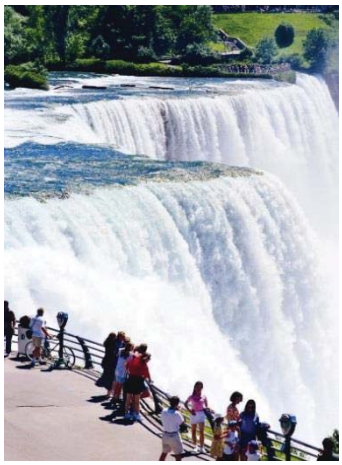
Niagara River Greenway Habitat Conservation Strategy



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Niagara River Greenway Habitat Conservation Strategy

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Maps

**Note: Technical Report information available online at www.bnriverkeeper.org/habitatstrategy*

Acronyms

AOC- Area of Concern
ARA- Active River Area
BAP- Biological Assessment Profile
BMP- Best Management Practice
BOA- Brownfield Opportunity Area
BOS- Buffalo Ornithological Society
BRR- Barrier Rock Reef
BUI- Beneficial Use Impairment
CAP- Conservation Action Plan
CSO- Combined Sewer Overflow
CWCS- Comprehensive Wildlife Conservation Strategy
CWM- Chemical Waste Management
DEC- Department of Environmental Conservation
EAB- Emerald Ash Borer
EAV- Emergent Aquatic Vegetation
EDR- Environmental Design & Research
E & E- Ecology & Environment, Inc.
FEMA- Federal Emergency Management Agency
GIS- Geographic Information System
HIP- Habitat Improvement Project
IBA- Important Bird Area
IBI- Index of Biotic Integrity
LDB- Left Descending Bank
LIDAR- Light Detection and Ranging
LWRP- Local Waterfront Revitalization Plan
NHD- National Hydrography Dataset
NHP- Natural Heritage Program
NOAA- National Oceanic and Atmospheric Association
NWI- National Wetland Inventory
NYPA- New York Power Authority
NYS DOS- NYS Department of State
OMOE- Ontario Ministry of Environment
OPRHP- NYS Office of Parks, Recreation and Historic Preservation
RAP- Remedial Action Plan
RDB- Right Descending Bank
RIBS- Rotating Integrated Basin Study
RMP- Robert Moses Parkway
ROW- Right-of-Way
RTE- Rare, Threatened, or Endangered
SAV- Submerged Aquatic Vegetation
SVAP- Stream Visual Assessment Protocol
TAC- Technical Advisory Committee
TNC- The Nature Conservancy
USACE- United States Army Corps of Engineers
USFWS- United States Fish & Wildlife Service
WNYLC- Western New York Land Conservancy
WQI- Water Quality Indicator

Acknowledgements

The Niagara River Greenway Habitat Conservation Strategy embodies four years of research guided by a suite of iterative planning tools and regional expertise. Many people contributed time, data, and insight to help shape the outcome of this work. Grateful acknowledgement goes out to each and every person who participated in this effort.

Special recognition is given to the following entities whose efforts were integral to the project and without whom, the project would not have been possible.

Buffalo Niagara Riverkeeper's Core Project Team: Emily Sadowski (Natural Resource Planner), Kerrie Gallo (Director of Ecological Programs), Joseph Gould (Natural Resource Planner), Margaret Wooster (Senior Environmental Planner), Laurie Stillwell (Assistant Director of Planning), and Katherine Winkler (Buffalo River Projects Manager). Intern Zachary Schaab volunteered many hours to complete research related to ecological conditions in the Greenway and completion of the CAP process.

Project Support Staff:
Ecology and Environment, Inc. (E & E), led by Kris Erickson, served as the technical field consultants for the Strategy. The E & E project team completed extensive field surveys of seeps within the gorge, barriers to fish, and site-specific opportunities. They also created a detailed land cover dataset for a portion of the Greenway, along with a number of other mapping analyses that contributed to the final report. E & E assisted in other tasks that contributed to the completion of the project through participation in discussions regarding the Niagara River Remedial Action Plan, providing input into the overall process, and contributing to completion of the CAP process among other things.

SUNY Buffalo State College completed stream assessments throughout the Greenway and provided detailed information and recommendations based on the results. This effort was led by Dr. Kelly Frothingham.

Aaron Feeney digitized current shoreline conditions throughout the Greenway with oversight from E & E and Lisa Matthies-Wiza of Erie County Department of Environment and Planning.

