



Project Summary

Environmental Monitoring and Assessment Program, Assessing the Suitability of Windbreaks as Wildlife Habitat— 1994 Pilot Plan

George R. Hess and Jeff M. Bay

The Environmental Monitoring and Assessment Program's (EMAP's) Agroecosystems Resource Group is developing a program to monitor and evaluate the ecological condition of U.S. agricultural lands. Windbreaks are an important non-crop element in the Great Plains, an extensive agricultural landscape. Although planted to protect fields, crops, livestock, and farmsteads from the prevailing winds, windbreaks also provide some of the scarce wooded habitat for birds and other wildlife. This document describes the plan for a pilot study that focuses on the potential biodiversity value of windbreaks in the Great Plains and is designed to test the feasibility of applying the U.S. Fish and Wildlife's Bird Species Richness Index for windbreaks on a regional basis.

The pilot study will be conducted in cooperation with the U.S. Department of Agriculture's National Agricultural Statistics Service (NASS). During June 1994, NASS enumerators collected information about the location of windbreaks in Nebraska. This information will be used to draw a probability sample of windbreaks. NASS enumerators will visit the sample windbreaks later in the year and collect the data needed to calculate the Bird Species Richness Index for windbreaks, including windbreak area, average height of the tallest row of trees in the windbreak, foliage height diversity, and snag density. An associated Wildlife Habitat Suitability Index can also be calculated from these data. A follow-up visit to the sample windbreaks is planned for the

spring of 1995 to survey the birds present and test the Bird Species Richness Index.

This Project Summary was developed by EPA's Environmental Monitoring and Systems Laboratory, Las Vegas, NV, to announce key findings of the research project that is fully documented in a separate report of the same title (see Project Report ordering information at back).

Introduction

The Environmental Monitoring and Assessment Program's (EMAP's) Agroecosystems Resource Group is developing a program to monitor and evaluate the ecological condition of U.S. agricultural lands. We are evaluating agricultural lands from several perspectives: productivity; quality of air, water, and soil; and biodiversity. This pilot focuses on the potential biodiversity value of windbreaks in the Great Plains and is designed to test the feasibility of applying the U.S. Fish and Wildlife's Bird Species Richness Index for windbreaks on a regional basis.

Windbreaks are an important non-crop element in the Great Plains, an extensive agricultural landscape. Although planted to protect fields, crops, livestock, and farmsteads from the prevailing winds, windbreaks also provide some of the scarce wooded habitat for birds and other wildlife. For example, less than 2% of Nebraska is covered by trees, and approximately 25% of that wooded cover is provided by windbreaks. Windbreaks may have a negative impact on wildlife species that require large, uninterrupted

areas of grassland habitat; this issue is not addressed by this research.

We are working in cooperation with the U.S. Department of Agriculture's (USDA's) National Agricultural Statistics Service (NASS). During June 1994, NASS enumerators collected information about the location of windbreaks in Nebraska. This information will be used to draw a probability sample of windbreaks. NASS enumerators will visit the sample windbreaks later in the year and collect the data needed to calculate the Bird Species Richness Index for windbreaks. The index gives the number of different bird species expected in a windbreak and is based on four habitat characteristics of the windbreak: windbreak area, average height of the tallest row of trees in the windbreak, foliage height diversity, and snag density.

An associated Wildlife Habitat Suitability Index can also be calculated from these data; this index reflects a windbreak's value as habitat for birds and small mammals but has been subjected to less extensive testing.

We will produce a report documenting the results of this study, including (a) estimated extent (number and area) of windbreaks in Nebraska with 95% confidence; (b) estimated cumulative distribution of the Bird Species Richness Index of windbreaks in Nebraska with 90% confidence intervals; and (c) estimated cumulative distribution of windbreak area in Nebraska with 90% confidence.

We are also planning a follow-up visit to the sample windbreaks during the spring of 1995 to survey the birds present and test the Bird Species Richness Index. As

part of that study, we will also collect multi-scale remote sensing data for the study sites in an attempt to determine the spatial scales of habitat to which the bird community composition is most closely correlated. Details of these future efforts are not covered in this plan.

This research has been funded primarily by the U.S. Environmental Protection Agency (EPA) through its Office of Research and Development (ORD) under Interagency agreements DW12934170 with the USDA Agricultural Research Service (USDA ARS), and DW1293747 with the USDA National Agricultural Statistics Service (USDA NASS). It was conducted by our research partners under the management of the Environmental Monitoring Systems Laboratory—Las Vegas in support of EMAP.

George R. Hess and Jeff M. Bay are with North Carolina State University, Raleigh, NC 27606.

Susan E. Franson is the EPA Project Officer (see below).

The complete report, entitled "Environmental Monitoring and Assessment Program, Assessing the Suitability of Windbreaks as Wildlife Habitat—1994 Pilot Plan," (Order No. PB95-129136; Cost: \$17.50, subject to change) will be available only from

*National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
Telephone: 703-487-4650*

*The EPA Project Officer can be contacted at
Environmental Monitoring and Systems Laboratory
U.S. Environmental Protection Agency
Las Vegas, NV 89193-3478*

United States
Environmental Protection Agency
Center for Environmental Research Information
Cincinnati, OH 45268

Official Business
Penalty for Private Use
\$300

EPA/620/SR-94/023

BULK RATE
POSTAGE & FEES PAID
EPA
PERMIT No. G-35