

Monitoring Waterfowl in the Midwest during the Non-Breeding Period: 2011 Workshop Review and Recommendations

Gregory J. Soulliere

U.S. Fish & Wildlife Service, Upper Mississippi River and Great Lakes Region Joint Venture

Brian Loges,

U.S. Fish and Wildlife Service, Division of Biological Resources

Eric M. Dunton

U.S. Fish and Wildlife Service, Shiawassee National Wildlife Refuge

ABSTRACT

Habitat conservation planning for migrating and wintering waterfowl is typically based on estimated foraging needs during these non-breeding periods. However, several factors limit the ability to draw strong inferences from the historic Midwest data sets of non-breeding waterfowl abundance collected by wildlife agencies. Survey protocols are not standardized among organizations, a statistically based sampling framework has not been developed, and the financial burden of surveys typically falls on individual agencies, sometimes precluding annual survey completion due to budget constraints. A one-day scientific workshop regarding waterfowl monitoring in the Midwest during migration-staging and winter was held 3 August 2011 in Zion, Illinois, to address these monitoring challenges. The first session included 11 presentations by invited speakers, providing an overview and context for long-term and experimental surveys of non-breeding waterfowl in the Midwest. The second portion of the workshop consisted of regionally based (i.e., Big Rivers vs. Northern Lakes landscapes) “breakout” discussions to critically assess monitoring activities and information needs across two primary ecoregions in the Midwest. Presentations coupled with the structured breakout sessions resulted in valuable information exchange and recommendations to enhance Midwest waterfowl monitoring during the non-breeding period.

Recommended citation: Soulliere, G.J., B. Loges, and E.M. Dunton. 2012. Monitoring waterfowl in the Midwest during the non-breeding period: 2011 workshop review and recommendations. Upper Mississippi River and Great Lakes Region Joint Venture Technical Report No. 2012-1, Bloomington MN, USA.

INTRODUCTION

Habitat conservation planning for migrating and wintering waterfowl is typically based on estimates of foraging needs (energy requirements) for populations during this non-breeding period (Reinecke et al. 1989, Soulliere et al. 2007). Joint Venture (JV) and National Wildlife Refuge (NWR) scientists are increasingly employing biological models to calculate waterfowl habitat objectives at smaller scales that, collectively, meet the goals of the continental-scale North American Waterfowl Management Plan (NAWMP; NAWMP 2012). Model components used to determine waterfowl habitat needs during the non-breeding period include estimates of population size, duration of stay during migration stopovers and wintering, and energy available / unit area, all of which must be collected via inventory and monitoring during the non-breeding period. Further, the tendency of some waterfowl, such as sea ducks and diving ducks, to concentrate in open water during migration staging and winter creates an opportunity to more efficiently track population change for habitat and harvest management purposes.

Calculations used to generate non-breeding waterfowl habitat objectives in the Midwest region (U.S. portion of the upper Mississippi Flyway) are coarse due to limited data regarding size of populations and duration of stay in the region (Soulliere et al. 2007). The Midwinter Waterfowl Survey (MWS), also referred to as the “Mid-winter Inventory,” is conducted each year in early January and is considered a “cruise” survey with no defined sampling framework in most areas. In addition to its lack of statistical sampling design, the MWS has been criticized for differences in field methods among states, changes in survey personnel, variability in personnel experience, variation in survey effort, and changes in surveyed areas within states (Eggeman and Johnson 1989). However, the MWS has been conducted for more than 50 years and has provided the only information available for regional estimates of waterfowl distribution and population trends during mid-winter. No such coordinated regional survey exists during migration periods although many smaller scale disparate surveys are conducted across the Midwest for various purposes.

The need for coordinated and statistically valid monitoring of migrating and wintering waterfowl has never been greater considering the potential influence of a warming climate on the distribution and timing of occurrence for non-breeding waterfowl, growing human demand on important waterfowl landscapes (e.g., wind energy development), and the need to maximize effectiveness with better targeted conservation. Monitoring data are necessary not only to inform local waterfowl habitat management, but also to identify regional concentration areas and to predict future areas of importance under changing environmental conditions. Moreover, administrators are increasingly demanding greater efficiency from wildlife agencies and organizations, and managers use adaptive approaches to achieve this desire. Population monitoring related to waterfowl habitat and harvest management serves as an essential measure of effectiveness in an adaptive management process. Finally, waterfowl scientists have recognized the need to assess population limiting factors throughout the annual cycle to better target conservation, resulting in development of life-cycle models (Conroy et al. 2002). Assessing influences on populations through the full annual cycle requires an understanding of species abundance and distribution in time and space during breeding and non-breeding

periods. As a result of these issues, we convened a one-day workshop of waterfowl professionals focused on monitoring waterfowl during the non-breeding period in the Midwest. Here we describe the process, objectives, and recommendations resulting from this workshop.

