

Integrated Waterbird Management and Monitoring Initiative

2014 Annual Report

Background

Integrated Waterbird Management and Monitoring (IWMM) is a collaboration among conservation partners (federal, state and non-governmental agencies) located along the Atlantic and Mississippi Flyways. The IWMM originated with the goal of helping resource managers make multi-scaled habitat management decisions for non-breeding waterbirds (waterfowl, shorebirds, and waders) in a structured, transparent, and defensible fashion. To that end, the IWMM developed monitoring protocols to simultaneously track habitat conditions, waterbird use and management actions at local sites, a flyway scale migration simulation model to provide decision support for land acquisition and restoration, and is finalizing development of a local scale multi-unit decision support model. These tools are designed to help conservation partners ensure there is adequate non-breeding waterbird habitat available. The IWMM's pilot phase began in the fall of 2010, when waterbird and habitat monitoring efforts were initiated following the distribution of standardized monitoring protocols to a network of cooperators in the flyways. In 2014, the IWMM completed its fifth year of the monitoring effort. IWMM continues to advance an innovative approach to habitat management and conservation for waterbirds, and is transitioning from pilot to operational status.

Monitoring Effort and Observations, Summer 2013 to Spring 2014

From July 2013 to June 2014, 101 participants collected monitoring data at 570 wetlands in the Atlantic and Mississippi Flyways. More than half of those wetlands are located on National Wildlife Refuges (NWR). The number of participating refuges in each USFWS Region included eight from Region 3; five from Region 4; and 19 from Region 5 (Table 1). As IWMM reduces the number of technicians hired to help survey state and NGO lands we will be reaching out to those partners to engage their staff in future years.

Participants conducted 7,026 waterbird counts and observed 9,827,975 individuals of 132 waterbird species (see Table 2 for the most common). Average numbers of individuals detected per survey by guild, region, and season are in Table 3.

Waterbird and Habitat Protocol Revisions

In an ongoing effort to improve the precision and accuracy of monitoring metrics, IWMM conducted a habitat validation study in 2012. Results led to a revised monitoring protocol that will be introduced in fall 2015. Efforts also have been underway to evaluate the waterbird use monitoring protocol. Phase one of this work was completed in 2014, and involved creation of a simulation model to evaluate the performance of alternative waterbird count protocols under



Mike Dunn

Northern Pintail feeding.

scenarios that differed in sample size and migration curve complexity. Phase two will begin in 2015 and will focus on enhancing the simulation model to address issues related to detection error during ground counts for waterbirds.

A National Protocol Framework

One of IWMM's major objectives in developing its monitoring protocol was to standardize waterbird and habitat monitoring across large geographic areas to inform management decisions at multiple scales. To guide use of the monitoring component by cooperators within the National Wildlife Refuge System (NWR), IWMM created a National Protocol framework for the development of site-specific protocols that are compliant with the NWR System's recently updated inventory and monitoring policy. The consistent and broad-scale implementation of this monitoring protocol will inform local

management decisions and collectively increase understanding of actions that succeed in meeting waterbird habitat needs. The IWMM protocol was approved as a National Protocol Framework by the USFWS's Inventory and Monitoring Program in January 2015.

Table 1. Number of wetlands surveyed as part of IWMM between 1 July 2013 and 30 June 2014 by U.S. Fish and Wildlife Service region and state; numbers in parentheses are wetland units on National Wildlife Refuges.

FWS Region	CT	DE	GA	IA	IL	MA	MD	MI	MO	NC	NJ	NY	PA	SC	VA	WI	Total
R3: Midwest				4 (2)	24 (16)			29 (29)	126 (44)							10 (10)	193 (101)
R4: Southeast			4 (0)							36 (19)				33 (18)			73 (37)
R5: Northeast	3 (3)	19 (9)				2 (2)	65 (56)				81 (31)	61 (25)	19 (19)		54 (27)		304 (172)

A Centralized Database

When pilot data collection began, IWMM staff created a Microsoft Access database that enabled basic data entry and reporting functions for cooperators that included graphs of migration curves and bird-use days. But the long-term vision for IWMM was to develop a centralized online database that will support cooperator data entry, storage, analysis, and reporting, as well as help create and iteratively update decision support tools to improve waterbird management decisions at multiple scales. In 2014, development of the online database, planned as a thematic node of the Avian Knowledge Network, got underway. The database will be tested in spring and summer of 2015 with an anticipated launch for IWMM participants in the fall of 2015.

