Priority Strategies/Actions for Statewide Implementation

This chapter of the CWCS outlines recommendations that are of statewide priority or are of statewide scale. In many cases there are components of these recommendations that will be carried out in an individual watershed basin, or at smaller scales. For planning recommendations, statewide restoration and management plans will likely be built from components at a watershed scale. The following recommendations do not appear in any priority order. All of these recommendations are intended to be of high priority to implement in the coming 5 to 10 years for the benefit of the most critical SGCN in the state. See the discussion of "Development of Conservation Recommendations for Species of Greatest Conservation Need and their Habitats" and their prioritization in the Introduction.

Data Collection Recommendations

Understanding the abundance and distribution of SGCN is perhaps the single most important factor in their effective protection and management. Knowing the condition of New York State's natural resources is fundamental to DEC's ability to carry out its legislated function to "monitor the environment to afford more effective and efficient control practices, to identify changes and conditions in ecological systems and to warn of emergency conditions" (Environmental Conservation Law, §3-0301).

FILL GAPS IN INFORMATION ON SGCN WHOSE STATUS AND DISTRIBUTION **ARE UNKNOWN**

There are many SGCN that have been selected for inclusion in the program due to poor understanding of their natural history, population information, threats, and other information necessary for their effective management. While it is not practical to expect that all the needed information can be gathered in the next 5 years, a network of professional and volunteer data collectors, a repository for the data, and a means to share it as it becomes available can be established using the SWG funding as a catalyst. There is more written about the establishment of a monitoring program for SGCN in the Monitoring chapter.

Some specific programs already exist that can be adapted, expanded, or improved to help in the effort to better understand SGCN. For example, the Rotating Intensive Basin Survey (RIBS) program led by DEC's Division of Water samples streams across the state for aquatic invertebrates as part of their water quality classification requirements under the Clean Water Act. The existing survey efforts could be enhanced through SWG funding to include a broader sampling for SGCN like odonates, stoneflies, mayflies, freshwater bivalves, and gastropods. Other existing water quality sampling programs should be adapted to include data on aquatic habitat quality as well.

Two statewide partnership programs, the NY Breeding Bird Atlas and NYS Amphibian and Reptile Atlas Project (Herp Atlas), have been tremendously successful in collecting a large amount of distribution information on broad classes of animals, including SGCN. In the case of the Herp Atlas, there is a need to develop standard survey methods for the herpetofauna SGCN in order to enable

more organizations and volunteers to collect data about them. Both of these atlas projects should be continued for their benefit to SGCN and other management efforts.

Under the guidance of the recommended monitoring plan in the Monitoring chapter, other programs need to be developed and coordinated with implementation of the CWCS. A specific example is the Governor's Invasive Species Task Force. There are many aquatic and terrestrial invasive species already in the state that cause adverse effects on SGCN. There is the potential for the introduction of many more species due to the prevalence of interstate and international shipping and trans-boundary waterways. There is further discussion of this issue in the Planning Recommendations section of this chapter.

Some specific SGCN are of statewide importance and recommendations related to data collection specific to those species are highlighted here.

American eel

Data collected from fishery dependent and fishery independent data in the Lake Ontario/St. Lawrence River estuary and Lake Champlain/Richelieu River systems point to a reduction in eel abundance and localized recruitment failure. Most eels from these two river systems are female and thought to contribute the majority of female biomass to the eel spawning stock. There is little data available for other areas in the state, including the marine district, where coastal streams are vital to stock recruitment along the coast.

Commercial eel fishing has been eliminated in the Province of Ontario, by the Ministry of Natural Resources, which directly affects the Lake Ontario/St. Lawrence River stock. This will reduce fishery-dependant information available about American eel stocks. Specific recommendations include:

- Develop methods of determining age and identifying sex of American eel.
- Determine fecundity at age, maturation mechanisms, and recruitment to spawning stock.
- ❖ Develop population life history models for all watersheds of the state, beginning with the Great Lakes and St. Lawrence River populations and the Marine District populations.
- Monitor populations for abundance by age, size, and sex of intermediate and adult life stage members.

