: 2005

Area included in the plan: Lake Washington/Cedar/Sammamish Watershed

Website Link: www.govlink.org/watersheds/8/planning/chinook-conservation-plan.aspx

Primary Goal: To support recovery of three Chinook populations in the watershed: the Cedar River population, the North Lake Washington population, and the Issaquah population.

General Description: The watershed Steering Committee developed this Plan through a multi-stakeholder planning process. The Plan is science-based and contains recommendations for prioritized actions to restore and protect salmon habitat, and a collaborative approach for implementing these actions over the next 10 years.

Approach: The technical committee used three analytical tools to create a conservation strategy for Chinook habitat protection and restoration. These tools were a Viable Salmonid Population (VSP) framework based on NOAA Fisheries guidance, a Watershed Evaluation, and an Ecosystem Diagnosis and Treatment (EDT) habitat model adapted to the watershed.

Results: Recommended actions resulting from the Plan were developed in three broad categories: land use, planning, and infrastructure; site-specific habitat protection and restoration projects; and public outreach and education. Site-specific habitat protection and restoration projects target actions that protect or restore a specific area or parcel through acquisition or easements, and restoration projects such as levee setbacks, revegetation, addition of large woody debris, and removal of barriers to fish passage.

Plan Citation: King County Department of Natural Resources. 2005. *Lake Washington/Cedar/Sammamish Watershed (WRIA 8) Chinook Salmon Conservation Plan* (Volume 1).

Washington Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Washington State Department of Natural Resources

Partners/Collaborators:

Year Completed: 2010

Area Included: State of Washington

Website Link: www.dnr.wa.gov/ResearchScience/Topics/ForestHealthEcology/Pages/em_statewide_assessment_of_forestry_programs.aspx

Primary Goals: To produce a detailed analysis of conditions, trends, threats, opportunities and existing strategies for the leading issues of forest management and conservation in Washington and provide a plan for using federal, state and leveraged partner resources to address these issues.

Key Assessment Findings: The Assessment identifies 34 opportunities to address threats to forest resources such as forestland conversion, loss of economic viability, climate change, habitat fragmentation and loss of legacy features, altered fire and disturbance regimes, loss of surface water quality, human safety and property loss, and invasive non-native forest insects and diseases, and loss of urban trees and forests to development.

Key Strategies: The following are examples of 34 opportunities for action identified by the Strategy.

- Reduce the rate of forest conversion.
- Assist forest landowners with meeting environmental protection requirements.
- Identify and protect priority species and ecosystems.
- Identify and protect and/or restore critical landscape linkages for species movement.
- Conserve, restore and expand the urban tree canopy.
- Assist communities with developing and implementing urban forest conservation programs.
- Reduce fuel loads in eastern Washington forests.
- Partner with multiple landowners and managers to achieve landscape-scale forest health restoration objectives.
- Enhance coordination among forest landowners and managers toward integrated watershed restoration outcomes.
- Remove barriers to fish passage and increase aquatic habitat availability.

5.35 West Virginia

West Virginia Wildlife Action Plan

Coordinating Organization(s): West Virginia Division of Natural Resources, Wildlife Resources Section

Partners/Collaborators: Other government agencies, academia, conservation organizations and individual citizens.

Year Completed: 2005

Area included in the plan: State of West Virginia

Website Link: www.wildlifeactionplans.org/west_virginia.html

Primary Goal: Conserve the diversity of West Virginia's fish and wildlife resources by emphasizing those Species of Greatest Conservation Need (SGCN).

General Description: While recognizing that, in many cases, vital conservation information on the natural history, abundance and distribution of species in West Virginia is incomplete, the plan charts a course for science-driven, active conservation of fish and wildlife resources over the next decade. Key features of the plan are its emphasis on conservation actions, including a land conservation initiative, and the collaborative approach to plan implementation.

Approach: The plan emphasized a species action approach rather than trying to construct a habitat conservation plan, because of the lack of comprehensive information to support a habitat approach. The plan was developed through the following steps:

Step 1: Identify SGCN.

Step 2: Identify the habitats required by the SGCN.

Step 3: Where information was available, SGCN were associated with one or more habitat systems.

Step 4: Critical habitat systems were identified.

Step 5: Conservation issues were identified by regions of the state and were used in detailed planning for habitat and site conservation actions.

Results: In total, 129 species or species groups were identified as SGCN. Fourteen habitat systems were identified for conservation actions with seven having direct relevance to forest management. These seven habitat systems included red spruce forests, hemlock forests, all wetland types, high Allegheny swamps, high Allegheny bogs and fens, forest seeps and vernal pools, and floodplain forests and swamps.

Plan Citation: West Virginia Division of Natural Resources, Wildlife Resources Section. 2005. *West Virginia Wildlife Conservation Action Plan*. Elkins, WV: West Virginia Department of Natural Resources.

West Virginia Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): West Virginia Division of Forestry

Partners/Collaborators: U.S. Forest Service and others.

Year Completed: 2010

Area Included: State of West Virginia

Website Link: http://www.wvforestry.com/events_12022K1.cfm

Primary Goals: To provide a general overview of forestry, forests, and related natural resources in the state focusing on the most pressing forestry-related issues, and to help direct resources toward areas where there may be the greatest impact.