Midwest monitoring challenges

Several factors limit the ability to draw strong inferences from the historic Midwest data set of waterfowl abundance collected by wildlife agencies during the non-breeding period. First, protocols are not standardized, making it difficult to compare results from various surveys. Second, a statistically based sampling framework for conducting these surveys has not been developed for the Midwest, providing inadequate spatial and temporal coverage of the region. Finally, the financial burden of surveys conducted during non-breeding periods typically falls on individual agencies, sometimes precluding all or portions of survey completion during a given year (Fronscak 2012).

Regional conservation planners often divide the Midwest into two primary landscape types. The “lakes region” in the north has been an important area at the continental scale for diving ducks and sea ducks, whereas the mid-latitude “big rivers” region is especially significant for non-breeding dabbling ducks and geese (NAWMP 2004). For workshop purposes, the Northern Lakes Region was described as that portion of the upper Midwest located in U.S. Fish and Wildlife Service (USFWS) Region 3 and including Bird Conservation Region (BCR) 12 (Boreal Hardwood Transition), BCR 23 (Prairie Hardwood Transition), and BCR 13 (Lower Great lakes/St. Lawrence Plain; Figure 1). The mid-latitude Big Rivers Region encompassed the Region 3 portions of BCR 22 (Eastern Tallgrass Prairie), BCR 24 (Central Hardwoods), and a small area of BCR 26 (Mississippi Alluvial Valley; Figure 1). Waterfowl population monitoring and associated challenges have varied in these ecoregions due to: 1) significantly different landscapes (e.g. wetland distribution and abundance) and community types occupied by waterfowl, 2) distribution and abundance patterns related to weather severity and food availability, and 3) wildlife agency resources committed to monitoring. Consequently, a statistically valid sampling framework will likely vary between these ecoregions.

WORKSHOP OBJECTIVES AND FORMAT

The need for improved waterfowl monitoring has been well documented at the continental (North American Bird Conservation Initiative Monitoring Subcommittee 2007, North American Waterfowl Management Plan 2004) and regional scales (Petrie et al. 2011). Only in recent years, however, has bird monitoring been elevated in importance in the Midwest region (Koch et al. 2010) and increasingly integrated into bird conservation planning and potential management decisions (Integrated Waterbird Management and Monitoring Initiative 2012). This workshop, which focused on monitoring during the migration and winter seasons, was intended as a forum to gather and inform Midwest waterfowl professionals with the goal of increasing management effectiveness during the non-breeding period.

A workshop announcement and needs statement including objectives was sent via email to members of the Midwest waterfowl conservation community to gauge interest and likely participation. Following a favorable response to the announcement, a meeting agenda was developed (Appendix A), and expert speakers were solicited to address topics directly related to workshop objectives. The following objectives were intended to be completed during the workshop (objectives 1–3) or soon after (objective 4):

- 1) Identify purpose, scope, and limitations of current monitoring efforts designed to document the distribution and abundance of waterfowl during migration and wintering periods in the northern Mississippi Flyway (i.e., USFWS Region 3).
- 2) Compare survey protocols and safety issues for monitoring non-breeding waterfowl across major landscape types (i.e., Northern Lakes vs. Big Rivers regions).
- 3) Discuss priority information needs for non-breeding waterfowl and enhance communication among biologists (and pilots) involved with non-breeding waterfowl inventory, management, and conservation planning.
- 4) Enhance Midwest waterfowl monitoring capacity, including development of prospective standardized protocol(s) that will adhere to the highest levels of safety and efficiency (available for implementation by 2013).

The one-day (3 August 2011) gathering was held in Zion, Illinois, in conjunction with a Midwest Bird Conservation and Monitoring Conference. Following a series of professional presentations, the last portion of the meeting was dedicated to regionally based (i.e., Big Rivers vs. Northern Lakes regions) discussions within breakout sessions. A copy of the meeting agenda, a description of the breakout session assignment, and a list of all known Midwest non-breeding period waterfowl surveys (G. Soulliere and K. Koch, USFWS, unpublished information) were provided to participants prior to the workshop to assist in preparation for these sessions.