Jundong Qiao, Michael Scanlon, and Spencer Podsiadlo completed GIS research and analysis regarding current and historical island extent and acreage.

Ryan Janus completed final report design and formatting.

Technical Advisory Committee Members: A core committee of 20 bi-national technical experts provided guidance and feedback to the project team for the duration of the project. The members are: Dimitry Gorsky, Betsy Trometer, Amy Roe, and Dan Gefell, U.S. Fish and Wildlife Service; Tim DePriest, Mike Wilkinson, Paul McKeown, Jennifer Dunn, Mark Filipski, and Shannon Dougherty, NYS Department of Environmental Conservation; Kevin Kapuscinski, Lake Superior State University; John Whitney, USDA/NRCS; Neil Patterson, Tuscarora Haudenosaunee Environmental Task Force; Kelly Frothingham, Buffalo State College; Amy Bartlett, University at Buffalo; Deanna Lindblad, Niagara Peninsula Conservation Authority; Kris Erickson and Paul Fuhrmann, Ecology and Environment, Inc.; Albert Garofalo, Bert Miller Nature Club; and David Klein, The Nature Conservancy.

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The New York Power Authority provided selected GIS shapefiles and databases related to Niagara River bathymetry, barriers, and flora and fauna.

Community Groups and Local Stakeholders: Although too numerous to mention individually, many local agencies, not-for-profit organizations, municipalities, citizen-based groups, sportsman's clubs, and individual citizens provided continuous feedback through public meetings, individual consultations and small-group meetings. This information was essential to fostering an iterative planning process and for helping to tailor the Strategy towards the needs of potential implementers.

Executive Summary

The purpose of the Niagara River Greenway Habitat Conservation Strategy is to create a blueprint of the most effective opportunities for conserving biodiversity and ecological function in the Niagara River Greenway and to engage the many stakeholders that need to be involved in resetting the region's environmental health trajectory away from "poor" and towards "good." The process for determining priority opportunities and actions included the use of the Conservation Action Plan (CAP) framework coupled with on-the-ground field data collection, Geographic Information System (GIS) analysis, ongoing consultation with regional experts and community stakeholders, along with a detailed base of existing literature. The end-result of specific conservation opportunities utilizes all of the tools in the tool box: acquisition, protection, regulation, restoration and education. The report is intended for use as a companion to the Niagara River Habitat Conservation Strategy which provides an essential watershed context and background to the work described in this document (Buffalo Niagara Riverkeeper, 2014b).

In completing the CAP process, the following steps were taken to develop a specific suite of conservation strategies needed to improve ecosystem integrity within the project area while building upon the Niagara River Greenway Plan and Remedial Action Plan:

- Define a suite of biodiversity features (habitat types) that represent biodiversity within the project area;
- Evaluate the current status, or viability, of each biodiversity feature through selection of a set of indicators that represent that feature's size, condition, connectivity, and species associations based on best available information;
- Determine the most critical threats to each feature to focus efforts necessary in maintaining ecosystem function and habitat health; and,
- Develop strategies that guide future conservation efforts to achieve improved habitat health for the entire Greenway. Chapter 4 provides detailed information on a municipal basis regarding the most relevant strategies and how they should be implemented.

A brief overview of these elements compiled for each biodiversity feature is as follows:

OPEN WATER/AQUATIC HABITAT

Description: Niagara River and tributary open water aquatic habitat.

Current Status: FAIR - Based on impaired benthic communities, a large amount of impermeable surface within the project area, and evidence of priority contaminants in some biota. However, remnants of Niagara's historic aquatic species diversity remain and are of critical importance to significant populations of resident and migratory fish-eating birds, so there is potential for a ranking of "GOOD" with focused conservation efforts.

Critical Threats: Barriers to fish movement; erosion and sedimentation (lack of riparian buffer); invasive species.

Conservation Strategies:

- *Strategy 1: Increase stream buffers, especially where connectivity to active floodplains, riparian wetlands, or other habitats is enhanced or where problems with runoff, flooding, and/or erosion are known to exist.* Flooding, erosion, and lack of stream buffers are problems often observed along streams within the Greenway. The Strategy provides tools to identify areas to focus efforts for buffer

improvements through landowner education, regulatory mechanisms, and living shoreline implementation.