Birds

- Survey grasslands and agricultural areas of the state for barn owls and investigate the feasibility of nest box deployment to augment declining populations.
- Continue participation in sampling the Great Lakes for Type-E botulism and research into its causes and disease cycle in fish and wildlife species. Use this information to more effectively manage susceptible species and minimize risk of disease spread through the state.

 Develop comprehensive and periodically implemented surveys for birds under-surveyed by other programs. Examples include: secretive marsh birds like rails and bitterns; nocturnal birds like owls and whip-poor-wills; and salt marsh birds like salt marsh sharp-tailed sparrow and seaside sparrow.

Crustacea/Meristomata

Inventory and survey aquatic caves of the state for devil crawfish and Piedmont groundwater amphipod.

Freshwater Fish

- Conduct workshops for DEC and other fisheries sampling staff on the identification of freshwater fish SGCN to assist in data collection for these species. Expand specialized surveys for these species, especially:
 - Blackchin shiner
 - All species in the "extirpated fishes" species group
 - Iowa darter
 - North American ninespine stickleback
 - Sauger
 - Swallowtail shiner
- Continue the hatchery rearing programs for lake sturgeon, Atlantic salmon, and paddle fish, and expand the restoration of these fish to suitable historic waters.
- Survey waters where freshwater fish SGCN were historically found for remnant populations, habitat suitability, and restoration potential.
- Continue to sample moribund and dead lake sturgeon in the Great Lakes for type-E botulism.

Herpetofauna

- Complete and analyze data from the Herp Atlas project. The Amphibian & Reptile Atlas Project (Herp Atlas) was a ten year survey that was designed to document the geographic distribution of New York State's herpetofauna in order to monitor changes in populations and to make sound management decisions. Using the Herp Atlas data (1990-1998) we have produced a map (19kb) that shows our progress by indicating the number of species reported in each of the 979 survey blocks (7.5' topographic quadrangles.) This survey effort should be repeated at 10 year intervals.
- Select sites to follow up on sampling for rare herp species especially:
 - Hellbender
 - Mudpuppy
 - Eastern spadefoot toad
 - Four-toed salamander
 - Fowler's toad
 - Wood turtle
 - Spiny softshell
 - Northern map turtle
 - Eastern ribbonsnake
 - Coal skink

- Common five-line skink
- Stinkpot
- Northern copperhead
- Smooth greensnake

- Determine threats to rare herpetofauna species.
- ❖ Develop standard survey protocols for all herpetofauna SGCN within the next 10 years. This will increase the ability of other agencies, organizations, and volunteers to assist in gathering data on herptile SGCN.

Insects

There is little information to support effective management of most insect SGCN in New York. Specific recommendations include:

- Widen the suite of aquatic insects sampled and recorded by the Division of Water's Rotating Intensive Basin Survey to include more SGCN insect species.
- Inventory publicly owned lands for insect SGCN species whose status are unknown including:
 - · Barrens buck moth
 - · All tiger beetle SGCN
 - · American burying beetle
 - Bog buckmoth
 - Regal fritillary
 - Gorgone checkerspot
 - Persius duskywing
 - · Southern grizzled skipper
 - Brazilian skipper
 - · Henry's elfin
 - · All species in the group "other moths"
- Continue to support the Odonate Atlas project.

Mammals

Several species have little data to support protection and management efforts. Specific recommendations include:

- Implement harvest-independent monitoring of American marten.
- Expand monitoring of river otter across the historic and expanded populations and increase monitoring and reporting accuracy in the marine district.
- ❖ Implement a monitoring protocol for New England cottontail in New York in consultation with the states of Connecticut and Massachusetts, resolve its taxonomic status, and identify specific threats to its continued existence in New York.
- ❖ Improve monitoring capacity for marine mammals in the Atlantic Ocean and Long Island Sound using satellite telemetry and aerial surveys. Coordinate this work with the federal government and adjoining states.
- Survey likely habitat for small-footed bat, tree bats, least weasel, and least shrew in the state to determine their population status.