The goal of breakout sessions was to use information from workshop presentations and professional experience to discuss the state of waterfowl monitoring in the two primary ecoregions of the Midwest. Each breakout group was asked to perform three tasks: 1) identify primary reasons for monitoring distribution and abundance of waterfowl during migration and wintering periods within the ecoregion, 2) identify 2–3 surveys of non-breeding waterfowl distribution and abundance currently being conducted at the state or smaller scale that could most effectively be refined and expanded to the ecoregional scale, and 3) list which agency or organization is best positioned to develop ecoregional waterfowl monitoring capacity, including development of prospective standardized protocol(s) adhering to the highest levels of safety, efficiency, and scientific integrity. In addition, the groups were asked to identify key individuals whose help would be important to move workshop recommendations forward. Each breakout group was assisted by a pre-assigned Chair and session Recorder.

Presentations

Workshop presenters were affiliated with federal, state, university, and non-governmental wildlife agencies and organizations. Presentation topics ranged from long-term and large-scale population surveys (e.g., MWS, Illinois and Mid-Mississippi Rivers waterfowl survey), application of monitoring information by state partners, use of survey data to generate regional waterfowl habitat objectives, and several population monitoring techniques currently being developed and refined (Appendix A). New monitoring initiatives included the Integrated Waterbird Management and Monitoring Initiative (U.S. Fish and Wildlife Service and U.S. Geological Survey), a Wabash River survey (Southern Illinois University), a lower Great Lakes survey for diving and sea ducks (Long Point Waterfowl), Lake St. Clair and western Lake Erie diving duck survey (Michigan Department of Natural Resources and Michigan State University), and a Saginaw Bay / Lake Huron waterbird survey (Michigan Natural Features Inventory).

Breakout sessions

Workshop participants were asked to divide into Big Rivers and Northern Lakes regional breakout groups based on interest and expertise; workshop organizers made minor adjustments to ensure the two groups were similar in size and volunteers of each group had known monitoring experience. Recorders compiled answers and discussion information related to the three assigned tasks stated above, and they worked with Chairs to develop region-specific summaries of “key insights” and “tangible outcomes” which were presented to all workshop participants following an afternoon break.

Based on results of the breakout sessions, both groups indicated that currently, the primary reason for conducting surveys during the non-breeding period was to serve stakeholder information requests, particularly informing waterfowl hunters of abundance and distribution of ducks during fall. Both groups also identified several biological needs for estimating non-breeding waterfowl populations. These needs included data to inform and generate ecoregional waterfowl habitat objectives (via biological models), provide population estimates for species not accurately assessed by breeding surveys (e.g., some diving ducks and sea ducks), fill management information gaps (e.g., migration chronology), and provide data for conservation planning (e.g., seasonal duration of stay, “use day” estimates). The Big Rivers group indicated a need to better document the influence of habitat management via population surveys (i.e., population monitoring as a metric for management performance). The Northern Lakes group identified a need for population monitoring to assess contemporary risk or threats within the region (e.g., wind energy development, climate change, invasive plant species, and disease).

Discussion also revealed that wildlife agencies in some Midwest states, as well as the province of Ontario, have well-developed and long-standing surveys of non-breeding waterfowl within specific areas. This monitoring has informed managers of long-term trends in abundance (Havera 1999) and more recently supported models of waterfowl use and abundance in relation to wetland characteristics (Stafford et al. 2007) and weather severity (Schummer et al. 2010).

However, most ongoing surveys fail to capture late winter or spring waterfowl use on a regular basis, omit other waterbird guilds, and do not document habitat conditions where waterfowl occur.

Each breakout group provided examples of survey approaches they felt were most appropriate for implementation at the ecoregional scale. The Northern Lakes group discussed expanding a transect survey similar to those conducted by Long Point Waterfowl (Lake Ontario) and by the Michigan DNR (Lake St. Clair and western Lake Erie; Figure 2). This type of survey could potentially target diving and sea ducks occurring on all of the Great Lakes in the Midwest region. The Big Rivers group identified the experimental Wabash River transect survey as having the greatest potential for expansion in the lower half of the Midwest region, where waterfowl (primarily dabbling ducks and geese) are more concentrated near large rivers and associated conservation areas.