Key Assessment Findings: Following are examples of statements found in the Assessment.

- West Virginia is 78% forested.
- Currently, parcelization is having a significant impact on forest land in West Virginia.
- West Virginia has approximately 11,749,872 acres of timberland theoretically available for harvesting.
- The largest single risk agent in West Virginia forests is the gypsy moth.
- The vast majority of West Virginia streams have more than 65% riparian cover.
- It is estimated that 59% of the CO₂ emitted from in-state power plants is sequestered by West Virginia's 12 million acres of forest land.
- The forest products industry is a major component of West Virginia's economy with a contribution in excess of four billion dollars annually.
- The Logging and Sediment Control Act of 1992 establishes mandatory guidelines for logging operations in the state, including licensing, notification, certification of loggers, training, and enforcement of best management practices to reduce or limit erosion and sedimentation from logging operations.

Key Strategies: Following are examples of strategies listed in the document:

- Protect significant forest land by acquiring working forest conservation easements.
- Contact each elementary school in West Virginia with forestry information.
- Gather data and information from FIA on forest growth and yield so as to monitor forest conditions in WV and make sound management recommendations.
- Continue to improve and enforce the Logging Sediment Control Act (LSCA).
- Continue to provide timely and effective wildland fire suppression services to the citizens of West Virginia.
- Target larger urbanized areas with technical and financial assistance to build successful urban forestry programs.
- Develop effective survey and monitoring methodologies (for native and exotic diseases, insects, and invasive species of concern).
- Develop infrastructure to encourage growth of primary and secondary forest industries.

5.36 Wisconsin

Wisconsin Wildlife Action Plan

Coordinating Organization(s): Wisconsin Department of Natural Resources

Partners/Collaborators: Representatives and experts from state and federal agencies, private wildlife conservation organizations, the academic community, Native American Tribes, lake groups, and many others, participated in the Advisory Team or provided technical expertise to the project.

Year Completed: 2005

Area included in the plan: State of Wisconsin

Website Link: www.wildlifeactionplans.org/wisconsin.html

Primary Goal: Set priorities for the allocation of State Wildlife Grant funds and provide guidance and information in support of the conservation efforts of government agencies, tribes, and the full range of public and private partners.

General Description: The Wisconsin Wildlife Action Plan is the result of a statewide effort to identify Species of Greatest Conservation Need (SGCN). The plan presents priority conservation actions to protect the species and their habitats.

Approach: The plan was developed through the following science-based steps:

- Step 1: Identify SGCN – determined using scientific literature and best professional judgment of a team of experts.
- Step 2: Identify the habitats required by the SGCN – determined using groupings of existing classification systems.
- Step 3: Identify species distributions within Wisconsin – determined by evaluating the probability that a SGCN occurred within each of the 16 Ecological Landscapes.
- Step 4: Identify issues, threats and conservation actions – determined for each SGCN.
- Step 5: Identify priority ecological opportunities – the components of the first three steps were integrated to identify ecological priorities.
- Step 6: Develop monitoring plans and opportunities to partner with various organizations.

Results: In total, 152 vertebrate and 530 invertebrate species were identified as SGCN. Four forest communities were identified by the plan as being in the top 20 natural communities for high numbers of SGCN: Floodplain Forest (35 species), Southern Dry-Mesic Forest (27 species), Southern Mesic Forest (24 species), and Southern Tamarack Swamp (24 species).

Plan Citation: Wisconsin Department of Natural Resources. 2005. *Wisconsin's Strategy for Wildlife Species of Greatest Conservation Need*. Madison, WI: Wisconsin Department of Natural Resources.

Wisconsin Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Wisconsin Department of Natural Resources, Division of Forestry

Partners/Collaborators: U.S. Forest Service and others.

Year Completed: 2010

Area Included: State of Wisconsin

Website Links:

Assessment: www.dnr.state.wi.us/forestry/assessment/strategy/assess.htm

Strategy: www.dnr.state.wi.us/forestry/assessment/strategy/comment.asp

Primary Goals: To assess the state of affairs of Wisconsin's public and private forests and analyze the sustainability of forested ecosystems, identify trends and issues with the resource and provide a long-term, comprehensive, coordinated approach for investing resources to address the management and landscape priorities identified.

Key Assessment Findings: The following are examples of the 30 major conclusions presented in the Assessment.

- The composition of the large-scale forest landscape is becoming fragmented and broken into small parcels.
- Wisconsin has the capacity to sustain present levels of timber harvest if it remains an important objective of landowners.
- The amount of forest land in Wisconsin that has some type of protection for soil and water resources is growing.
- Incorporating climate science and monitoring information into landscape management activities would help forests adapt to new and changing conditions, mitigate greenhouse gas emissions responsible for climate change, and meet changing demands for forest products and other ecosystem services.
- There is considerable opportunity for storing additional carbon in Wisconsin's forests.

Key Strategies: The Statewide Forest Strategy identifies 18 goals and 51 strategies organized by the following themes.

