

SECTION 9 PLANTS AND WILDLIFE

GOAL: Preserve the rich diversity of plant and animal life.

- Create, protect, and restore high quality lake, stream, and wetland habitats.
- Maintain the integrity of native ecosystems by protecting rare plants and animals, controlling invasive species, and protecting large blocks of dominant plant communities.

CHALLENGE

The Susquehanna-Chemung Watershed is biologically diverse, with many types of habitat, plants, and wildlife. Each ecological community is formed by complex connections between plant, animal, and environmental elements. Watershed residents live within and are sustained by these natural systems, which provide food, air, and water, as well as aesthetic and recreational benefits. Because humans are among the most influential living components in most ecosystems, we are faced with the challenge of being responsible stewards. The objective is to maintain the stability, resilience, and high yields that result from diverse interconnected ecological communities.



Great blue heron in Goodhue Lake, Steuben County (by Noel Sylvester).

Efforts to restore New York's wildlife populations began in the early 1900s with the regulation of hunting (beginning in 1908) and establishment of a Conservation Fund supported by sale of hunting and fishing licenses (in 1925). Fish and wildlife conservation efforts included establishment of wildlife management areas, active management of wildlife habitats, and transplanting of game species to restore populations. Although populations of game fish and wildlife species rebounded, many non-game species continued to decline in numbers. In 1973, the Endangered Species Act targeted over 1,000 plant and animal species nationwide. However, habitat loss and other factors continued to impact many non-game fish and wildlife species. New York completed a Comprehensive Wildlife Conservation Strategy (CWCS) in 2005 to address wildlife "species in greatest need of conservation" and other wildlife-related issues (NYS DEC, 2005). This Strategy enables federal funding (through the State Wildlife Grants program) for conservation efforts aimed at preventing fish and wildlife populations from declining, including those species that might become endangered in the future if they remain unprotected.

The CWCS identifies the following priority issues in the Susquehanna-Chemung Watershed:

- Stream protection including sedimentation and nutrient reduction
- Protection and management of large forest blocks for Species of Greatest Conservation Need (SGCN)
- Protection of contiguous forest stands
- Management, restoration, and protection of stream buffers to protect SGCN
- Improved local land use planning

The most frequently cited threat to species groups occurring in the Susquehanna Basin was outright loss of habitat via conversion to a human dominated land use (NYS DEC, 2005). The state has lost over half of its wetlands since colonization, resulting in classification of many wetland-dependent species as endangered or threatened. Floodplain forests have also declined substantially from historic levels. Much of the remaining habitat is degraded by fragmentation, exotic plants, pollution, or other disturbances that compromise complex ecosystem functions. High deer populations degrade forest ecosystems by selectively feeding in certain plant

species. In-stream habitat is damaged by disturbances in and near streams. The key to wildlife survival and perpetuation is thus to protect, restore, and manage an interconnected network of diverse habitats. This should include large intact blocks, such as forests and wetland complexes, connected by corridors that serve as wildlife paths. Connecting corridors are needed to improve access to water and other resources, support larger breeding populations, and enable animals to shift their ranges with seasons or changing conditions. Stream and river corridors are ideal places for wildlife paths because of the multiple benefits of undeveloped floodplains (including improved stream stability and reduced flooding risks). The challenge of maintaining an interconnected network of open space is expected to become increasingly difficult due to the construction of infrastructure (roads, pipelines, etc.) to support the natural gas industry, as well as other rural development. Existing, healthy ecosystems warrant protection, because it is generally far more cost-effective to protect existing habitat than to take corrective action after degradation has occurred.

The structure and function of many of the watershed's habitats is degraded by increasing populations of invasive species and pests. A plant or animal is considered to be invasive if it competes with native flora or fauna in a manner that harms the ecosystem. The watershed is already home to many species that impair ecosystem functions, disrupt recreation, reduce timber values, pose health risks, and necessitate high management costs. A few of the many problems and threats are:

- Giant hogweed can cause severe health impacts and should not be touched.
- Zebra mussels, which are now found in the watershed, can have significant impacts on water quality as well as biological communities.
- Central New York has a population of feral swine that can cause serious environmental and agricultural damage.
- The emerald ash borer has been detected in Steuben County and may have a dramatic impact on both forests (in which ash is currently a dominant and valuable species) and urban areas (where ash is frequently planted).
- Monocultures of Japanese knotweed have replaced diverse plant communities along many streams, resulting in a uniform and shallow root structure that is less effective in stabilizing streambanks and preventing bank erosion.
- A new threat is hydrilla, an aquatic weed that necessitates costly management to maintain navigation, which has recently become established in the nearby Cayuga Lake inlet.