Formal Decision Support For Local Managers: Clarence Cannon And Mattamuskeet NWRs Case Studies

In 2014, the IWMM technical staff worked closely with two refuges, Clarence Cannon in the Mississippi Flyway, and Mattamuskeet in the Atlantic Flyway, to develop a multi-unit decision support model for each NWR. These models provide insights for the coordinated management of habitat across a collection of units to maximize their use by waterbirds. The team used Structured Decision Making principles to (1) clearly define the decision problem, (2) explicitly capture the refuges' waterbird objectives, (3) identify alternative management plans via a management actions portfolio approach, (4) develop and apply an expert-based model to evaluate outcomes of alternative plans relative to waterbird objectives, and (5) to provide management

recommendations assuming different weights for waterbird objectives and budgetary constraints. The manager then selects a portfolio to implement in a given year, and monitors the bird use and habitat responses using IWMM protocols.

At both refuges, presentations have been given to refuge staff to demonstrate the multi-unit decision support that IWMM can provide to wetland managers. These models will be completed in early 2015, and later in the year, presentations of these case studies will be made available to a wider audience.

Administration

In October, IWMM became part of the Inventory and Monitoring branch of the USFWS's National Resource Program Center in Ft. Collins, CO. This is an especially important milestone for IWMM because the transition provides dedicated funds for staff and program operation. IWMM is now formally recognized as a platform for informing biological planning.

Ongoing and Future Efforts

Past and ongoing monitoring efforts by IWMM participants provide the foundation for current and future success. We are indebted to all the cooperators that pilot-tested the protocols and helped IWMM evolve to its current state! In 2015, IWMM looks forward to releasing improved protocols, extending reporting tools via an on-line database, providing demonstrations of decision support models, and making formal decision support more widely available to interested participants. Other projects underway include continued development and validation of

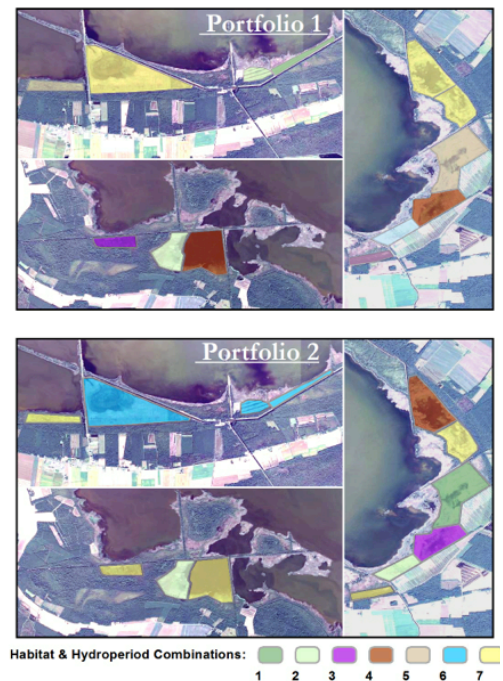


Figure 2. Management actions portfolios for multiple freshwater impoundments on Mattamuskeet National Wildlife Refuge. Possible management portfolios consist of various combinations of seven hydroperiods and four habitat management actions.

the flyway migration simulation model; publication of several manuscripts that were submitted to peer-reviewed journals¹; and development of an e-newsletter to provide more frequent communications about IWMM to participants and other interested parties.

¹Manuscripts submitted for the flyway migration simulation model; the first habitat protocol validation study; and models examining influence of habitat and environmental factors on local abundance of waterbird species counted by IWMM.

For additional information or questions contact:

Project Website: iwmmprogram.ning.com
Contact: Linda Wires, IWMM Project Coordinator, linda_wires@fws.gov

Federal Relay Service
for the deaf and
hard-of-hearing
1 800/877 8339

February 2015



Table 2. Three most abundant non-breeding species for each guild surveyed under IWMM between 1 July 2013 and 30 June 2014.

Waterfowl		Waders		Shorebirds	
Species	Count	Species	Count	Species	Count
Mallard	3,959,138	Snowy Egret	29,039	Semipalmated Sandpiper	121,603
Snow Goose	1,087,762	Great Egret	28,024	Dunlin	92,995
Northern Pintail	919,936	Great Blue Heron	20,173	Short-billed Dowitcher	32820

Table 3. Average number of non-breeding individuals observed per ground count under IWMM from 1 July 2013 to 30 June 2014. Counts are stratified by guild, region, and period. Two periods were distinguished: summer-fall (SF) and winter-spring (WS). Averages are rounded to the nearest whole number.

USFWS Region	Waterfowl		Waders		Shorebirds	
	SF	WS	SF	WS	SF	WS
3	1508	155	15	5	12	20
4	106	228	7	5	64	21
5	189	238	21	16	64	177