

INTEGRATED WATERBIRD *Management & Monitoring*

PUBLICATION SUMMARY



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

Quantifying the relative contribution of an ecological reserve to conservation objectives. *Global Ecology and Conservation*. January 2017. DOI: 10.1016/j.gecco.2017.01.002

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THE PROBLEM

If a managed wetland supports an abundant and diverse community of waterbirds, is it inherently more valuable than one that has a smaller, less diverse assemblage but supports waterbird species of concern? Valuation questions like this are common in conservation and management settings, but are difficult to answer because of the subjective nature of conservation value.

THE IWMM APPROACH

Several recently developed methods provide tools for measuring the value of landscape units in reserve networks. The Integrated Waterbird Management and Monitoring program (IWMM) leveraged one of these methods and measured the contribution of IWMM management units to migratory waterbird conservation efforts in the U.S. Fish and Wildlife Service's (USFWS) Midwest, Southeast, and Northeast Regions (Regions 3, 4 and 5, respectively; Fig. 1).

METHODOLOGY

To understand the conservation value of individual units monitored in the IWMM network, IWMM created a unit-specific contribution index (UCI). This index incorporates measurements for three attributes associated with the conservation value of wetlands, and quantifies their value on a scale of 0 to 1. The attributes incorporated include waterbird abundance, species richness (the number of different waterbird species present), and conservation status for each waterbird species occurring in the wetland unit (based on IUCN threat level). Each attribute was converted to a common scale, summed and weighted to incorporate its relative importance. Because our metric quantifies these attributes along a common spectrum, while also allowing for flexibility in management priorities, the UCI is a highly flexible valuation tool that allows for transparent and objective comparison of conservation contribution between units.



Fig 1. Location of wetland units participating in IWMM in eastern U.S.

RESULTS/FINDINGS

UCI values were generated for all wetland units across the regions participating in IWMM (see Appendix 6 of Aagaard et al. Technical Report for IWMM Pilot Data, <http://iwmmprogram.org/resources/>). Values ranged from 0.02 to 0.67, with a unit at Chincoteague National Wildlife Refuge in Region 5 scoring the highest UCI. These results indicate that individual units vary widely in terms of their contribution to waterbird conservation goals. Nevertheless, the mean relative UCI values were consistent for all three FWS regions considered (Figure 2), despite differences in regional geographies. With the UCI tool, managers have a simple way to rank a unit and make

comparisons to all other units participating within a refuge, a region or across the IWMM monitoring network. By making these comparisons, managers can better understand the relative value of their units to migrating waterbirds within and between regions. And, by comparing the before- and after-UCI for a unit of interest, the tool can also help indicate the effectiveness of management actions and conservation interventions, a critical need in wildlife conservation.

This application used the IUCN Red List to quantify species conservation scores. But locally relevant sources can also be used to establish conservation status for regional waterbird species, such as prioritized lists of species of conservation concern compiled by Joint Ventures, or the Birds of Conservation Concern compiled by the USFWS. Importantly, the method we have presented here has been illustrated in the context of narrowly defined conservation goals, with a focus strictly on the comparative contribution of a specific unit to the conservation efforts for non-breeding waterbirds only. However, combining the UCI score with criteria relating to other key factors (e.g. habitat connectivity, energetic productivity, or resilience to climate change) would ultimately lead to a more realistic quantification of the relative value of a unit to broader waterbird conservation goals.

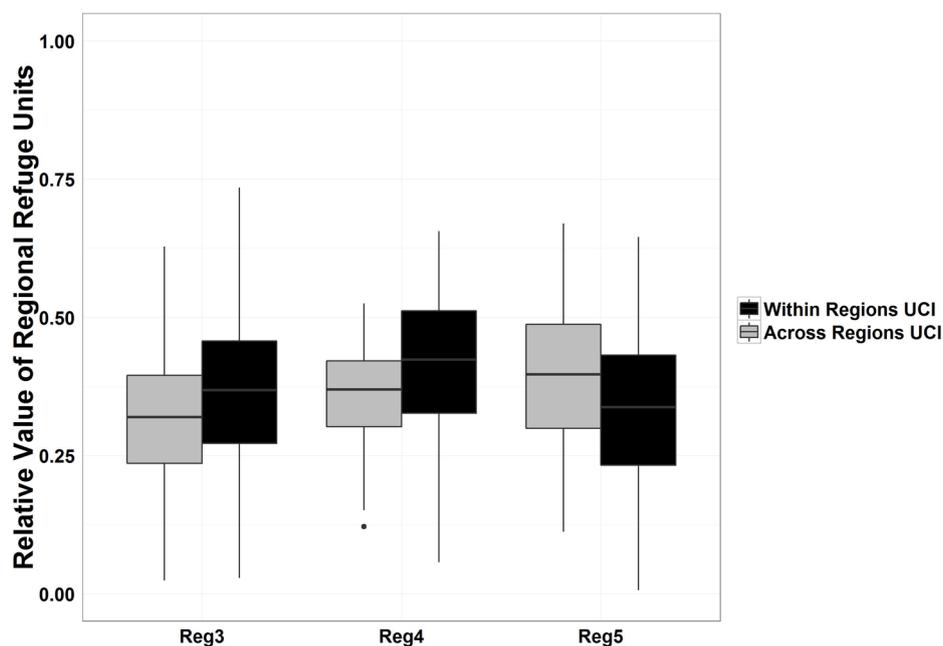


Figure 2. Relative contribution to waterbird conservation, in terms of species diversity, abundance, and conservation status of each wetland unit participating in IWMM, within (black boxes) and across (gray boxes) USFWS Regions 3, 4 and 5.

FOR MORE INFORMATION

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