Unfortunately, once invasive species are established, there aren't many methods for successful management. Even herbicides or poisoning are rarely permanent solutions. The key is to prevent the spread of species and identify new occurrences quickly, when it may still be possible to eliminate or contain them. It is also important to maintain healthy ecosystems that are resilient to the competition by invasive species and damage caused by other pests.

*"Our task must be to free ourselves by widening our circle of compassion
to embrace all living creatures and the whole of nature in its beauty."*

- Albert Einstein

RECOMMENDATIONS

The Susquehanna Basin section of the "Comprehensive Wildlife Conservation Strategy for New York" (NYS DEC, 2005) includes conservation recommendations that support the Plants and Wildlife goals of this Action Plan. The detailed recommendations in that Strategy (called CWCS) are supported by this Action Plan, but are not reiterated herein. (They are referenced briefly as CWCS recommendations.) The goals of this section are also supported by other parts of the Action Plan, particularly Sections 1 (Water Quality and Quantity), 3 (Land Use), and 4 (Streams and Rivers). Watershed-wide coordination of many of the following recommendations is provided by the Upper Susquehanna Conservation Alliance (facilitated by the US Fish & Wildlife Service).

Habitat: Preserve the ecological integrity of existing high quality habitat and enhance the quality of impaired habitat that has a high potential for successful restoration. Place emphasis on large blocks

of intact habitat and corridors connecting the blocks. The watershed's unique ecological communities rely on rivers, streams, lakes, ponds, perennial wetlands, vernal ponds, forests, shrub land, and grassland systems, as well as transitional areas.

- 9a. Perform ecosystem monitoring and assessment to provide the data needed for effective habitat restoration and protection activities. This includes: (1) determining which ecosystems and ecosystem components are healthy and which are degraded or under stress, (2) assessing the causes of degradation, and (3) identifying trends.

Immediate action: Challenge each county in the watershed to develop a natural resources inventory (similar to that prepared by Tompkins County) to provide data on land, water, and ecological resources that can form the basis for local planning and environmental assessment. Inventories can be developed by local organizations (such as Environmental Management Councils) and/or in partnership with the NYS Natural Heritage Program (which has scientific expertise on natural ecosystems). They should build on existing information, such as the biologic and habitat assessments conducted for water quality monitoring (by SRBC, NYS DEC, and others), and lead to an increased commitment to collection of ecological and habitat data in the Susquehanna-Chemung Watershed.

5-year target: Implement "Data Collection Recommendations for Habitats" in the Susquehanna Basin section of the CWCS (NYS DEC, 2005). These relate to fragmentation, habitat degradation, and interspecific interactions.

Measure: Number of counties with natural resources inventories. Number of studies and reports.

- 9b. Develop a habitat management plan for the watershed that focuses on restoration, protection, and management of forests, wetlands, grassland, shrublands, and early successional forests. Key characteristics for identifying priority areas include: biodiversity hot spots, critical habitat for priority species, intact forests, large wetland complexes, and corridors connecting larger blocks. Other considerations include: proximity to other protected areas, property owner interest, anticipated costs, and the potential for successful protection. Place particular emphasis on areas that support multiple objectives including: recreation, watershed protection, flood mitigation, water quality enhancement, carbon sequestration, education, maintenance of natural resource industries (such as farming and forest products), smart growth principles, and preservation of historic or cultural features.

Immediate action: Pursue ongoing and new habitat planning efforts, with coordination by the Upper Susquehanna Conservation Alliance. Key partners include: Trout Unlimited, Audubon Society (Important Birding Areas), The Nature Conservancy ("functional landscape" preservation), Upper Susquehanna Coalition (wetlands), NYS Department of Environmental Conservation (NYS DEC), US Fish and Wildlife Service, Finger Lakes Land Trust, Otsego Land Trust, and others.

5-year target: Identify priority areas with exceptionally high water quality, habitat, and biological resources (based on natural resources inventories, monitoring, and habitat planning efforts) and develop habitat protection strategies for these areas.