- Fragmentation and Parcelization
- Forest Composition and Structure
- Energy and Climate Change
- Forests as Economic Contributors
- Protection of Life and Property in Forested Areas

5.37 Wyoming

Wyoming Wildlife Action Plan

Coordinating Organization(s): Wyoming Game and Fish Department

Partners/Collaborators: Not identified.

Year Completed: 2005

Area included in the plan: State of Wyoming

Website Link: www.wildlifeactionplans.org/wyoming.html

Primary Goal: To serve as a central hub for all existing and future management plans and conservation strategies in Wyoming, and to guide the combined efforts of government agencies at all levels—non-profits, academia, non-governmental organizations, tribes and individuals—to conserve all Wyoming’s wildlife for future generations.

General Description: Wyoming’s Wildlife Action Plan provides a long-range plan to conserve the state’s wildlife and their habitats. The plan identifies Species of Greatest Conservation Need (SGCN) and threats to their persistence. It also identifies proposed actions to conserve these species and their associated habitats. The strategy will guide conservation decisions in Wyoming through 2010. A broad range of stakeholders reviewed the plan and their comments are incorporated.

Approach: SGCN were identified using Wyoming’s existing Native Species Status matrix. This system incorporates information on population and habitat variables. Species ranked NSS1 to NSS4 were considered to be SGCN. The SGCN list was circulated to partners and stakeholders for comments. Terrestrial habitats were classified using NatureServe’s Ecoregions and Ecological Systems approach. Habitat quality was assumed to be directly related to habitat intactness. Factors used to calculate intactness included: road density, mine presence, oil and gas equipment presence, residential development, impaired streams, Hilsenhoff’s Biotic Index score, surface water use, and the occurrence of invasive species.

Results: In total, 279 species were identified as SGCN: 54 mammal species, 60 birds, 38 reptiles and amphibians, 40 fishes, and 87 invertebrates. Fifty-two terrestrial habitat types were identified and mapped relative to seven Wyoming ecoregions. Each habitat type was evaluated by ecoregion for mean habitat quality and the number of associated SGCN.

Plan Citation: Wyoming Game and Fish Department. 2005. *A Comprehensive Wildlife Conservation Strategy for Wyoming*. Cheyenne, WY: Wyoming Game and Fish Department. 562 pp.

Wyoming Statewide Forest Resource Assessment and Strategy

Coordinating Organization(s): Wyoming State Forestry Division

Partners/Collaborators: U.S. Forest Service and others.

Year Completed: 2010

Area Included: State of Wyoming

Website Links:

Assessment: slf-web.state.wy.us/forestry/adobe/StatewideAssessment.pdf

Strategy: slf-web.state.wy.us/forestry/adobe/Resource_Strategy.pdf

Primary Goals: To provide an analysis of present and future forest conditions, trends, and threats on all ownerships, identify forest related threats, benefits, and services, delineate priority rural and urban forest landscape areas and outline long-term strategies for addressing these issues.

Key Assessment Findings: The Assessment identifies 15 threats to priority forest landscapes. Five examples are as follows:

- Wyoming is facing forest health issues that are probably unprecedented.
- A viable forest products industry is essential to enable effective forest management on a meaningful scale.
- In many areas, older forests are being converted to young forests on a large scale due to bark beetle epidemics.
- The threat of fire in the Wildland Urban Interface (WUI) is significant and expanding.
- Wildfires in areas outside of the WUI are also a threat.

Key Strategies: The Strategy identifies 61 key strategies to address the 15 threats to forest resource. Strategies for the five threats listed above are

- increase age class, structural, and species diversity on lands suitable for forest management;
- ensure a predictable, dependable supply of forest products to help sustain a viable forest products industry;
- use fire as a tool on non-harvestable or administratively withdrawn lands to achieve species and age class diversity goals;
- mitigate risk of catastrophic fires in WUI areas; and
- utilize prescribed fire where practical while focusing on lands that cannot be managed using other means.

6.0 CONSERVATION INITIATIVES – SINGLE SPECIES

Single-species conservation plans or programs were included in this review if they were broad-scale, high profile, and collaborative initiatives. In addition to the completed initiatives identified below, the American Woodcock Initiative was described as in progress. The reader should also be aware that many single-species management or recovery plans are also complete and available. However, they are not included in this report due to the magnitude of the effort required to review all existing single-species plans. Most state wildlife action plans provide an exhaustive list of existing single-species management or recovery plans for Species of Greatest Conservation Need within each state.

6.1 The Rocky Mountain Elk Foundation Strategically Important Landscapes

Coordinating Organization(s): Rocky Mountain Elk Foundation

Partners/Collaborators: Local, state, and federal government agencies, private landowners, conservation organizations, tribal governments and agencies, forest products industry, oil and gas companies, mining companies, and corporations.

States identified with Strategically Important Landscapes: Arizona, California, Colorado, Kentucky, Michigan, Minnesota, Montana, Oregon, Pennsylvania, South Dakota, Tennessee, Washington, Wisconsin, and Wyoming

Website Link: www.rmef.org/Conservation/HowWeConserve/Landscapes/

Primary Goal: To protect and steward the most important and threatened landscapes in elk country.