Marine Fish

There are many marine fish species whose populations and habitat needs are poorly understood and not measured. Recreational and commercial harvest regulations of several of these species do not include reporting requirements. Due to their importance in coastal food webs specific recommendations include:

- ❖ Develop fishery-independent sampling program for river herrings (American shad, alewife, blueback herring), rainbow smelt, and estuarine forage species (killifish and silversides) and calculate abundance indices.
- ❖ Document life history of river herrings, rainbow smelt, and estuarine forage species in New York and their habitat usage.
- ❖ Attempt to identify the predators on river herrings, rainbow smelt, and estuarine forage species, and the relative energetic importance of these species to those predators.
- ❖ Map remnant spawning runs of river herrings and rainbow smelt and identify candidate sites for fish passage structures in the Hudson, Susquehanna, and Delaware River systems and in coastal streams on Long Island.
- ❖ Improve the capacity to sample and quantify demersal and pelagic shark populations in New York at all life stages and the role New York's waters play in their life cycle.
- Conduct literature reviews to determine habitat suitability of New York's coastal zone for shark pupping and nursery areas.
- ❖ Improve harvest reporting on skates and rays in marine waters of New York. Use these data to determine the health of New York's population of these animals.
- Expand fishery-independent surveys for juvenile winter flounder in New York's marine district. Correlate juvenile indices with temperature data to determine if this species may be experiencing a range reduction.

MOLLUSKS

- Expand toxicity testing for pesticides and ammonia on freshwater mussels. Update water quality guidance and BMPs as appropriate.
- Continue research into the efficacy and optimal placement of spawner sanctuaries and reef sites for marine bivalves. Work with local governments in the marine district to manage marine bivalve populations.

IMPROVE MAPPING AND UNDERSTANDING OF HABITAT DISTRIBUTION AND CONDITION IN NEW YORK STATE.

Knowing the condition of the natural resources of the state is a fundamental responsibility of DEC. Given the vast area and diversity of natural resources found in our state, this daunting task will require the cooperation of many partners in order to effectively manage our SGCN across the state. Improvements in remote

sensing and GPS technology have reduced the potential costs of landscape-scale mapping.

One of the first attempts at statewide habitat condition analysis was carried out in the New York GAP analysis project (NYGAP) (Smith et al. 2001). This project predicted the distribution and abundance of certain wildlife species across the state based on remote sensing imagery. The GAP analysis project used the same remote sensing imagery as the US Environmental Protection Agency's (EPA) Multi-Resolution Land Classification (MRLC) project. While MRLC was simply a land cover classification mapping project, the NYGAP went a step further and predicted the habitat value and corresponding wildlife distribution of terrestrial vertebrates across the state. There is an aquatic GAP analysis project underway in New York as well. As with NYGAP, the aquatic GAP project is being led by Cornell University's Cooperative Fish and Wildlife Unit. The last comprehensive statewide aquatic surveys were carried out by New York Conservation Department staff in the 1920s and 30s. The New York Natural Heritage Program has completed a baseline inventory of natural resources on state park lands and is in the process of inventorying state forests. The Heritage Program inventories include habitat and fauna information.

Unfortunately, there are no plans to update NYGAP at this time. The MRLC maps are now being updated by EPA and will provide a comparable data set at a 10 year interval from the initial MRLC data used to develop the CWCS. Further habitat mapping and habitat data collection should be carried out as part of the recommended monitoring program in the Monitoring chapter of this strategy. There is a need to improve the accuracy of habitat mapping statewide. Ideally those habitat maps will be indexed with the native fauna associated them.

General

- ❖ Identify and map large blocks of unfragmented habitat cover types. This should include roadless forest tracts, grasslands, shrub lands, riparian areas and free-flowing streams. Wherever possible, these mapping efforts should extend across watershed and state boundaries, and both public and private lands, especially in the case of forested and aquatic habitats.
- Develop methods of invasive plant detection and mapping to track their extent and spread across the state.
- ❖ Identify spatially-explicit critical habitat maps for SGCN statewide and determine their protective status. Use this information to inform the Open Space Conservation Plan and other land protection and acquisition programs, including the Land Owner Incentive Program, Forest Stewardship Program, Farm Bill programs, and others.
- Use the above information to identify the publicly-owned lands that support SGCN and provide that information to land managers.