Both groups identified the MWS as an enduring effort supported by state and federal wildlife agencies but in need of refinement to increase scientific rigor. The developing FWS / USGS Integrated Waterbird Management and Monitoring (IWMM) Initiative was also acknowledged as a potential source for valuable monitoring data. This waterbird survey, conducted across a network of managed wetlands in the Mississippi and Atlantic flyways, is pursuing a standardized approach to monitoring wintering and migrating waterbirds to support predictive modeling at multiple spatial scales (Integrated Waterbird Management and Monitoring Initiative 2012). The IWMM Initiative, coupled with a refined MWS and perhaps other monitoring technologies (e.g., geo-locators, Nexrad, radio-telemetry), could provide population information necessary to generate transition probabilities across regions as well as migration chronology curves (Figure 3). These data may be used to inform management throughout the Midwest and neighboring regions. Moreover, NWR personnel coordinating the IWMM effort may provide sub-regional hubs for expanding non-breeding waterfowl surveys beyond refuge boundaries when monitoring partners and resources are available.

Breakout groups concluded their sessions by developing lists of regional contacts (i.e., researchers, science coordinators, existing teams and groups, and key agency waterfowl staff) with the collective potential to refine, expand, and/or develop an ecoregional non-breeding season waterfowl monitoring plan. This effort should include development of standardized protocol(s) and a focus on safety, efficiency, and scientific integrity, the roles and responsibilities of partner organizations, and estimated financial and personnel budgets.

DISCUSSION AND RECOMMENDATIONS

Unbiased estimates of waterfowl abundance and distribution throughout the annual cycle are necessary to develop regional population and habitat objectives that are coordinated with the NAWMP (Petrie et al. 2011). Waterfowl managers use population abundance objectives to quantify habitat objectives and frame conservation delivery strategies. Sound population objectives based on abundance estimates have been developed for breeding waterfowl in the Midwest region, but objectives for migrating and wintering waterfowl are crude (Soulliere et al.

2007). Developing regional population and habitat objectives for waterfowl during the non-breeding period has posed a significant challenge due to the lack of reliable data describing waterfowl distribution, abundance, composition, and migration and wintering chronology. Comprehensive waterfowl surveys across areas used by substantial numbers of non-breeding waterfowl are necessary to address these information needs and improve management schemes at regional and smaller scales.

Workshop participants discussed information needs for waterfowl management, compared population survey techniques and protocols, and identified common and diverse themes for monitoring initiatives in two primary Midwest ecoregions (Figure 1). They also generated the following recommendations to increase effectiveness of waterfowl monitoring during the non-breeding period:

1. Workshop organizers should document the format, development, and outcomes of this meeting, considered to be a valuable gathering of Midwest waterfowl researchers and managers interested in effective monitoring during the non-breeding period.
2. A designated workshop participant should present workshop information to the Mississippi Flyway Council Technical Section (MFCTS) as these individuals typically coordinate state-scale waterfowl monitoring efforts.
 - a. Feedback from MFCTS members regarding potential to refine and expand non-breeding period surveys should be recorded for future reference.
3. Convene a Midwest Waterfowl Monitoring Team (MWMT) of experts to develop a proposed comprehensive survey of non-breeding waterfowl in the Midwest region, which will consider similar monitoring efforts taking place in neighboring regions.
 - a. Team members should include Midwest workshop participants, government agency and NGO waterfowl biologists (MFCTS members), NAWMP Science Support Team members, and USFWS / USGS monitoring and survey specialists (i.e., USFWS Population Assessment Unit), and survey pilots.
 - b. A new monitoring approach would be founded on the MWS as well as the IWMM Initiative, taking advantage of current dedicated monitoring resources, but improving protocols and expanding from mid-winter to spring (high biological value) while also maintaining a fall effort (stakeholder support focus).
 - c. Design surveys based on knowledge gained during the workshop; protocols will vary based on differences between the two Midwest ecoregions.
 - i. Preferred monitoring approaches in the Big Rivers Region were reflected in the existing Illinois and Mid-Mississippi Rivers survey (Illinois Natural History Survey) and an experimental Wabash River survey (Southern Illinois University).
 - ii. Preferred monitoring approaches for the Northern Lakes Region would reflect similar techniques currently used on Lake Ontario (Long Point Waterfowl) and Lakes St. Clair and Erie (Michigan DNR and Michigan State University). Inland areas in the northern Midwest may require monitoring approaches more similar to the Big Rivers Region.

- iii. Landscape-scale waterfowl monitoring efforts can substantially benefit by coordinating with IWMM Initiative implementation on conservation lands across the Midwest region.
 - d. A new monitoring approach must be statistically sound but strive to be cost neutral (e.g., reduce / modify existing survey efforts and / or lower frequency of an expanded survey).
4. Using MWMT recommendations, seek expanded long-term collaboration with the USFWS' Population Assessment Unit in implementation of enhanced monitoring of non-breeding waterfowl in the Midwest region.

