

Introduction

Regional management of grassland birds would be benefited by increased knowledge of species' distributions. However, detailed information on species' distributions is limited and difficult to coll

Predicted distributions from statistical models could be used by managers at a regional level. Assessing the accuracy of predictive models, however, is essential before utilizing predicted distributio to make management decisions.

Objectives

1. Assess accuracy of models of grassland bird abundances

2. Relate model accuracy to species' abundance and niche breadth

Methods

Predictive Models (Thogmartin et al. 2006) based on: North American Breeding Bird Survey Data (1981-2001) 1992 National Land Cover Data (NLCD) 30-year average climate data Spatial hierachical count models of bird abundances



Accuracy of predictive models of grassland bird abundances in the prairie hardwood transition of the midwestern U.S. Les D. Murray¹, Christine A. Ribic^{1,2}, Wayne E. Thogmartin³, & Melinda G. Knutson³ ¹Department of Wildlife Ecology, University of Wisconsin-Madison ²USGS Wisconsin Cooperative Wildlife Research Unit ³USGS Upper Midwest Environmental Sciences Center

	Test Data Set
,	lowa, Minnesota, Wisconsin portions of the prairie hard
	75 800-ha areas
llect.	Roadside surveys
	-3 stops per 800 ha
	-400-m radius, 3-minute point counts
'e	-June 1 to July 4 in 2003-2005
ons	Abundances were centered around zero to allow for di

Accuracy Measure Spearman's rank correlation (p): correlation of ranked observed and predicted abundances

Related rank correlation measures to observed abundance and niche breadth using linear regression







dwood transition



irect comparison







BOBO = Bobolink, EAME = Eastern Meadowlark, GRSP = Grasshopper Sparrow, HESP = Henslow's Sparrow, SAVS = Savannah Sparrow, SEWR = Sedge Wren, UPSA = Upland Sandpiper

Discussion

Models were more accurate for more abundant and generalist species

Over prediction in areas of high predicted abundance Under prediction in areas of low predicted abundance

Utility of models for management of rarest species is limited

Model accuracy limited by:

- 1. Land cover accuracy
- 2. Time discrepancy between land-cover data and abundance data
- 3. Inability to distinguish among grassland types in NLCD
- 4. Unused suitable habitat may bias model results

Acknowledgements

Funding provided by USGS Upper Midwest Environmental Sciences Center and the Wisconsin Cooperative Wildlife Research Unit.

S. Craven, M. Guzy, D. Johnson, D. Mladenoff, D. Sample, J. Sauer, S. Temple, S. Vos, and J. Zhu provided insights on study design and data analyses.

Literature Cited

Best, L.B., K.E. Freemark, J.J. Dinsmore, and M. Camp. 1995. A review and synthesis of bird habitat use in agricultural landscapes of Iowa. American Midland Naturalist 134:1-29.

Thogmartin, W.E., M.G. Knutson, and J.R. Sauer. 2006. Predicting regional abundance of rare grassland birds with a hierarchical spatial count model. Condor 108:25-46.