

# Managing White-tailed Deer in Forest Habitat From an Ecosystem Perspective Pennsylvania Case Study

## Report of the Deer Management Forum

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Convened by Audubon Pennsylvania and the Pennsylvania Habitat Alliance  
to compile and examine the pertinent research, enlist other expertise, weigh the issues,  
and set forth a vision of what ecosystem-based deer management might entail in large  
forested areas of the eastern United States, using Pennsylvania as an example.

100 Wildwood Way  
Harrisburg, Pennsylvania 17110

January 2005

## ***Citing this report***

Latham, R. E., J. Beyea, M. Benner, C. A. Dunn, M. A. Fajvan, R. R. Freed, M. Grund, S. B. Horsley, A. F. Rhoads and B. P. Shissler. 2005. *Managing White-tailed Deer in Forest Habitat From an Ecosystem Perspective: Pennsylvania Case Study*. Report by the Deer Management Forum for Audubon Pennsylvania and Pennsylvania Habitat Alliance, Harrisburg. xix + 340 pp.

## ***Availability***

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### **Front cover**

Painted trillium, redback salamander, white oak, red trillium, hobblebush, and eastern wood-pewee are among the many native species that have been overlooked by traditional approaches to white-tailed deer management. Deer are a valued part of our natural ecosystems, but many other species have declined, sometimes drastically, in areas where deer densities have exceeded the cultural carrying capacity of the forest (see back cover).

*Photo credits (clockwise from upper left):* Roger M. Latham (painted trillium); Stephen V. Silluzio (redback salamander); John A. Haarstad, courtesy of Cedar Creek Natural History Area (white oak); Roger M. Latham (red trillium); Roger Earl Latham (hobblebush); J. Heidecker, courtesy of VIREO, Academy of Natural Sciences of Philadelphia (eastern wood-pewee); Roger M. Latham (white-tailed deer).

### **Back cover**

*Photo credits (clockwise from bottom):* Ann Fowler Rhoads (fern carpet, Wyoming County, Pennsylvania); Roger Earl Latham (fenced-undefenced comparison, Susquehanna County, Pennsylvania); Roger Earl Latham (boulder-top “rock garden,” Warren County, Pennsylvania); Tom Kornack (close-up of bluebead lilies).

To Dr. Roger M. Latham (1914-1979),  
a pioneering advocate for ecosystem management before the term was created. His work on deer  
research and management beginning in 1938 still informs our current understanding of  
Pennsylvania's deer problem. In a lifetime of speaking and writing about his love of nature and the  
sport of hunting, he educated the public about the need for a scientific basis for managing wildlife,  
without sidestepping controversy. We dedicate this book to Roger and his vision.

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## ***Preface***

In April 2001, the Pennsylvania office of the National Audubon Society and the Pennsylvania Habitat Alliance asked a group of professionals to look at deer management from an ecosystem perspective. The resulting Deer Management Forum, first convened in October 2001, was asked to set forth a vision of what ecosystem-based deer management might entail. In particular, the group was asked to describe how deer management might differ from current practices if deer were managed within an ecosystem framework that aims to conserve native biodiversity. Only with such a vision in hand could decision makers, should they be so inclined, take the steps that will be needed to move deer management in Pennsylvania from a single-species approach to ecosystem management.

The preparation of this report is supportive of a recommendation made by a stakeholder group convened by the Pennsylvania Game Commission (P.G.C.) in July 2002. The group's top-priority recommendation was that deer be managed on an ecosystem basis. This report presents a vision of how that might be done.

Participants in the Deer Management Forum reviewed the scientific literature, visited field sites, heard presentations from other ecosystem and wildlife management experts, and interviewed others (See Appendices B and C for a list of presentations, field sites visited, and interviews).

The report is generally based on consensus. The one exception is the inclusion of material in Chapter 13, which is critical of P.G.C. Two former Game Commission staff members<sup>1</sup> felt that discussion of external critiques of the agency was inappropriate and counterproductive. It was a consensus of the remaining members of the Deer Management Forum, however, that it would be impossible to manage deer from an ecosystem perspective without facing up to and correcting deficiencies identified by external reviews of P.G.C., including reviews commissioned by the agency itself. Presented with an irresolvable impasse, the minority members withdrew their names from the report, although they allowed their contributions to the scientific portions of the report to remain.

By including in Chapter 13 past critiques of P.G.C. (e.g., the so-called MAT review and legislative audits), we do not imply any disrespect for the agency, its commissioners, or staff. We recognize that managing a large resource agency is no easy task, and all agencies have problems. A strong institution will welcome outside critiques as an opportunity for self-improvement.

Two members of the Deer Management Forum are on the staff of the Pennsylvania Department of Conservation and Natural Resources (D.C.N.R.). Their participation does not imply concurrence and endorsement of the report by D.C.N.R. leadership or the administration. To fully explore the issues of policy and structure around the management of deer, D.C.N.R.

permitted staff members participating in the Forum the freedom to openly discuss issues and alternatives from a scientific viewpoint.

The draft version of this report or portions of it have been reviewed by 10 experienced scientists and managers (listed on page ix; also see Appendix D). However, the reviewers were not asked to endorse the conclusions or recommendations, nor have they seen the final report before its release. Overall, the reviewers were very complimentary.<sup>2</sup> In a few cases, as explained in several endnotes and in Appendix D, we did not accept the suggestions or advice of reviewers. In the vast majority of cases, however, we were able to incorporate the suggested improvements. The Pennsylvania Game Commission was also given an advance review copy and senior staff members responded with updates, clarification of their position, and suggestions for revision, many of which are included in the final report.