Wetlands and Aquatic Habitats

Complete an update of all state wetlands regulatory mapping under both Article 24 and Article 25. Use this data to conduct a status and trends analysis

- of wetlands in the state since inception of protective legislation. Priority should be placed on areas with known or suspected net loss of wetlands.
- ❖ Document the use of wetland habitats by SGCN in wetlands smaller than 12.4 acres and not currently protected under Article 24. Of particular priority are amphibian SGCN.
- Continue and expand benthic habitat mapping and indexing efforts in the Marine District. Develop analogous mapping procedures in larger freshwater systems of the state.
- Expand habitat condition information collected during water quality surveys, and expand the Division of Water's ongoing Rotating Intensive Basin Survey to include information on a wider suite of aquatic species.

Forests

Continue to improve and upgrade forest health and composition mapping efforts on state forest lands.

Planning Recommendations

- ❖ Build on the existing "fine-filter" draft of the CWCS to generate "coarse filter" recommendations for identification of priority habitats and threat assessments. Work with conservation partners and existing GAP project information to generate these new products.
- ❖ Conduct statewide goal setting for maintenance and restoration of terrestrial habitats, specifically mature forests, early successional shrub lands and forests, and grasslands. Several species-based management and recovery programs set competing goals of increasing one or another type of habitat. These goals should be coordinated and set based on a mosaic management approach of these habitats on public lands in the short-term and expanded to voluntary private lands participation in the future.
- ❖ Develop stepped-down watershed management plans for each of the watershed basins in the next 5 years. This process should include refinement of the vision, goals, and objectives in each watershed.
- ❖ Develop a statewide, standardized GIS layer of all protected lands in New York. This should include information on all levels of protection, including easements, and integrate information from the new Landowner Incentive Program, where appropriate.
- Create a statewide strategy to address the threat of atmospheric deposition of mercury and nitrogen and sulfur compounds. Build on the existing efforts of the DEC's Acid Deposition Reduction Program.
- Develop a statewide assessment of the effects of global climate change on New York's natural resources. Build on existing efforts of the Regional Greenhouse Gas Initiative, Long Island Sound Study Tidal Wetlands Workshop recommendations, and boreal species research in the Adirondacks.
- ❖ Develop a statewide eel management and recovery plan. Build watershed components of this plan beginning with the Great Lakes and St. Lawrence River and the Marine District of the state. Include the data collection and management recommendations cited in this section and in the species group report for American eel found in Appendix A.
- **❖** Update the 1979 Keller brook trout management plan for New York to include current recommendations for heritage strains of trout.
- ❖ Develop management or recovery plans for high priority SGCN in the state where such plans do not yet exist.
- ❖ Develop statewide goals for bird SGCN in decline including grassland species, early successional forest and shrubland breeding birds, and boreal forest species. Integrate these goals with habitat planning goals above.
- Develop recommendations for expansion sites to establish new populations of Karner blue butterflies in suitable habitats.

- ❖ Update and expand the existing DEC Aquatic Nuisance Species Plan with a comprehensive terrestrial invasive species plan statewide. Incorporate the recommendations and findings of the Governor's Invasive Species Task Force. Develop regional approaches to implementation of these recommendations that will be effective in containing and reducing the abundance of the most invasive of the plant species.
- ❖ Update state land unit management plans, state park master plans, national wildlife refuge comprehensive plans, and other appropriate planning documents to include information and management needs of SGCN statewide.
- ❖ Develop a statewide map of avian and bat migration routes for use in wind turbine and communications structure placement.

Land Protection Recommendations

- ❖ Implement the recommendations of the NYS Open Space Conservation Plan that fulfill habitat protection needs of SGCN. The Open Space Conservation Plan has a well established collaborative process for determining regional land acquisition priorities among state and local governments and stakeholder groups. By informing the Open Space Conservation Planning process of the needs of SGCN in each region, the CWCS can effectively integrate land protection needs into the existing land acquisition mechanism for the State of New York.
- ❖ Improve mapping accuracy and availability for sensitive habitats like wetlands and riparian zones. Use this information to identify buffer parcels and inform landowners and local planning and zoning boards of their value.
- ❖ Implement the new Landowner Incentive Program and support existing private lands cooperative management programs to improve habitat for SGCN on private lands. Grassland and early successional habitats are of particular priority.
- Develop land protection strategies for large blocks of unfragmented forests by working with private land owners and public land managers, transportation planners, and local government to reduce planned fragmentation. Development of tax incentives and disincentives, easements, and cooperative management programs is crucial to the achievement of this task.

