

INTEGRATED WATERBIRD *Management & Monitoring*

A continental landscape where non-breeding waterbirds have the right habitat, in the right place, at the right time.

PUBLICATION SUMMARY



An Evaluation of Rapid Methods for Monitoring Vegetation Characteristics of Wetland Bird Habitat. *Wetlands Ecology and Management*. doi:10.1007/s11273-015-9476-5

Brian G. Tavernia¹, James E. Lyons², Brian W. Loges³, Andrew Wilson⁴, Jaime A. Collazo⁵, Michael C. Runge¹.

¹U.S. Geological Survey, Patuxent Wildlife Research Center, Laurel, MD 20708, USA

²U.S. Fish and Wildlife Service, Division of Migratory Bird Management, Patuxent Wildlife Research Center, Laurel, MD

³U.S. Fish and Wildlife Service, National Wildlife Refuge System, Brussels, IL 62013, USA

⁴Environmental Studies Department, Gettysburg College, Gettysburg, PA 17325, USA

⁵U.S. Geological Survey, Cooperative Fish and Wildlife Research Unit, North Carolina State University, Raleigh, NC 27965, USA

THE PROBLEM

Wetland managers and researchers need to evaluate waterbird use relative to habitat conditions in order to improve waterbird conservation efforts. However, traditional plot-based assessments of important habitat features such as vegetation cover and composition are time intensive and collect detailed data that are often incompatible with management decisions. Rapid visual assessments of key wetland habitat parameters are needed to quantify and

describe condition of wetlands that are managed for waterbird use during the nonbreeding period.



Figure 2: High resolution color infrared image and a classification derived cover map (bottom) of the Display Pond Unit at Clarence Cannon NWR, Missouri. Average accuracy of visual estimates across 15 wetlands was 93% when compared to aerial imagery.



Figure 1. Wetland managers are constantly innovating techniques to manipulate habitats for waterbirds. Rapid assessments of key habitat variables are needed to evaluate their effectiveness.

THE IWMM APPROACH

The Integrated Waterbird Management and Monitoring

program (IWMM) tested an approach to assessing habitat conditions for waterbirds during the nonbreeding period using rapid visual assessments of entire wetland management units. In cooperation with Ducks Unlimited, six technicians were deployed in the fall of 2012 to survey 44 managed wetlands in Illinois, Missouri, Minnesota, North Carolina, South Carolina, New Jersey and New York.

METHODOLOGY

During survey efforts for waterbirds, rapid visual estimates of vegetation height and cover for perennial, annual and residual vegetation were obtained from vantage points located around the perimeter of each wetland. These same features were also measured using quadrat and Robel pole samples from each wetland. The intensive data collection (quadrat and Robel pole data) were used to validate the rapid visual assessments. In addition cover maps created from high resolution aerial photography were used to validate rapid assessments of the amount of vegetation, bare ground, and open water.

RESULTS/FINDINGS

This study supports the use of rapid visual estimates to document the condition of wetland management units. When estimated from the perimeter of the wetland, cover of annual, perennial, and residual vegetation, and open water and bare ground showed either no significant variation or less than 10 % variation from the plot- and imagery-based estimates. When properly matched to management objectives, this level of precision allows managers to quickly document a response to their management efforts without dedicating a large amount of staff time to traditional vegetation monitoring approaches. Based on average survey times for both methods, 15 visual surveys could be completed within the time required to complete a single plot-based survey.

Results from this study lead to substantial revisions to the IWMM habitat monitoring methodology. The revisions were included in the first version of a nation-wide monitoring protocol released in 2015. The flexibility and rapid nature of these habitat assessments will facilitate the widespread collection of habitat data that are specific to particular management units and easily associated with waterbird observations from the same units for a full understanding of management responses. Accessible via the Avian Knowledge Network, this data set will facilitate research exploring the relationships between waterbird use and habitat conditions.

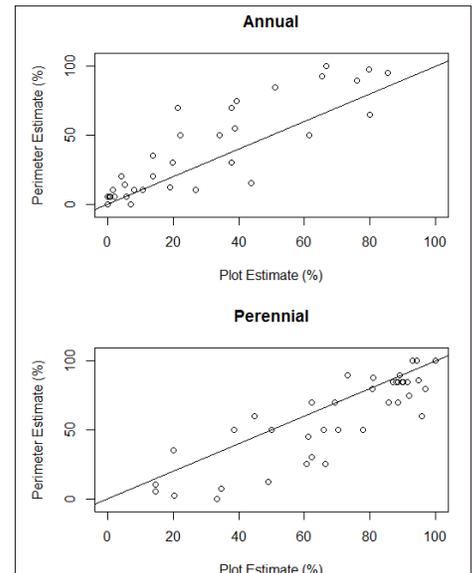


Figure 3: Scatterplots illustrating the relationship between plot and perimeter based estimates. Average differences were below 10% with annuals being overestimated and perennials underestimated.



FOR MORE INFORMATION:

Linda Wires, IWMM National Project Coordinator U.S. Fish and Wildlife Service 5600 American Blvd
linda_wires@fws.gov

Brian Loges, Inventory and Monitoring Zone Biologist U.S. Fish and Wildlife Service,
brian_loges@fws.gov

James Lyons, U.S. Geological Survey, Patuxent Wildlife Research Center, Laurel,
jelyons@usgs.gov

iwmmprogram.org