Long-range target: Implement "Planning Recommendations" in the Susquehanna Basin section of the CWCS (NYS DEC, 2005), which includes forest management planning, grassland and wetland planning, and NYS DEC unit management planning.

Measure: Progress on watershed-wide planning efforts, including localized plans that contribute to watershed objectives.

- 9c. Develop and implement strategies for protecting critical habitat. Utilize various tools including: public land acquisition, acquisition by non-profit organizations, conservation easements, farm bill programs, permit conditions (for wetlands and protected streams), comprehensive planning, municipal land use regulations, and incentives for voluntary protection. (Additional land use planning recommendations are included in Section 3 of this Action Plan.)

Immediate action: Land trusts, state agencies, local governments, and others secure funding to permanently protect priority habitat areas, including acquisition of inholdings within state forests and

parks, stream buffer easements, and protection of other critical environmental resources (NYS DEC and OPRHP, 2009). In addition to the cost of purchasing property or conservation easements, funding is needed for transaction and stewardship costs, which can be modeled after the Trout Unlimited Coldwater Land Conservancy Fund.¹² Educate property owners about conservation easements and other protection strategies.

Immediate action: Include information about ecological resources and priority habitat areas in the Susquehanna-Chemung Data Atlas,¹³ with links to additional online resources. Promote the use of this tool by municipalities (for comprehensive planning and review of development proposals) and by the public.

5-year target: Provide county Planning Departments with information to disseminate to municipalities about the locations or priority habitat and strategies for protecting these areas (such as critical environmental area designation). Include information and sample language for protecting small wetlands and vernal pools (less than 12.4 acres) that are not regulated by the state. Recommend subdivision requirements that maintain and protect ecological functions, including large undeveloped parcels. Provide municipalities with follow up planning assistance as needed to revise comprehensive plans and revise/enforce land use regulations.

5-year target: Expand public education and assistance programs that help property owners understand the ecology of habitat on their property, develop effective management strategies, and implement habitat protection measures.

Long-range target: Implement “Land Protection Recommendations” in the Susquehanna Basin section of the CWCS (NYS DEC, 2005), which address water quality and habitat loss.

Measure: Information and features added to the Data Atlas. Number of municipalities and property owners that receive information and assistance. Number of revised plans and regulations. Acres of habitat protected.

- 9d. Develop and implement strategies for habitat restoration, focusing on areas with a high potential for restoration, opportunities for expanding habitat for priority species, and establishing corridors that connect the larger blocks.

Immediate action: Conduct stream training (see Section 4) that includes strategies for incorporating habitat considerations into stream management, stream remediation, culvert installation, and bridge projects. This includes avoiding indiscriminant dredging, leaving woody material in the stream, establishing shading riparian vegetation, removing fish blockages, restoring riffle-pool systems, etc.

Immediate action: Enhance the Upper Susquehanna Coalition Wetland Program (for wetland restoration, construction, and protection) to include additional public education through signs, media releases, and other strategies for informing the public about local projects and general issues (such as “why do watersheds need wetlands?”). Explore opportunities for using beaver to maintain wetland habitat in areas where they won’t adversely impact developed areas. Establish demonstration areas for documenting multiple benefits of wetlands (including water quality, flood attenuation, and habitat).

Immediate action: Provide information and assistance to lake associations and others for implementation of lake management programs that promote diverse lake and lake shore ecosystems. (See also the septic system recommendations in Section 1 of this plan.)

Immediate action: Promote local implementation of habitat restoration programs, including: NYS Department of Transportation mitigation projects, Natural Resources Conservation Service Floodplain Easement program, US Fish and Wildlife Service programs, and USDA Farm Bill programs (Wetland Reserve Program which benefits migratory birds, Wildlife Habitat Incentive Program which benefits grassland nesting birds, Conservation Reserve Enhancement Program for riparian corridors, etc.), and others.

¹² The Coldwater Land Conservancy Fund supports Trout Unlimited protection priorities by providing grants to land trusts and state agencies to cover the transaction costs associated with donated and purchased conservation easements.

¹³ Susquehanna-Chemung Data Atlas: <http://24.97.219.74/SCAtlas/>

5-year target: Evaluate feasibility and identify potential funding sources for fish passage or dam removal projects at the 9 dams that were determined to have a medium to high potential for restoration in “A Strategy for Removing or Mitigating Dams in New York State and Lessons Learned in the Upper Susquehanna Watershed” (US Fish and Wildlife Service, 2008).