General Description: The Rocky Mountain Elk Foundation Strategically Important Landscapes sets national priorities and develops conservation strategies by focusing on a series of landscape-scale initiatives.

Approach: The program draws from the best ideas and methods of the scientific and conservation community and from the best tradition of hunters, conservationists, and philanthropists to protect and steward the most important and threatened wildlife habitat in elk country.

Results: An interactive map is available on the website with a description and discussion of each of the identified Strategically Important Landscapes.

Program Citation: Not available

6.2 The Northern Bobwhite Conservation Initiative

Coordinating Organization(s): Southeast Association of Fish and Wildlife Agencies Quail Study Group Technical Committee

Partners/Collaborators: State and federal agencies, non-governmental organizations, and academia.

Year Completed: 2002

Area included in the plan: See Figure 6.1.

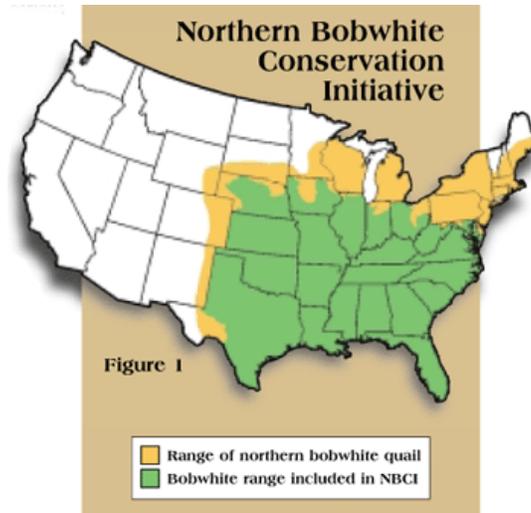


Figure 6.1 Range of Northern Bobwhite Quail
www.bobwhiteconservation.org

Website Link: www.qu.org/seqsg/nbci/nbci.cfm

Primary Goal: To restore northern bobwhite populations range-wide to an average density equivalent to that which existed on improvable acres in the baseline year of 1980.

General Description: The Northern Bobwhite Conservation Initiative (NBCI) delineates population and habitat objectives for 15 Bird Conservation Regions. The NBCI includes detailed specific management practices that can be employed on agricultural land, grasslands, and forest lands to meet the overall objectives of the plan. Average northern bobwhite population densities similar to those in 1980 are set as a goal for the purposes of this plan. The types and amounts of habitats and habitat management efforts needed to achieve this goal are identified and described.

Approach: Assumptions regarding bobwhite population demographics (i.e., mean clutch size, mean covey size, nest success rates, etc.) were derived from published literature, unpublished data sets, and expert knowledge. Assumptions regarding bobwhite habitat characteristics were also identified and described. Existing data (harvest data and breeding bird survey data) were used to establish past and present population densities and trends by state and Bird Conservation Region.

Results: The plan indicated that restoring northern bobwhites to the targeted 1980 densities would require the addition of 2,770,922 coveys to current populations. To reach this goal, the plan estimated that 81.1 million acres of habitat would have to be restored or improved. More than 78% of these coveys would be produced on 18.7 million acres of farm land with conversion of cool season to native grasses. In addition, the plan suggested that altering forest management practices on 53.5 million acres to include site preparation that encourages favorable grass and forb communities, prescribed fire, thinning to encourage light penetration, and where appropriate, increased acreage of longleaf pine, to contribute an additional 196,617 coveys toward the target. The plan also suggested that improved range management practices could add 403,614 coveys on 8.9 million acres if management practices incorporate prescribed fire, proper grazing densities, and conversion of exotics plant species to natives.

Plan Citation: Dimmick, R.W., M.J. Gudlin, and D.F. McKenzie. 2002. *The Northern Bobwhite Conservation Initiative*. Miscellaneous publication of the Southeastern Association of Fish and Wildlife Agencies, South Carolina. 96 pp.

6.3 Ruffed Grouse Conservation Plan

Coordinating organizations: Association of Fish and Wildlife Agencies, Resident Game Bird Working Group

Partners/Collaborators: Members of the Association of Fish and Wildlife Agencies.

Year Completed: 2006

Website Link: www.ruffedgrousesociety.org/conservation-plan

Area included in the plan: Bird Conservation Regions 5, 10, 12, 13, 14, 16, 22, 23, 24, 28, 29, and 30; see Figure 6.2.



Figure 6.2 Ruffed Grouse Conservation Plan Regions

Primary Goal: To provide a comparison of ruffed grouse habitat conditions and populations between the base year (1980) and 2005 and the habitat availability and management objectives required to sustain populations at, or restore them to 1980 levels.

General Description: The Ruffed Grouse Conservation Plan is designed to provide wildlife and habitat managers with guidance on how much grouse habitat is needed within ruffed grouse historical range to stabilize ruffed grouse numbers at 1980 levels. The plan complements other bird conservation planning efforts accomplished under the North American Bird Conservation Initiative.

Approach: Habitat conditions and population densities were based on available data or the expertise of resource professionals. Forest inventory data were used to document species composition by forest size-class for each Bird Conservation Region for 1980 and 2005, where two inventories were available. Ruffed grouse population and breeding male density estimates were developed using these forest inventory data.

