

ECOLOGICAL AND SOCIOLOGICAL ASPECTS OF
WHITE-TAILED DEER HERBIVORY IN
SOUTH CENTRAL WISCONSIN

by

REBECCA ANN CHRISTOFFEL

A thesis submitted in partial fulfillment of the

requirements for the degree of

Master of Science

(Wildlife Ecology)

at the

UNIVERSITY OF WISCONSIN - MADISON

1998

PREFACE

White-tailed deer numbers have increased dramatically in Wisconsin in the 20th century. This has been due to several factors; (1) protection afforded deer early in this century, (2) the elimination or near elimination of natural predators and (3) by forestry practices which have created a mosaic of young and mature forests with a large amount of edge habitat.

As natural resource managers become more sensitive to the issue of maintenance of biological diversity, the need to determine the effects of white-tailed deer browsing on native plant communities and on other wildlife has been identified. Some plants are extremely palatable to deer and can be eliminated from an area by browsing pressure, thus reducing plant species diversity.

The mix of agricultural and forested lands in southern Wisconsin supports extremely high deer densities. Deer densities have not yet been limited by biological carrying capacity but instead reflect the public's tolerance level for deer vehicle collisions and agricultural crop damage balanced with hunters' desire for more abundant deer and the public's desire to view deer. By addressing the sociological impacts of deer herbivory, the values and perceptions of different interest groups can be considered by natural resource managers in determining acceptable levels of deer herbivory on native landscapes and in finding effective and innovative means of reducing these levels when required.

In 1994, the United States Department of Agriculture North Central Agricultural Research Station contracted the University of Wisconsin, Madison, to conduct a study of the effects of white-tailed deer herbivory in the Baraboo Hills of south central Wisconsin. The goals of this research were to; (1) survey woodland owners in Sauk and Columbia counties, Wisconsin, about their attitudes and beliefs regarding white-tailed deer and deer herbivory, (2) relate observed changes in plant community composition and structure to white-tailed deer population levels, (3) evaluate white-tailed deer herbivory in oak forest fragments on an agricultural landscape, and (4) identify a plant that has potential as an index to white-tailed deer herbivory intensity in forested habitats in south central Wisconsin. Data collection was initiated in June 1994, and was completed in August, 1997.

This thesis consists of four parts, each of which is an independent paper. Each paper is presented in the format of the scientific journal to which it will be submitted. Part 1 will be submitted for publication in the Wildlife Society^x Bulletin. Parts 2 and 3 will be submitted for publication in the Journal of Wildlife Management, and Part 4 will be submitted for publication in Natural Areas Journal.