

LANDSCAPE FRAGMENTATION OF THE GREAT PLAINS:
THE EFFECT ON THE TALLGRASS PRAIRIE PLANT SPECIES DIVERSITY

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ABSTRACT

Eilertson, Sheree Ann, M.S., Program of Natural Resource Management, Department of Animal and Range Sciences, College of Agriculture, North Dakota State University, March 2000. Landscape Fragmentation of the Great Plains: The Effect on the Tallgrass Prairie Plant Species Diversity. Major Professor: Dr. Carolyn Grygiel.

The tallgrass prairie of the North American Great Plains is an ecosystem that has been thoroughly impacted by humans. Urbanization and agricultural activities have converted the once expansive natural landscape to an area broken up and divided into small habitat areas. This fragmentation may potentially have negative effects on the functioning and stability of the tallgrass prairie ecosystem which, in turn, can impact the species composition and diversity of the area.

Several theories have been developed to account for the problems associated with landscape fragmentation. The theory of island biogeography is the theory most commonly associated with this phenomenon. However, metapopulation theory has gained popularity in recent years. The core-satellite hypothesis has also been applied in the study of areas affected by landscape fragmentation.

Methods used in conservation efforts are centered primarily on geographic information systems (GIS). GIS in conjunction with other forms of landscape data is an extremely useful tool for natural resource managers. It allows managers to identify threatened areas and effectively initiate remediation when necessary. Restoration has also proven to be helpful in tallgrass prairie conservation. In order for a successful prairie area to become established, several years of careful management are needed. With efforts such as these and continuing studies of prairie landscape dynamics, some of the lost natural tallgrass prairie habitat may be regained.