

HUDSON RIVER ESTUARY

WILDLIFE AND HABITAT CONSERVATION FRAMEWORK



An Approach for Conserving Biodiversity
in the Hudson River Estuary Corridor



New York State Department of Environmental Conservation

This page intentionally left blank.



New York State Department of
Environmental Conservation



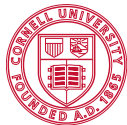
NYSDEC, Division of Fish,
Wildlife and Marine Resources,
Bureau of Wildlife



Hudson River Valley Greenway



United States Geological Survey,
Biological Resources Division,
New York Cooperative Fish & Wildlife
Research Unit, Cornell University



Cornell University

Department of Natural Resources



New York State Office of Parks, Recreation,
and Historic Preservation

Hudson River Estuary

Wildlife and Habitat Conservation Framework

An Approach for Conserving Biodiversity
in the Hudson River Estuary Corridor

2006

Prepared by:

Mark E. Penhollow, Paul G. Jensen,
and Leslie A. Zucker
New York Cooperative
Fish & Wildlife Research Unit,
Department of Natural Resources,
Cornell University

Hudson River Estuary Program

The Hudson River Estuary Program is a unique regional partnership designed to protect, conserve, restore, and enhance the estuary's productivity and diversity of natural resources to sustain a wide array of present and future human benefits. The Hudson River is a nursery for valuable food and game fish, a water supply, a boater's playground, a landscape of inspiring beauty, a shipping route, and more. Therefore, its management calls for a cooperative effort of broad scope, coordinating public input with the expertise of professionals throughout New York State's Department of Environmental Conservation (NYSDEC) and other agencies.

The *Hudson River Estuary Action Agenda* identifies priority actions to be taken to conserve the natural resources of the estuary and its associated shore lands. One of those priorities is conservation of biodiversity in the Hudson River Valley and the greater Hudson Estuary ecosystem.

This report describes significant habitats of the Hudson River Valley and identifies voluntary, non-regulatory strategies for conserving wildlife and habitat in the region.

For more information on the Hudson River Estuary Program please write or visit the program's web page.

New York State Department of Environmental Conservation
Hudson River Estuary Program
21 South Putt Corners Road
New Paltz, New York 12561-1696
Email: hrep@gw.dec.state.ny.us
<http://www.dec.ny.gov/lands/4920.html>

Recommended citation format:

Penhollow, M. E., P. G. Jensen, and L.A. Zucker. 2006. Wildlife and Habitat Conservation Framework: An Approach for Conserving Biodiversity in the Hudson River Estuary Corridor. New York Cooperative Fish and Wildlife Research Unit, Cornell University and New York State Department of Environmental Conservation, Hudson River Estuary Program, Ithaca, NY.

Cover photo credits:

Northern harrier by Isidor Jeklin (left), brackish tidal marsh along the Hudson River Estuary courtesy of NYSDEC (upper right), and trout-lilies in the Catskill Mountains by Andrew Finton (lower right).

Table of Contents

List of Tables	ii
List of Figures	ii
List of Appendices	iii
Acknowledgments	iv
Executive Summary	v
Overview	1

PART I: An Approach To Biodiversity Conservation

Introduction	7
The Hudson River Estuary Biodiversity Program	7
Conservation Area.....	7
Biodiversity Defined	8
Biodiversity Value	8
Biodiversity Conservation Considerations.....	10
Community Involvement.....	11
Partnerships.....	12
Threats to Biodiversity in the Hudson River Estuary Corridor	13

PART II: Significant Habitats of the Hudson River Valley

Introduction	16
Significant Habitats and Biodiversity Areas	17
Hudson River Estuary Area of Biological Concern	21
Parks and Preserves	26
Significant Habitat Descriptions	31
Cave & Cliff Habitats	32
Coastal Habitats	35
Open Uplands & Barrens	37
Tributaries & Riparian Habitat	42
Unfragmented Forest & Habitat Corridors	47
Wetlands	50
Significant Biodiversity Area Descriptions	59
Albany Pine Bush	60
Arthur Kill	62
Catskill Mountains	63
Delaware/Mongaup Rivers	66
Dutchess County Wetlands	67
Esopus/Lloyd Wetlands and Ridges	69
Harlem Valley Calcareous Wetlands	71
Highlands	74
Hudson River Estuary and Tidal Wetlands	77
Hudson Valley Limestone and Shale Ridges	83
Jamaica Bay and Beaches	85
Narrows	87

Neversink River	89
Palisades	90
Rensselaer Plateau	92
Rosendale Limestone Cave Complex	94
Shawangunk Kill/ Shawangunk Grasslands	96
Shawangunk Ridge	98
Staten Island Greenbelt.....	101
Taconic Ridge	103
Van Cortlandt Park	105
Ward Pound Ridge Reservation	105