ACKNOWLEDGMENTS

We thank all workshop participants for their contribution during the gathering, especially invited speakers whose presentations provided the foundation for meaningful breakout sessions and development of recommendations. Presenters included John Coluccy, Eric Dunton, Mike Eichholz, Ron Gatti, Mick Hanan, Brian Loges, Mike Monfils, Mike Schummer, Brendan Shirkey, and Aaron Yetter. Breakout sessions were chaired by Brad Potter and Brian Loges while Eric Dunton and Dan Holm served as recorders. This workshop was one of several embedded in the 2011 Midwest Bird Conservation and Monitoring Conference, expertly organized by Katie Koch. Ben Kahler, John Coluccy, and Rachael Pierce assisted with manuscript development.

LITERATURE CITED

- Conroy, M.J., M.W. Miller, and J.E. Hines. 2002. Identification and synthetic modeling of factors affecting American black duck populations. *Wildlife Monographs* 150.
- Eggeman, D.R. and F.A. Johnson. 1989. Variation in effort and methodology for the midwinter waterfowl inventory in the Atlantic Flyway. *Wildlife Society Bulletin* 17:227–233.
- Fronscak D. (compiler). 2012. Midwinter Waterfowl Survey, Mississippi Flyway, January 3–6 2012. U.S. Fish and Wildlife Service, Ft. Snelling MN.
- Havera, S.P. 1999. Waterfowl of Illinois: status and management. Illinois Natural History Survey Special Publication 21.
- Integrated Waterbird Management and Monitoring Initiative. 2012. Integrated Waterbird Management and Monitoring Initiative: monitoring waterbirds for effective management. Project Fact Sheet June 2012. U.S. Fish and Wildlife Service and U.S. Geological Survey (<http://iwmmprogram.ning.com>).
- Koch, K.E., T. Will, G.J. Soulliere, B. Bartush, R. Mordecai, and R. Brady. 2010. Framework for the Midwest Coordinated Bird Monitoring Partnership: 2010–2012. U.S. Fish and Wildlife Service, Fort Snelling, MN, USA.
- North American Bird Conservation Initiative Monitoring Subcommittee. 2007. Opportunities for improving avian monitoring. U.S. North American Bird Conservation Initiative Report. Division of Migratory Bird Management, U.S. Fish and Wildlife Service, Arlington, VA.
- North American Waterfowl Management Plan. 2004. North American Waterfowl Management Plan: strengthening the biological foundation (Implementation Framework). U.S. Department of Interior, Fish and Wildlife Service, and Environment Canada, Canadian Wildlife Service.
- North American Waterfowl Management Plan. 2012. North American Waterfowl Management Plan: people conserving waterfowl and wetlands. Canadian Wildlife Service, U.S. Fish and Wildlife Service, Secretaria de Medio Ambiente y Recursos Naturales.
- Petrie M.J., M.G. Brasher, G.J. Soulliere, J.M. Tirpak, D.B. Pool, and R.R. Reker. 2011. Guidelines for establishing Joint Venture waterfowl population abundance objectives. North American Waterfowl Management Plan Science Support Team Technical Report No. 2011-1.
- Reinecke, K.J., R.M. Kaminski, D.J. Moorhead, J.D. Hodges, and J.R. Nassar. 1989. Mississippi Alluvial Valley. Pages 203–247 in L.M. Smith, R.L. Pederson, and R.M. Kaminski, editors.

Habitat management for migrating and wintering waterfowl in North America. Texas Tech University Press, Lubbock, USA.

Schummer, M.L., R.K. Kaminski, A.H. Raedeke, and D.H. Graber. 2010. Weather-related indices of autumn-winter dabbling duck abundance in middle North America. *Journal of Wildlife Management* 74:94–101.

Soulliere, G.J., B.A. Potter, J.M. Coluccy, R.C. Gatti, C.L. Roy, D.R. Luukkonen, P.W. Brown, and M.W. Eichholz. 2007. Upper Mississippi River and Great Lakes Region Joint Venture Waterfowl Habitat Conservation Strategy. U.S. Fish and Wildlife Service, Fort Snelling, Minnesota, USA.

Stafford, J.D., M.M. Horath, A.P. Yetter, C.S. Hine, and S.P. Havera. 2007. Wetland use by mallards during spring and fall in the Illinois and central Mississippi River valleys. *Waterbirds* 30:394–402.