Results: Ruffed grouse population goals and associated habitat objectives (acres) were presented by individual Bird Conservation Regions and states. The plan indicates that Ruffed grouse population densities are strongly dependent upon the proportion of small-diameter (≤ 5 inch d.b.h.) forest habitat on the landscape. Approximately 30 million acres of small diameter habitat were identified for future management by the states and regions of interest to this project.

Plan Citation: Dessecker, D.R., G.W. Norman, and S.J. Williamson, eds. 2006. *Ruffed Grouse Conservation Plan*. Association of Fish and Wildlife Agencies. Resident Game Bird Working Group.

6.4 Puget Sound Salmon Recovery Plan

Coordinating Organization(s): Shared Strategy for Puget Sound

Partners/Collaborators: Local, state, tribal, and federal agencies, non-government organizations, and academic institutions.

Year Completed: 2007

Area included in the plan: See Figure 6.3.

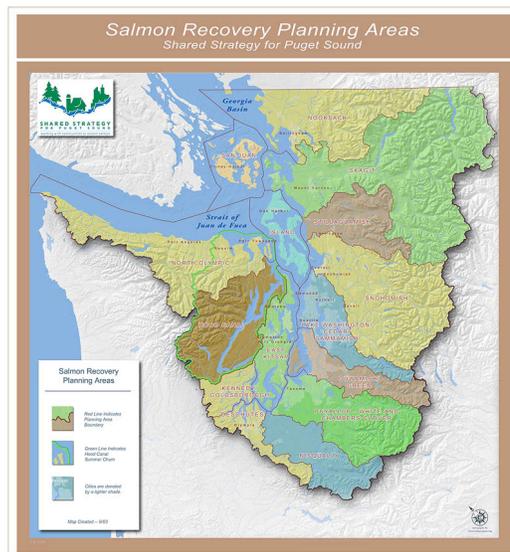


Figure 6.3 Salmon Recovery Planning Area
(www.sharesalmonstrategy.org)

Website Link: www.sharesalmonstrategy.org/

Primary Goal: To recover self-sustaining, harvestable salmon runs in a manner that contributes to the overall health of Puget Sound and its watersheds and allows us to enjoy and use this precious resource in concert with the region's economic vitality and prosperity.

General Description: The Puget Sound Salmon Recovery Plan proposes substantial increases in the abundance, productivity, spatial distribution and diversity of existing Chinook populations to recover their health and ensure their long-term sustainability. The Technical Recovery Team identifies protection of existing and functioning habitats as most important to salmon recovery. The plan

identifies watershed-level actions that are needed but also identifies actions common to all watersheds.

Approach: The plan used an ecosystem approach to recovery that addresses physical and biological factors that create or impact fish habitat.

Results: In addition to watershed-level conservation actions, 10 common actions across watersheds were identified by the plan: 1) estuarine restoration, 2) restoring floodplain areas, 3) restoring riparian vegetation, 4) instream flow management, 5) improving water quality, 6) improving fish access to spawning and rearing habitat, 7) restore shoreline and marine riparian areas, fish spawning beaches, etc., 8) fish harvest management that allows salmon runs to return to their spawning grounds, 9) revise hatchery management objectives, and 10) recognize the cumulative effects of “H factors” (harvest, hatcheries, and habitat).

Plan Citation: Shared Strategy for Puget Sound. 2007. Puget Sound salmon recovery plan. <http://www.sharedsalmonstrategy.org/plan/toc.htm>

6.5 American Woodcock Conservation Plan

Coordinating Organization(s): Developed under the auspices of the Woodcock Task Force of the Association of Fish and Wildlife Agencies with technical support by the Wildlife Management Institute, and funding support by the National Fish and Wildlife Foundation.

Partners/Collaborators: Woodcock Minnesota, Connecticut Woodcock Council, Woodcock Limited of Pennsylvania, Golden-Winged Warbler Working Group, Ruffed Grouse Society, and Wildlife Management Institute.

Year Completed: 2008

Area included in the plan: See Figure 6.4.

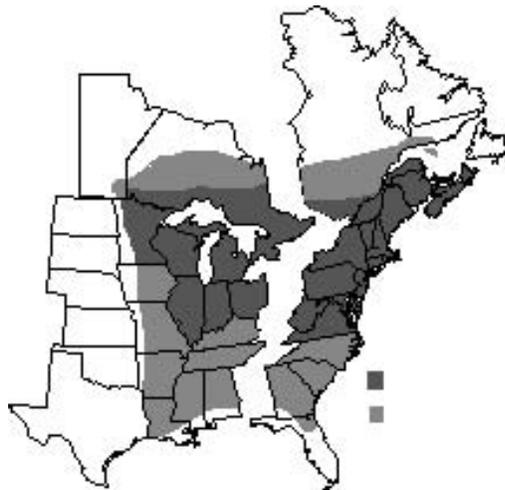


Figure 6.4 American Woodcock Range in North America

Website Link: www.timberdoodle.org

Primary Goal: To halt the decline of woodcock populations and to return them to densities which provide adequate opportunity for utilization of the woodcock resource.