Management and Restoration Recommendations

- ❖ Develop an "Urban Wildlife" pilot program for chimney swift and common nighthawk. These bird species are uniquely suited to urban environments and have potential for educational involvement at public school buildings. Large cities in the state should be examined for potential inclusion in the pilot program.
- ❖ Use data collected for SGCN through the SWG funding stream to update appropriate New York Natural Heritage Program records.
- ❖ Incorporate tabular and spatial data collected for SGCN and their habitats into DEC's Master Habitat Data Bank and the Natural Heritage Program Database, as appropriate.
- Develop monitoring program outlined in the monitoring chapter and develop data standards for research projects funded by SWG. Institute peer review of monitoring protocols for SGCN.
- ❖ Develop experimental forest management areas within publicly-owned forest lands to determine appropriate forest management parameters for SGCN, especially forest-breeding raptors.
- Improve the management of the state's grassland and pine barrens areas by introducing or continuing the use of prescribed fire.
- Implement large-scale shellfish restoration with accompanying sustainable management and enforcement procedures.
- **❖** Improve management, conservation, and encourage restoration of riparian buffers for the state's waterbodies.
- ❖ Expand and support existing efforts to implement BMPs on farms along stream corridors statewide to protect water quality, reduce excessive soil erosion, protect habitat, and improve nutrient management.
- ❖ Work with land owners to increase percentage of streams statewide that have vegetated buffers wider than 50 feet.
- **❖** Implement management recommendations of the Governor's Invasive Species Task Force. Develop means for early detection and response to invasive exotic plant and animal species statewide.
- ❖ Expand capacity of agencies and non-governmental organizations to work with private land owners who have habitat for SGCN on their property to manage it for the benefit of SGCN.
- ❖ Develop and improve appropriate volunteer data collection for SGCN.
- Develop and improve remote data collection and processing abilities within agencies and non-governmental organizations.

- ❖ Update and maintain the CWCS planning database in anticipation of the redrafting of the CWCS in 5 years.
- ❖ Develop a statewide in-stream flow policy that allows for management of the quantity and temperature of flows that mimic natural conditions to te extent possible wherever possible. Examination of existing flow rate agreements must be a component of this task.

Information Dissemination Recommendations

- Expand forestry practices information sheets to include information related to SGCN and watershed protection. Support the outreach efforts associated with the "Wildlife and Forestry in New York Northern Hardwoods, A Guide for Forest Owners and Managers." Participate in future revisions of this document to include the needs of SGCN.
- ❖ Work with governmental agencies and trade associations to educate garden wholesalers and retailers about invasive plants and discourage their sale and use in New York State. Develop similar outreach to private citizens.
- Develop fact sheets regarding all SGCN for distribution to the public. Include steps that the public can take to protect and enhance wildlife.
- ❖ Work with the US and state departments of transportation to incorporate SGCN-friendly components into road maintenance and renovation work. Specific examples include wildlife underpasses, median and right-of-way mowing, tree-cutting schedules and plantings, sand and salt use runoff reduction measures, and new road location planning.
- Make information available to public and private land managers regarding the benefits and need for reducing fragmentation of mature forests. Also provide for early successional habitat, including even-aged forest stand management and sustainable forestry practices where it is deemed appropriate or desirable.
- ❖ Work with public utilities to manage rights-of-way to provide maximum habitat benefits to early successional forest/shrub land birds. Utilize existing information and education resources, such as SUNY Environmental Science and Forestry School's *Shrubs on Rights-Of-Way* guide.
- Develop an outreach program for public and private land managers to increase awareness of the benefits of managing the land with wildlife-friendly agricultural practices. Species groups that will benefit include fish, freshwater marsh nesting birds, amphibians, and grassland birds.
- Promote the establishment of vegetated buffers between agricultural fields and wetlands and streams to protect them from runoff and benefit fish, bivalves, and freshwater marsh nesting birds.
- Provide information about negative effects of human disturbance on wildlife. Human behavior can be altered by education and outreach and can help reduce detrimental interactions.
- Enhance public education to curtail collection and translocation of fish, or killing of hellbenders and snakes. This includes dispelling common myths about dangers posed to people and pets by native snakes.
- ❖ Develop an outreach and education tool to highlight the possible detrimental effects of human disturbance on wetland dependant wildlife, especially SGCN. An example could be off-road vehicle effects on vernal pool and marsh nesting species.