- *Strategy 2: Reduce stream barriers in areas of known or probable interference with aquatic life.* Only 46% of tributaries within the Greenway are free of barriers to fish movement. Ecology & Environment, Inc. (E & E) assessed barriers and identified mitigation measures for each stream. Priority streams for barrier removal include Big Sixmile and Spicer Creeks on Grand Island.
- *Strategy 3: Mitigate the effects of channelization and altered flows.* Channelization and altered flows are observed in the Greenway as a result of stream manipulations that can be mitigated through development setbacks, buffer requirements, and soft engineering of shorelines. Activities from the State Power Authority and Erie Canal also contribute to altered flows. Research is needed on how to mitigate their effects on habitat and wildlife.
- *Strategy 4: Implement Stream Visual Assessment Protocol recommendations.* Stream assessments were completed for 348 reaches on 12 tributaries with recommendations for specific stream segments.

WETLANDS

Description: Emergent, scrub/shrub, and forested wetlands including coastal, floodplain, and headwater wetlands; and springs and seeps within the project area.

Current Status: FAIR - Although wetland obligate animal populations are decreasing due to a major wetlands deficit in the river corridor compared to historic cover, amphibian and marsh bird IBIs conducted at existing protected coastal wetlands demonstrate better than average abundance and diversity, indicating good potential for species to benefit from increased wetland conservation.

Critical Threats*:* Lack of protection/connectivity; loss of acreage (development, human disturbance); highway department practices (spreading of invasive plants/ditching).

Conservation Strategies:

- *Strategy 5: Identify large and/or high quality wetlands for state designation and/or public acquisition.* Lack of protection, lack of connectivity, and loss of acreage are among the most critical threats to wetland habitat within the Greenway. State protection of wetlands (over 12.4 acres) and public acquisition are the best tools for protecting valuable wetland areas. A desktop analysis provides potential priority areas to investigate for wetland protection.
- *Strategy 6: Work with public and private landowners on best management practices to gain maximum ecosystem and community values of wetlands including stormwater retention and filtration, native species diversity, and beauty.* Due to the fact that most wetlands are located on privately-owned lands, it is important that landowners are made aware that their property contains wetlands and that technical assistance related to protecting and improving habitat is available to them. The Strategy provides examples of Best Management Practices (BMPs) and programs available for technical assistance.

WOODLANDS

Description: Deciduous, evergreen, and mixed forest.

Current Status: POOR- Based on <10% forest cover, fragmentation, and population trends of listed species.

Critical Threats: Lack of protection/connectivity; lack of ecological management plans; fragmentation (utility, roads, rail).

Conservation Strategies:

- *Strategy 7: Work with municipalities, land conservancies, and private owners to transform vulnerable woodlots into ecologically functional, resilient forests through protection and connection of existing lots.* Lack of protection and connectivity were identified as the critical threats to woodlands within the Greenway. Several desktop analyses contribute to identifying priorities for implementing this strategy including forested areas at risk for fragmentation due to development pressures, critical headwater forests, and large forested areas.
- *Strategy 8: For public acquisition, prioritize escarpment and other headwater woodlands, remnant native communities, and parcels that will increase forest tract size to >100 acres.* A key objective regarding habitat within the Greenway is to preserve and restore large patches of woodland required to support the long-term ecological function of forests in the region, provide habitat to forest dwelling wildlife species, and offer resiliency to disturbances like extreme weather events and invasive species.

GRASSLANDS/SHRUBLANDS

Description: Grassland/herbaceous and scrub/shrub, plus selected capped landfills.

Current Status: POOR - Can be greatly improved if grasslands restoration is designed into remediation strategies for landfills, brownfields, and other re-naturalizing urban-industrial areas, as well as abandoned agricultural lands.

Critical Threats: Lack of protection/connectivity; management practices on public lands; mowing (and landfill regimes) and farming practices.

Conservation Strategies:

- *Strategy 9: Incorporate creation of native grassland meadows into remediation of landfills, brownfields, or other abandoned lands in the river corridor.* Remediated landfills and brownfields represent an opportunity for creation of grassland habitat where uses on these lands are otherwise limited. Potential brownfields and landfills for creation of grassland are identified. Management techniques are also included in the report.
- *Strategy 10: Educate landowners about best management practices associated with grasslands, especially on agricultural lands.* Agricultural practices pose a considerable threat to the viability of grassland habitat for the region. Recommended management actions and tools for technical assistance are provided in the report.