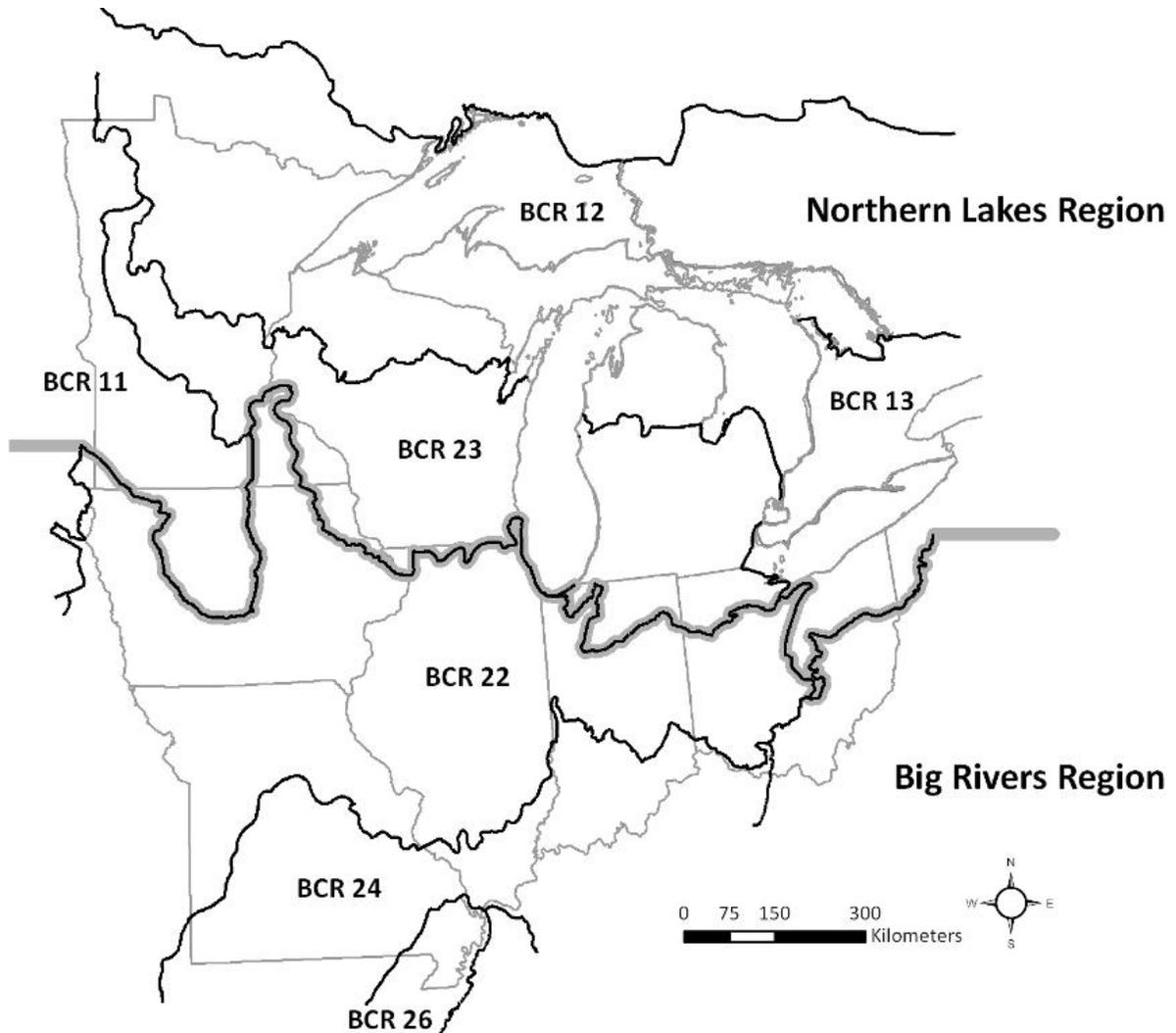


Figure 1. The Midwest region (USFWS Region 3) has been characterized by large-scale bird conservation planners as two primary ecoregions. The Northern Lakes region encompasses Bird Conservation Region (BCR) 12 (Boreal Hardwood Transition), BCR 23 (Prairie Hardwood Transition), and BCR 13 (Lower Great Lakes / St. Lawrence Plain) within the Midwest states. The Big Rivers region includes BCR 22 (Eastern Tallgrass Prairie), BCR 24 (Central Hardwoods), and a portion of BCR 26 (Mississippi Alluvial Valley). Large portions of BCRs 12 and 13 occur in Canada, and a relatively small area of BCR 11 (Prairie Potholes) is also within the boundary of USFWS Region 3.