General Description: American woodcock populations have experienced significant declines throughout their historical range in North America. Loss and degradation of early succession forest habitat is identified as the primary factor responsible for these population declines. Changes in land use and societal attitudes towards even-aged forest management are identified as the primary reasons for the changes to early successional habitat.

Approach: The plan determines the amount of early succession habitat that must be created in each of 16 bird conservation regions (BCRs) and by state to return woodcock densities to early 1970 levels. Measurements of decreases and increases in habitat are based on the Forest Inventory Analysis (FIA) system. Population increases and decreases are measured by Single-ground Survey (SGS).

Results: Approximately 20.8 million acres of new woodcock habitat is identified for creation throughout the 16 BCRs.

Plan Citation: Kelley, J, S. Williamson, and T.R. Cooper, eds. 2008. *American Woodcock Conservation Plan: A Summary of and Recommendations for Woodcock Conservation in North America*. Wildlife Management Institute. 168 pp.

6.6 Spruce Grouse Continental Conservation Plan

Coordinating Organization(s): Developed under the auspices of the Resident Game Bird Working Group of the Association of Fish and Wildlife Agencies with funding by the Wildlife Management Institute and the National Fish and Wildlife Foundation.

Partners/Collaborators: Spruce grouse researchers and managers, the Association of Fish and Wildlife Agencies Resident Game Bird Working Group, Wildlife Management Institute, and National Fish and Wildlife Foundation.

Year Completed: 2008

Area included in the plan: See Figure 6.5.

Website Link: www.foolhen.org

Primary Goal: To provide range-wide and Bird Conservation Region (BCR) estimates of population and habitat and to assemble current assessments of threats, management recommendations and research needs.

General Description: The Plan was created to address concerns about declining or rare populations particularly along the eastern, southern fringe of its range.

Approach: Forest inventory data and expert opinion were used from various sources to describe spruce grouse distributions and published density estimates. The lack of data for some regions was identified as a limiting factor. Estimates were provided range-wide as well as by the 10 BCRs.



Figure 6.5 Range of the Spruce Grouse in North America

Results: Estimates of spruce grouse populations across the continent ranged from 5.0 to 16.5 million birds, with the majority of spruce grouse occurring in BCR 8 and BCR 6. These two BCRs represent over 50% of the continental population of spruce grouse.

Plan Citation: Williamson, S., D. Keppie, R. Davison, D. Budeau, S. Carriere, D. Rabe, and M. Schroeder, eds. 2008. *Spruce Grouse Continental Conservation Plan*. Washington, DC: Association of Fish and Wildlife Agencies. 60 pp.

6.7 Eastern Brook Trout Joint Venture

Coordinating organization(s): National Fish Habitat Initiative and Eastern Brook Trout Joint Venture

Partners: State and Federal Agencies, nongovernmental organizations, and academic institutions.

Year Completed: 2007

Area included in the plan: See Figure 6.6.

Website Link: www.easternbrooktrout.org/

Primary Goal: To provide a blueprint for brook trout conservation and restoration priorities range-wide.

General Description: The National Fish Habitat Action Plan is leading a national effort to improve the nation's fish populations. The Eastern Brook Trout Joint Venture was established as a pilot partnership under the National Habitat Plan umbrella. The Eastern Brook Trout Joint Venture Conservation Strategy is guided by range-wide objectives for expected performance by the year 2025. In addition, the 17 states encompassing the range of the eastern brook trout are divided into three distinct regions defined by common conservation challenges and priorities. The regional objectives represent expectations to be achieved by 2012. The strategy is also available by state.

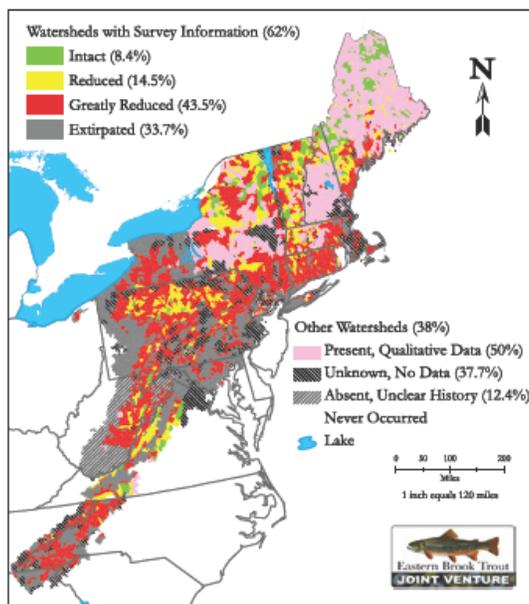


Figure 6.6 Brook Trout Population Status by Subwatershed for Eastern US Range (from Eastern Brook Trout Joint Venture 2006)

Approach: Using the best scientific information and expert knowledge available, the historical watersheds of the eastern brook trout were assessed for population presence, integrity and range within a watershed. Threats and perturbations which could impair or are impairing populations were also assessed. Where total loss of the species has occurred, the probable cause of extirpation was identified. The results were mapped to convey the current conditions as well as probably threats to brook trout for all known areas within the historical range.

Results: The following are key priorities of the EBTJV.