PART III: Conservation Strategies and Recommendations

Introduction	107
Addressing Threats to Biodiversity	107
Conservation Program Areas and Strategies	108
Biological Inventories & Ecological Research.....	108
Land Management & Environmental Quality.....	118
Education	125
Literature Cited	129

List of Tables

Table 1. Distribution of public land stewardship in the Hudson River Estuary corridor.....	26
Table 2. Levels of biodiversity protection for public lands in the Hudson River Estuary corridor.....	28
Table 3. Threats to biodiversity in the Hudson River Estuary corridor and program areas designed to address each threat.....	108
Table 4. Distribution of land ownership in the Hudson River Valley	119

List of Figures

Figure 1. The Hudson River Estuary ecosystem is geologically and biologically diverse.....	6
Figure 2. The Hudson River Estuary corridor of New York State.....	9
Figure 3. Significant biodiversity areas of the Hudson River Estuary corridor	18
Figure 4. Biodiversity element occurrences tracked by the NY Natural Heritage Program within the Hudson River Estuary corridor.	20

Figure 5. Types and distribution of public lands and private conservation lands in the Hudson River Estuary corridor.....	27
Figure 6. Biodiversity corridor and areas that merit further investigation in three towns of eastern Westchester County.....	30
Figure 7. Significant biodiversity areas of the Hudson River Estuary corridor notable for cave and cliff habitats.....	34
Figure 8. Significant biodiversity areas in the Hudson River Estuary corridor notable for coastal habitats.....	36
Figure 9. Significant biodiversity areas in the Hudson River Estuary corridor notable for open uplands and barrens.....	41
Figure 10. Significant biodiversity areas of the Hudson River Estuary corridor notable for tributaries and riparian habitat.....	46
Figure 11. Significant biodiversity areas of the Hudson River Estuary corridor notable for unfragmented forest and habitat corridors.....	49
Figure 12. Significant biodiversity areas of the Hudson River Estuary corridor notable for wetlands.....	58
Figure 13. Sample portion of the East Fishkill habitat map.....	110
Figure 14. Predicted species richness in the Hudson River Estuary corridor	114
Figure 15. Census block groups within the Hudson River Estuary corridor ranked according to the likelihood of future residential development.....	124

List of Appendices

Appendix I. Steering committee members of the NYSDEC Hudson River Estuary Biodiversity Program (1997-2002).....	132
Appendix II. Common and scientific names for plant and animal species mentioned in this report.....	134

Acknowledgements

The development of this document is the product of a team effort involving the Biodiversity Program Steering Committee under the leadership of the New York State Department of Environmental Conservation (NYSDEC), Hudson River Estuary Program and the New York Cooperative Fish and Wildlife Research Unit at Cornell University.

We gratefully acknowledge the significant involvement and input of the Steering Committee. Their expertise, insights, and suggestions were instrumental in shaping the development of this report and, indeed, the biodiversity and terrestrial habitat elements of the overall estuary management program. Because the Steering Committee deliberations have been so important to the development of the final product and, because so many individuals have contributed to this effort, committee members and their affiliations are listed in Appendix I. The report is improved by a number of illustrative figures, maps and photographs and we thank all of those who provided these materials. Of particular note in the development of this framework for conservation planning and action in the Hudson River Valley are four NYSDEC employees who have teamed up to provide a platform for this project, and impetus for the overall Hudson River Estuary Program. For their vision, leadership, support and encouragement; and, for their support of field research, data interpretation, and preparation of this report we thank Francis Dunwell, Arthur Johnsen, Ted Kerpez, and Maynard Vance all from NYSDEC Regions 3 and 4.

Lastly, we thank Milo Richmond, Unit Leader of the New York Cooperative Fish and Wildlife Research Unit at Cornell for suggestions, research planning, facilitation of employee and field research needs, and for offering an opportunity for professional growth. His support, involvement, and friendship have helped the effort in measurable ways.

Much of the drafting, redrafting, original thinking and creative writing for this document have been the work of Mark Penhollow, Paul Jensen and Leslie Zucker who have gone the distance to capture the ideas, intent, and specific facts that came from so many sources and are so important to the integrity of this document.

Several publications were particularly valuable in development of the framework. Descriptions of significant biodiversity areas and habitats were supplemented by extensive surveys, reports, and personal communications from the NY Natural Heritage Program. Characterizations of significant habitats were enriched by high quality habitat profiles included in the Biodiversity Assessment Manual for the Hudson River Estuary Corridor developed by Hudsonia, Limited. Background information on terrestrial habitats and vertebrates, and the status of their conservation was found in the Hudson River Valley Gap Analysis completed by the NY Cooperative Fish and Wildlife Research Unit. Original descriptions of the ecological communities found in the Hudson River Valley were taken from Reschke's Ecological Communities of New York State (1990) published by NYSDEC.

The New York State Department of Environmental Conservation provided support for the development of this document from the Environmental Protection Fund through the Hudson River Estuary Program.