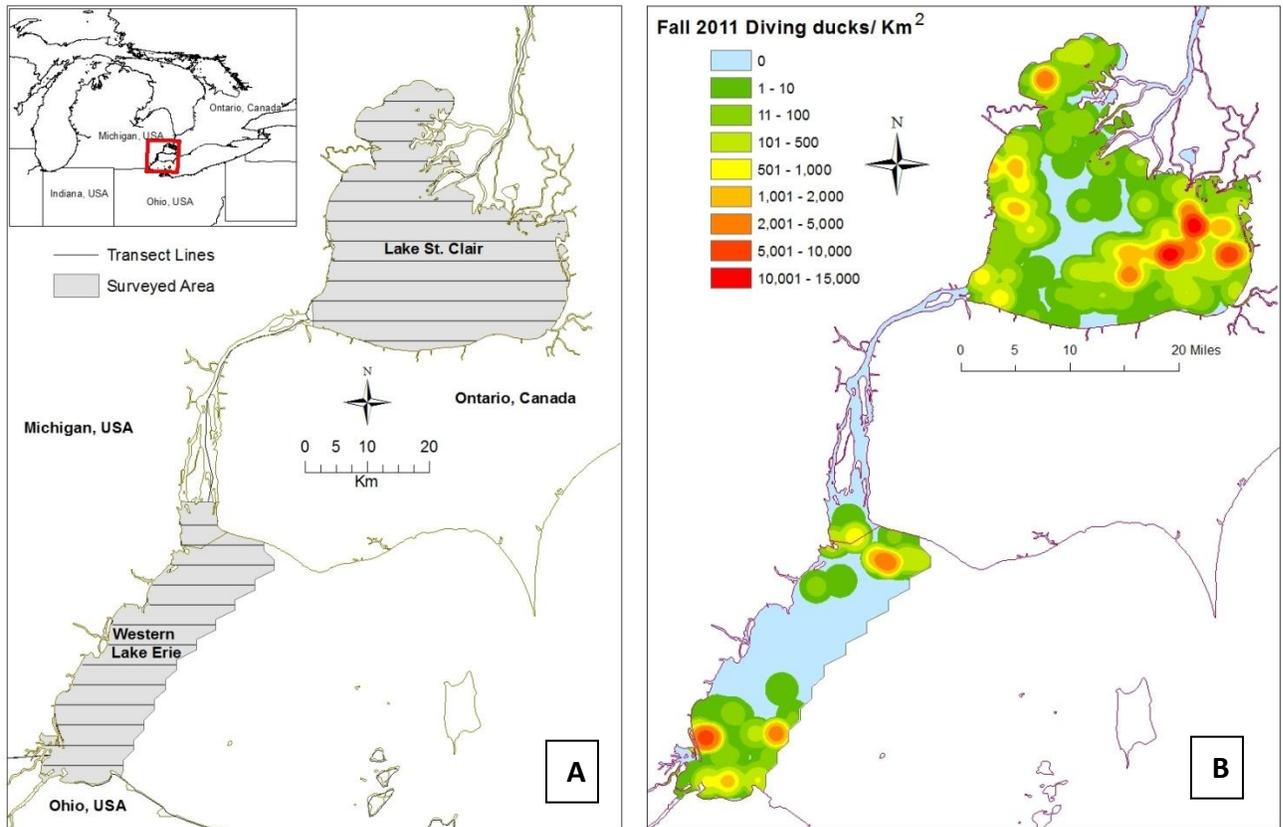


Figure 2. Area map of the Lake St. Clair and Western Lake Erie diving duck survey conducted by Michigan Department of Natural Resources and Michigan State University indicating (A) survey transect locations and (B) average diving duck abundance and distribution in southeast Michigan, USA, and Ontario, Canada, during fall 2011 (B. Shirkey and D. Luukkonen, , unpublished data).