NATURAL AREAS

Description: Land covers supporting terrestrial habitat connectivity and/or stream function.

Current Status: FAIR - Only 28% of the project area has natural cover, although much of that is semi-protected by a density of state and municipal parks, state-regulated wetlands, and Wildlife Management Areas within the Greenway area.

Critical Threats: Lack of protection/connectivity; fragmentation (utility, roads, rail).

Conservation Strategies:

- *Strategy 11: Contribute to the creation of a Niagara River Greenway by protecting and connecting natural areas.* Opportunity exists to complete the vision of the Niagara River Greenway as "a necklace of open space and conservation areas" (Wendel and Duchscherer, 2007). Desktop analyses and field assessments helped to identify some of the largest and most ecologically significant areas within the Greenway in need of conservation. Some of these include from south to north: the City of Buffalo's Outer Harbor; islands and shorelines between Grand Island and the Town of Tonawanda;

and the Niagara Gorge rim and escarpment within the Greenway. Greenway funds should be used to support acquisition of development rights in these areas so they are clearly in the public trust. Funding should also be dedicated to protecting and restoring the habitat and functional values of these large beads on the Greenway necklace.

- *Strategy 12: Increase habitat values of protected natural areas through improved management practices on public lands.* Improved management practices on public lands in the region would greatly benefit habitat quality. Specific techniques are identified in the report and include training of highway departments on BMPs.
- *Strategy 13: Build partnerships with and between municipalities to connect and increase ecological values of coastal zones, steam corridors, and other shared habitat features through best management practices and ecology-based planning and zoning regulations.* This strategy offers a detailed list of regulatory tools available to municipalities to protect natural resources. It also recommends that townships work together to manage shared habitat features like streams.

NIAGARA GORGE

Description: Including six miles of cliffs, talus slope, bedrock shoreline, and vegetated rim between the falls and the northern edge of the Niagara Escarpment at Lewiston.

Current Status: FAIR-GOOD - High historic aquatic and terrestrial biodiversity continues to be affected by fragmentation, invasive species, changes to surface and groundwater hydrology, and water level fluctuations related to hydropower and other uses.

Threats: Management practices on public lands; highway department practices (spreading/diching); water level fluctuations.

Conservation Strategies:

- *Strategy 14: A primary management goal for the Niagara Gorge is to identify, characterize, protect, and restore areas containing or supporting listed plant species and communities.* Specific recommendations for managing sensitive gorge habitat include identifying and conserving rare plants and communities (i.e. remnant oak savannah), reducing human impacts (e.g. re-routing trails and roads away from sensitive areas), and continuing surveys of groundwater seeps as significant micro-habitats supporting plant diversity in the gorge.
- *Strategy 15: Remove roads, infrastructure, and incompatible uses from the gorge rim and river to the greatest extent possible***.** Impacts to the unique and sensitive plants and communities within the gorge should be avoided. The Strategy recommends that the ecological and economic findings of the EDR study (2011) be included in the ongoing studies of the gorge rim parkway. Erosion and siltation from daily water level changes and jet boat use within the gorge should also be evaluated in terms of impacts on vegetation and habitat.

ISLANDS

Description: Natural and manmade islands, breakwalls, and surrounding shallow water habitat.

Current Status: FAIR-GOOD - Although island habitat acreage has diminished, species use of remaining areas is high indicating potential for improving population trajectories with increased island habitat protection and conservation.

Critical Threats: Lack of ecological management plans; loss of acreage (development, human disturbance).

Conservation Strategies:

- *Strategy 16: Use wetland, park, or other designation to limit human disturbance of island habitats and develop management plans that protect fish and wildlife habitat values.* A trend of loss in island habitat has been experienced within the Niagara River with current island habitat estimated at only 56% of acreages reported historically. The Strategy recommends that human use is limited around sensitive island habitats, long-term monitoring and management of Habitat Improvement Projects is ensured and research be conducted regarding the viability and habitat needs of species dependent on island/shallow water habitat.

AREA OF CONCERN

Conservation Strategies:

- *Strategy 17: Provide support to delist habitat-related impairments in the Niagara River AOC.* Through the Strategy, Riverkeeper participated in the Niagara River Area of Concern Loss of Habitat Working Group to identify priority sites for delisting the Loss of Fish and Wildlife Habitat BUI. Riverkeeper's top 10 sites are identified in Chapter 3.