Measure: Number of habitat restoration projects.

- 9e. Engage stakeholders in conservation of wild places and improved stewardship of all land (including urban and suburban areas) in order to protect and enhance habitat functions. Educate the public about how ecosystems work and species that occur within the watershed. Include recommendations for stream management, riparian corridors, not feeding waterfowl, mowing less grass, attracting wildlife, timber management practices that create early successional habitat, and selecting plant species that will be resilient to warming climate conditions. (See also public education recommendations in Section 11.)

5-year target: Develop and implement a public education campaign about ecosystem functions and habitat enhancement techniques (backyard ecology and rural land management). Build on existing resources, such as the outdoor exhibit at Rogers Environmental Education Center that shows how anyone can enhance wildlife habitat at home.

Measure: Number of educational exhibits, articles, and programs.

Target Species: Protect and restore sustainable populations of plant and animal species in need of conservation, including those classified as endangered, threatened, Species of Greatest Conservation Need (SGCN), and others with important ecological functions. Target species include: Eastern hellbender, American shad, American eel, blueback herring, brook trout, Jefferson salamander, longtail salamander, pearly mussels, river otter, and American woodcock.

- 9f. Support studies of priority species to monitor populations and provide the technical basis for developing protection and restoration strategies. Research the effects of climate change on individual species and ecological communities.

Immediate action: Coordinate research on target species in the watershed through the Upper Susquehanna Conservation Alliance. Key programs include the NYS Natural Heritage Program (with an increased commitment to data collection in the Susquehanna-Chemung Watershed), Biological Field Station (pearly mussel studies), Trout Unlimited (brook trout), NYS DEC, US Fish and Wildlife Service, university research, non-profit conservation organizations, and others.

5-year target: Implement “Data Collection Recommendations for SGCN” in the Susquehanna Basin section of the CWCS (NYS DEC, 2005). This includes population, habitat, and life history research on a number of priority species to address critical data gaps. It also includes monitoring of contaminants in animals and evaluating population restoration efforts.

Measure: Number of studies and reports.

- 9g. Develop restoration plans for priority species that are both biologically feasible and socially acceptable.

Immediate action: Complete the hellbender recovery plan, under development by NYS DEC.

5-year target: Implement “Planning Recommendations” in the Susquehanna Basin section of the CWCS (NYS DEC, 2005). This includes population, habitat, and life history research on a number of priority species to address critical data gaps. It also includes monitoring of contaminants in animals and evaluating population restoration efforts.

Measure: Number of species restoration plans.

- 9h. Implement management and restoration activities to protect and restore populations of priority species.

Immediate action: Coordinate protection and restoration activities through the Upper Susquehanna Conservation Alliance. Maintain NYS participation in the Susquehanna River Anadromous Fish

Restoration Cooperative (SRAFRC) and implementation of recommendations of the “Strategic Plan for Restoration of Migratory Fishes to the Susquehanna River” (which currently focus on fish passage for American shad and eel at 5 downstream dams and research on the declining population of American shad). Implement conservation strategies developed by the Eastern Brook Trout Joint Venture to protect, enhance, and restore brook trout. Implement recommendations of the management plan for American eels recently prepared by the US Geological Survey for NYS DEC. (Eel restoration will restore important ecosystem functions to streams and rivers in the watershed.)

Long-range target: Implement “Management and Restoration Recommendations” in the Susquehanna Basin section of the CWCS (NYS DEC, 2005). This includes habitat management strategies, invasive species control techniques, and recommendations regarding human-wildlife interactions.

Measure: Number of projects that protect and/or restore populations of target species.

- 9i. Educate property owners, land managers, and municipalities about target species and protection/restoration strategies in order to facilitate informed decisions about activities that may help or harm SGCN. Include information about management strategies for beavers, which have hydrologic benefits and create attractive habitat for many wetland species. Provide individual technical assistance as needed.

Immediate action: Publicize and maintain the Conservation Guides on the NY Natural Heritage Program website, which help land managers, decision-makers, planners, scientists, consultants, and the interested public better understand the rare species and natural communities.¹⁴

Immediate action: Provide information about biologically important areas to the counties (for natural resources inventories; Recommendation 9a), municipal governments (for planning and land use decisions; Recommendation 9c), and landowners. Assist property owners and managers with development of conservation strategies. Provide municipalities with planning assistance as needed to implement zoning controls (such as an overlay protection district) or establish Critical Environmental Areas so that new development would be required to protect the endangered species.