- Develop outreach material to educate the public about the benefits of grasslands, freshwater mussel life history, and at-risk Lepidoptera.
- Share information on lands that provide critical habitat for SGCN with county and town planning boards to assist them in steering development and growth away from critical areas.
- ❖ Develop a report on the "State of Wildlife in New York." This document should be public-friendly, and could serve the additional purpose of an executive summary. The document should be updated with each update of the CWCS.
- Continue to update the State Wildlife Grants web pages on the DEC website to inform interested parties of projects funded by State Wildlife Grants.

Regulatory and Legislative Recommendations

- ❖ Afford protected stream status under ECL §608.2 to Class D non-navigable stream segments that provide habitat for SGCN.
- Explore the issuance of general permits for regulated activities under ECL §608.5 (navigable streams) for those stream segments that provide habitat for SGCN.
- Work to strengthen existing support programs for local government planning and zoning boards to incorporate water quality and land side habitat protections into local regulations. An example of this type of program is the Local Waterfront Revitalization planning process administered by Department of State.
- ❖ Explore the need for extending regulatory authority over SGCN and/or their critical habitats where it does not exist. For example, legislation extending protection as 'special concern' species is pending for many of the herptile species. This protection would be based on data collection activities proposed elsewhere in this CWCS.
- ❖ Implement reporting requirements for sharks, rays, and other marine SGCN that are harvested and not currently reported.
- ❖ Explore an amendment of §480a of the Real Property Tax Law that may provide for wide-ranging holistic stewardship on eligible tracts of private property. Consider the establishment of a Habitat Reserve component to encourage land owners to voluntarily conserve and manage significant habitats for wildlife and fish located on their lands through Real Property Tax exemptions.
- Implement the regulatory recommendations of the Regional Greenhouse Gases Initiative and Acid Deposition Reduction Program.
- ❖ Review and respond to project applications involving tall structures such as cellular transmission towers and wind turbines that may adversely affect migratory birds and tree bats.
- Conduct a statewide reinventory of wetlands and update the state Freshwater and Tidal Wetland maps.

Incentives

Only about 15% of the land area of New York State is in public ownership. In order to effectively maintain viable wildlife habitat for healthy and resilient populations of SGCN in New York, cooperation with private landowners is a necessity. An effective conservation incentive program must have clear goals, adequate funding, strategic delivery, efficient communication and coordination among conservation partners, and monitoring and adaptive management of the ecological outcomes of the program. DEC and other partners should collaborate to create a habitat incentive program to encourage private land owners to make land use decisions which protect and preserve SGCN habitat.

In order to attract participants, the program must provide clear benefits that are desirable to the land owner. The process must be accessible and understandable and keep decision making at a local level. The most effective use of SWG toward incentive programs will be to provide the strategic vision and technical guidance to existing incentive outlets like the federal Farm Bill programs, Landowner Incentive Program, Partners for Wildlife, and others.

Implementation of incentive programs will be strengthened by expanding guidance to local governments regarding effective zoning statutes, technical and financial assistance to watershed protection and development planning, and effective enforcement techniques for existing statutes.

Some specific recommendations include:

- ❖ Explore an amendment of §480a of the Real Property Tax Law that may provide for wide-ranging holistic stewardship on eligible tracts of private property. Consider the establishment of a Habitat Reserve component to encourage land owners to voluntarily conserve and manage significant habitats for wildlife and fish located on their lands through Real Property Tax exemptions.
- Develop other incentives for private land owners to incorporate protections of SGCN into their land management.
- ❖ Work with the Forest Certification Program, Forest Stewardship Council®, and Sustainable Forestry Initiative® across the state to incorporate BMPs sensitive to the needs of SGCN.
- Work with local governments to develop effective zoning statutes, technical and financial assistance to watershed protection and development planning, and effective enforcement techniques for existing statutes. Explore the development of state incentives for local government to undertake Quality Community or Smart Growth initiatives and create local open space conservation plans.