- 1) Protect brook trout populations across the eastern United States.
- 2) Restore brook trout populations where original habitat conditions exist and where habitats can be restored.
- 3) Monitor and evaluate brook trout population responses to habitat protection, enhancement and restoration projects.
- 4) Complete brook trout distribution and quantitative status assessment.
- 5) Increase recreational fishing opportunities for wild brook trout.

Plan Citation: Eastern Brook Trout Joint Venture. 2008. *Conserving the Eastern Brook Trout: Action Strategies*. Report prepared for Conservation Strategy/Habitat Work Group Eastern Brook Trout Joint Venture. 88 pp.

6.8 Range-Wide Conservation Plan for Longleaf Pine

Coordinating Organization(s): Regional Working Group for America's Longleaf

Partners/Collaborators: Steering committee members included members representing federal and state agencies and non-government organizations. Over 120 resource professionals are identified as having contributed to the Plan.

Year Completed: 2009

Area included in the plan: See Figure 6.7.

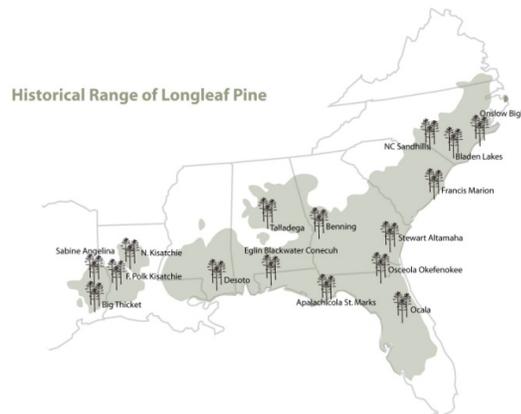


Figure 6.7 Historical Range of the Longleaf Pine

Website Link: www.americaslongleaf.net

Primary Goal: To increase the longleaf pine acreage from 3.4 million to 8 million acres with more than half of this acreage targeted in the range-wide “Significant Geographic Areas” over the next 15 years.

General Description: A regional working group made up of diverse organizations was formed in 2007 to develop the America's Longleaf Initiative. The vision of this group was to establish or maintain functional, viable longleaf pine ecosystems through a voluntary partnership. Five guiding principles were identified: 1) using a strategic, science-based approach, 2) identify site-based conservation efforts in the context of sustainable landscapes, 3) involve the public and private sectors, 4) develop partnerships and collaboration, and 5) using the conservation plan as a framework and catalyst.

Approach: Objectives and key actions are identified relative to six strategic areas that include public lands, private lands, economic and market-based financial, fire management, understory and overstory regeneration, and climate change.

Results: Objective identified relative to the private lands strategy include ensure that conservation easements are used to support longleaf restoration; Farm Bill and other habitat restoration programs are more fully utilized by and available to private landowners; Forest Resource Coordinating Committee is engaged to promote national awareness in longleaf ecosystems; ensuring that longleaf conservation is considered in State Forest Resource Assessments, response strategies, and identification of priority areas; state wildlife agencies are engaged to ensure implementation of the

longleaf-related components of the Wildlife Action Plans; multiple programs are utilized to support conservation efforts and innovative approaches to support local implementation efforts; and interest and opportunities for longleaf management are identified within the TIMO/REIT community.

Plan Citation: America's Longleaf Initiative. 2009. *Range-Wide Conservation Plan for Longleaf Pine*. Report prepared by the Regional Working Group for America's Longleaf. 42 pp.

APPENDIX A**STATES OR REGIONS WITH SUFFICIENT FOREST INDUSTRY
PRESENCE TO WARRANT A REVIEW OF EXISTING
CONSERVATION PLANS AND STRATEGIES**

The following list represents those states or regions with sufficient forest industry presence to warrant a review of existing conservation plans and strategies, for the purpose of this report.

Alabama	Oregon
Arkansas	Pennsylvania
California	Rhode Island
Colorado	South Carolina
Connecticut	South Dakota
Delaware	Tennessee
Florida	Texas
Georgia	Vermont
Idaho	Virginia
Indiana	Washington
Kentucky	West Virginia
Louisiana	Wisconsin
Maine	Wyoming
Maryland	
Massachusetts	
Michigan	
Minnesota	
Mississippi	
Missouri	
Montana	
New Hampshire	
New York	
North Carolina	
Ohio	

APPENDIX B

GENERAL INFORMATION ON CONSERVATION PLANS NOT COVERED IN REPORT

The following conservation plans or programs were identified during the initial screening process for possible inclusion in this review. However, they did not meet the inclusion criteria identified for the project. They are included here, with a brief description, as general information for interested parties.

Biosphere Reserves

Website link: portal.unesco.org/science/en/ev.php-URL_ID=4801&URL_DO=DO_TOPIC&URL_SECTION=201.html

Biosphere reserves are sites recognized under United Nations Educational Scientific and Cultural Organization's (UNESCO) Man and the Biosphere Program which innovate and demonstrate approaches to conservation and sustainable development. Biosphere reserves includes one or more protected areas and surrounding lands that are managed to combine both conservation and sustainable use of natural resources. To date, no biosphere reserves in the United States have been identified as including private land.