5-year target: Implement “Information Dissemination Recommendations” in the Susquehanna Basin section of the CWCS (NYS DEC, 2005). This includes recommendations concerning rare species, agriculture and silviculture practices, exotic species, and human-wildlife interactions.

Measure: Number of educational exhibits, articles, and programs. Number of counties, municipalities, and property owners that receive information and assistance.

Invasive and Harmful Species: Manage the adverse ecological impacts of invasive species and pests by (1) preventing introduction of new species, (2) early detection and rapid response, (3) public outreach and education, and (4) focused, ecologically sound control and management activities (where feasible).

- 9j. Monitor the occurrence and ranges of invasive species, conduct research to determine the best control strategies, and prepare a comprehensive invasive species management plan. These efforts should include monitoring for species not yet established to enable early detection and rapid response (during the critical early stage when eradication may be feasible).

Immediate action: Document invasive species in conjunction with water quality monitoring (by SRBC and others) and other data collection efforts. Fund



Feral swine (courtesy of NYS DEC).

¹⁴ Conservation Guides on the NY Natural Heritage Program website provide population trends, habitat information, conservation strategies, information about identification, and other useful resources for hundreds of individual plant and animal species and biological communities: www.acris.nynhp.org

additional invasive species monitoring and research (by universities, non-profit organizations, and government agencies).

Long-range target: Implement the information and research recommendations of the NYS Invasive Species Task Force, which include: (1) establish a center for invasive species research, (2) develop a state-wide database clearinghouse for all taxa of invasive species (integrating existing databases and information clearinghouses), (3) recognize and fund demonstration projects, (4) convene a regular invasive species conference, and (5) prepare and implement a comprehensive invasive species management plan for New York state.

Measure: Number of studies and reports.

- 9k. Conduct education and outreach about invasive species targeting land managers, landscaping businesses, lake associations, and the general public. This should include information about: (1) the negative effects of invasive species, (2) techniques for preventing the introduction and spread of invasive and exotic species, (3) identification assistance to facilitate early detection and reporting, (4) promotion of native species as alternatives to invasives, (5) techniques for preventing colonization by invasive species when an area is disturbed, (6) resources for managing healthy ecosystems that are resilient to the impacts of introduced species, and (7) control and management strategies for individual species.

Immediate action: Support regional coordination of invasive species education through the Finger Lakes Partnership for Regional Invasive Species Management (FL-PRISM), Catskill Regional Invasive Species Partnership (CRISP), New York Invasive Species Clearinghouse,¹⁵ and Mid-Atlantic Panel on Aquatic Invasive Species.

Immediate action: Support county-based invasive species experts (trained Master Gardeners, Cooperative Extension staff, or others) who can disseminate information, make presentations, conduct workshops, provide assistance to the public, and serve as an early detection network.

Immediate action: Conduct targeted public awareness campaigns for specific species of concern, particularly emerging problems like hydrilla, the emerald ash borer, and feral swine.

5-year target: Provide educational signage and boat washing facilities at all public boat launch sites. Signs should provide information about the dangers posed by the spread of exotic species and the role of boats in their spread.

5-year target: Provide nurseries and landscapers with information about landscaping plants that can become nuisance species and appropriate native species substitutions. Encourage labeling of native species. Provide handouts for distribution to customers.

Measure: Number of educational exhibits, articles, and programs.

- 9l. Where feasible, implement ecologically sound invasive species control and management activities to slow the spread of harmful species and mitigate the impacts of established populations.

Immediate action: Allocate funding and sufficient staff to implement invasive species management activities of the FL-PRISM, CRISP, NYS Department of Environmental Conservation, US Fish and Wildlife Service, counties, and other organizations. Maintain sufficient staff to enable early detection and rapid response to new threats as well as management of established populations.

Long-range target: Implement the "Management and Restoration Recommendations" for invasive species in the Susquehanna Basin section of the CWCS (NYS DEC, 2005), which specifies the need to control purple loosestrife, invasive aquatic plants, Japanese knotweed, and invasive species of minnows.

Measure: Number of invasive species control and management projects.

¹⁵ New York Invasive Species Clearinghouse: www.nyis.info