This document is organized to facilitate its use by a range of readers, including scientists, interested stakeholders, policy analysts, and policy makers. It begins with a brief executive summary. Summary findings and recommendations are placed at the end of each chapter. The most important findings and recommendations appear in a separate chapter at the end of the main report. Supporting material appears in appendices.

### **Audubon Pennsylvania and the Pennsylvania Habitat Alliance**

The mission of the Pennsylvania state office of the National Audubon Society is to conserve and restore natural ecosystems, focusing on birds, other wildlife, and their habitats for the benefit of humanity and the Earth's biological diversity. The state office supports 22 chapters in Pennsylvania with expertise on conservation projects, chapter capability building, fundraising, advocacy, education, and collaboration with other environmental organizations.

Pennsylvania has played a major role in the Audubon Society's history. When John James Audubon first moved to America in 1803, he settled at Mill Grove near Valley Forge. It was in Pennsylvania that he developed his spectacular and unique painting style. In 1896, the Pennsylvania Audubon Society was created as the second state Audubon Society in the country.

The Pennsylvania Habitat Alliance is a coalition of 30 organizations dedicated to conservation issues. It was formed in 1998 with a commitment to conservation of habitat through effective communication and cooperation among conservation organizations, sportsmen's groups, and land trusts.

This report was produced at the request of the Pennsylvania Habitat Alliance, with Audubon Pennsylvania acting as project administrator. The statements, findings and recommendations contained in this report do not necessarily reflect the positions of the member organizations of the Alliance.

## Endnotes

<sup>1</sup> Dr. Duane R. Diefenbach and Jerry Hassinger

<sup>2</sup> Complimentary comments from reviewers included the following:

“I will start by complimenting the authors on the wealth of information contained in the report. It is a good reference source for a range of ecosystem topics.”

“First and foremost, I want to congratulate all of you on this wonderful document. I know how incredibly hard you worked to produce this, and that work is richly and sometimes eloquently reflected on each page of this document. It is quite unusual in both its breadth and depth, its degree of interdisciplinarity, its readability (no, it’s not casual reading, but interested parties from nearly any discipline or interested lay people will gain a great reward for the effort that they put into perusing this volume, and it is accessible to the willing from across that range), and its specific adaptive resource management framework.”

“The report of the Deer Management Forum is a fascinating and superb effort to capture deer management in a comprehensive context. The report is an impressive document written by a group of biologists who have rich experience with the issues of deer in eastern forest ecosystems. The adaptive management approach provides the framework for a managing both deer and forests in manner that can build consensus for multiple objectives and incorporate the best scientific knowledge. The synthesis of existing knowledge presented here makes this a valuable document to many readers beyond the intended audience.”

“First, I would like to say it was a great read. The task force is to be congratulated on pulling together an amazing amount of information. I have tried to write several chapters like the ones in this plan and I know how scattered the information is. Excellent job.”

“I have just spent the last couple hours reading your draft report and I wish to commend you all on a job very well done. I came away from my visit with the Forum feeling overwhelmed with the complexity of the task before you but somehow you seem to have got your arms around it and come up with a credible way forward. Congratulations!”

“In general, I think that this is an excellent publication. I was particularly impressed by the logical, organized presentation of information in the book. I also think that the sections at the end of each chapter on ‘Findings’ and ‘Recommendations’ will greatly improve the utility of the publication.”

## ***Acknowledgments***

We are grateful to those who have provided data, expert knowledge, or logistical support, in particular the reviewers of earlier versions of the manuscript (listed on opposite page). Dr. Duane R. Diefenbach, Pennsylvania State University, Cooperative Fish and Wildlife Research Unit, contributed introductory material on adaptive resource management and the bulk of the chapter on measuring deer population density. He and Jerry Hassinger, Pennsylvania Game Commission, Wildlife Diversity Section (retired) attended most of the Forum meetings, providing valuable guidance on deer management. In addition, we thank: Steve Balzano, formerly Pennsylvania Department of Conservation and Natural Resources; James Bailey, Dr. E. Michael Blumenthal, Mark W. Deibler, Dr. James R. Grace, and Dr. Thomas J. Hall, Pennsylvania Department of Conservation and Natural Resources, Bureau of Forestry; Dr. James K. Bissell, Cleveland Museum of Natural History; Robert C. Boyd, Calvin W. DuBrock, Dr. Chris Rosenberry, and Vernon R. Ross, Pennsylvania Game Commission; Dr. Patrick H. Brose and Dr. Susan L. Stout, U.S. Forest Service, Northeastern Research Station, Irvine, Pennsylvania; Dr. James C. Finley, Pennsylvania State University, School of Forest Resources; Dr. Kurt W. Gottschalk, U.S. Forest Service, Northeastern Research Station, Morgantown, West Virginia; Dr. William H. McWilliams, U.S. Forest Service, Forest Inventory and Analysis, Newtown Square, Pennsylvania; Brad Nelson, U.S. Forest Service, Allegheny National Forest; Michael Pechart, Pennsylvania Department of Agriculture; Beth Sanders and Sharon Sherick, Audubon Pennsylvania; Justin Vreeland, Pennsylvania Cooperative Fish and Wildlife Research Unit, University Park; and Paul g. Wiegman, formerly Western Pennsylvania Conservancy. We also thank:

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