Fish and Wildlife Resource Conservation Priorities

Website link: www.fws.gov/midwest/News/documents/priority.pdf

Developed by U.S. Fish and Wildlife Service Region 3 representatives, this report presents a table of 243 species considered to be in greatest need of attention under the Service's full span of authorities.

Indiana Wetland's Conservation Plan

Website link: www.in.gov/dnr/fishwild/3350.htm

The Indiana Wetland's Conservation Plan provides a generalized, strategic approach to conserving Indiana's wetlands resources. It includes a wetlands definition, goal, guiding principles, wetland conservation priorities, and case studies of wetland conservation partnerships already up and running.

Maine Forest Biodiversity Project

Website link: www.publicconversations.org/node/106

In 1994, a group of people with diverse interests and backgrounds came together to discuss the issue of biodiversity in Maine's forests. The collaboration became known as the Maine Forest Biodiversity Project. The mission of the MFBP was to explore and develop strategies to help maintain viable populations of native species and native ecosystems in Maine. The project ended in 1999. This group, in partnership with the Maine Natural Areas Program, produced the publication *Biological Diversity in Maine: An Assessment of Status and Trends in the Terrestrial and Freshwater Landscape*. The MFBP appears to have also developed a set of management guidelines which can be downloaded at www.maine.gov/doc/mfs/pubs/pdf/biodiversity_forests_me.pdf

New York State Biodiversity Project

Website link: www.nybiodiversity.org/nysbp.html

The New York State Biodiversity Project was initiated in 1999 to improve understanding of the state's biodiversity and to identify challenges and solutions to protecting that biodiversity. The Project is in the process of producing a biodiversity book that will include general and specific information concerning the biodiversity of New York.

Northern Forest Alliance

Website link: www.outdoors.org/pdf/upload/cons-FY10-LPFprojects.pdf

The Alliance's priorities are to conserve wildlands in the Northern Forest to help protect the forest's ecological integrity, its recreational opportunities and its timber productions; to encourage well managed private forests to support the forest-based economy, including high-value timber products, recreation tourism, and the jobs these industries support; and to build strong, diverse, local economies. To that end, the Northern Forest Alliance proposes creating a system of wildlands across the northern forest to maintain ecological balance. A map of conservation priority areas has been developed.

Partners in Amphibian and Reptile Conservation (PARC)

Website link: www.parcplace.org

PARC is a partnership dedicated to the conservation of reptiles and amphibians and their habitats. The partnership is made up of state and federal agencies, non-governmental organizations, industry, academia, etc. PARC has produced regional Habitat Management Guidelines that provide recommendations for landowners and managers to consider the needs of amphibians and reptiles in the course of their management activities.

Coastal Landscape Analysis and Modeling Study (CLAMS)

Website link: www.fsl.orst.edu/clams

CLAMS is a multi-disciplinary research effort sponsored cooperatively by Oregon State University College of Forestry, U.S. Forest Service Pacific Northwest Research Station, and Oregon Department of Forestry. Its primary goal is to analyze the ecological, economic, and social consequences of forest policies of different land owners in the Coast Range.

Oregon Plan for Salmon and Watershed

Website link: www.oregon-plan.org/

The Oregon Plan for Salmon and Watershed seeks to restore salmon runs, improve water quality, and achieve healthy watersheds and strong communities throughout the state. Key elements of the plan are: voluntary restoration actions by private landowners; coordinated state and federal agency and tribal action to support private restoration efforts, effectively administer regulatory programs, and manage public lands; monitoring watershed health, water quality, and salmon recovery; and strong scientific oversight by an independent panel of scientists who evaluate the plan's effectiveness. The plan does not identify restoration targets or goals at this time.

Texas Wetland Conservation Plan

Website link:

www.tpwd.state.tx.us/landwater/water/habitats/wetland/publications/conservation_plan.phtml

The Texas Wetlands Conservation Plan focuses on non-regulatory, voluntary approaches to conserving Texas' wetlands. The plan is intended as a guide for wetlands conservation efforts throughout the state.

The Cascade Agenda

Website link: www.cascadeagenda.com

The Cascade Land Conservancy and its partners initiated The Cascade Agenda to conserve more than 1.26 million acres of land from Puget Sound to the Columbia River.

Washington Biodiversity Project

Website link: www.biodiversity.wa.gov

The Washington Biodiversity Project is an effort of the Washington Biodiversity Council to conserve the state's native plants, animals, and ecosystems for current and future generations. The Project will develop a prioritized 30-year strategy that enables the state to sustainably protect its biodiversity heritage. The goal is to produce a pro-active conservation blueprint for the state of Washington.

Wildways

Website link: www.wildlandsnetwork.org/wildways

Wildlands Network is in the process of completing four continental wildways, large protected landscapes for wildlife movement. The four wildways are identified as the Eastern Wildway (north from Everglades through the Appalachians to the Arctic), the Western Wildway (spanning the continent from Mexico through the Rockies to Alaska), the Pacific Wildway (from Baja to Alaska), and the Boreal Wildway (east-west from Alaska across Canada to the Maritimes, with a lower loop through the northern Midwestern states). The Eastern and Western Wildways are the current focus of the group.