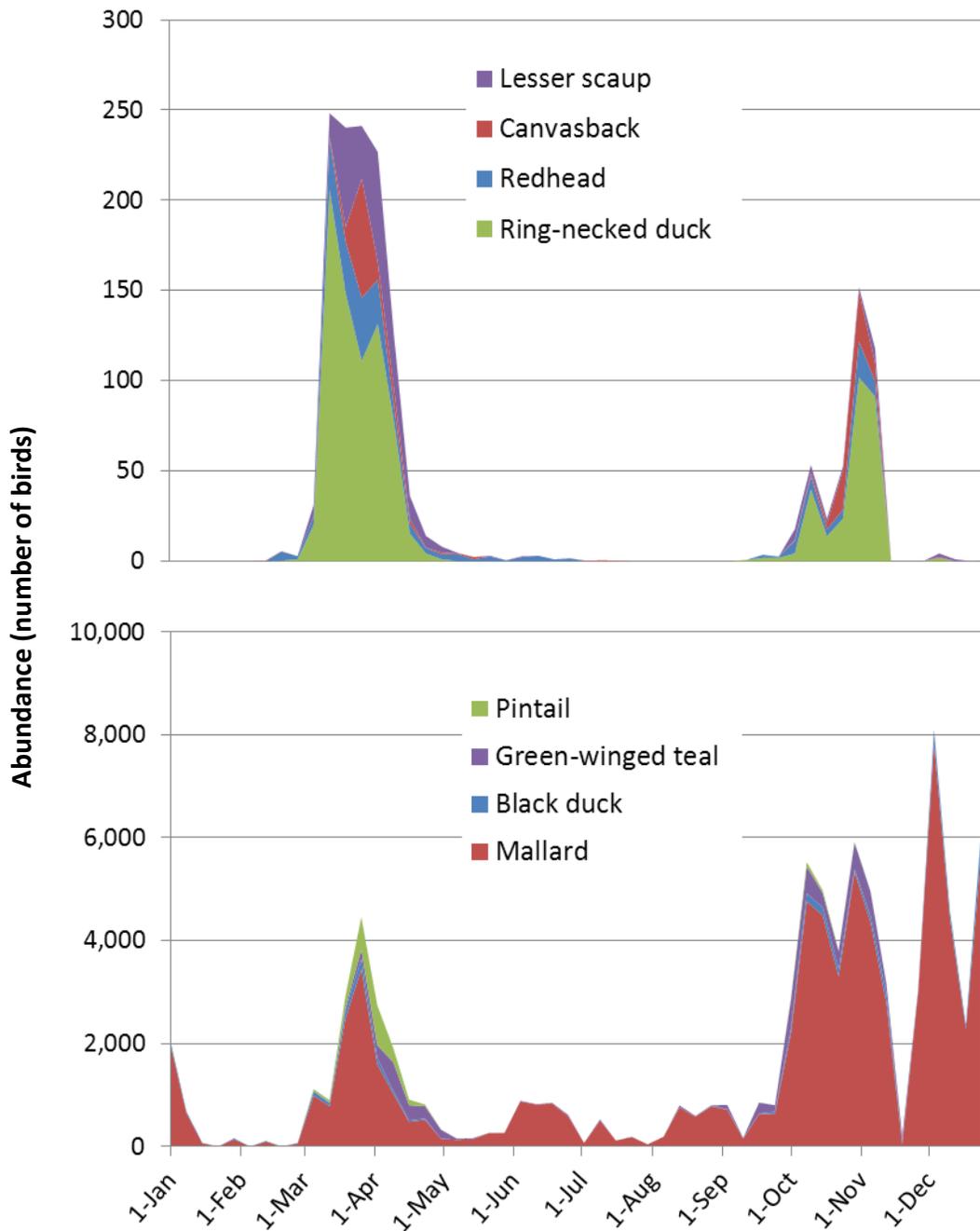


Figure 3. Example of systematically collected waterfowl monitoring data from a northern Midwest National Wildlife Refuge (Shiawassee NWR, 2003–2006) that may be used to estimate waterfowl species abundance, migration chronology, and seasonal use-days, information valuable for determining waterfowl habitat needs during the non-breeding period. By pooling population and habitat-use data collected at multiple national wildlife refuges and other conservation areas, the nascent FWS / USGS Integrated Waterbird Management and Monitoring Initiative can create capacity to assess waterfowl management needs and effectiveness at multiple geographic scales (e.g., ecoregional, Midwest region, and flyway).

Appendix A. Agenda for 2011 workshop regarding monitoring waterfowl in the Midwestern U.S. during the non-breeding period.

Monitoring Midwest Waterfowl During the Non-Breeding Season

Midwest Bird Conservation and Monitoring Conference
Illinois Beach and Conference Center, Zion, IL
August 3, 2011 (8:30 a.m. – 5:00 p.m.)

This one-day workshop will provide a venue for Midwest partners collecting non-breeding season waterfowl data to discuss current surveys, data collection, analysis, reporting, and application. The goal of this workshop is to share information, assess potential to increase coordination, and ultimately generate improved information for waterfowl habitat management during the non-breeding period (i.e., regional waterfowl populations reflecting unbiased estimates of birds in time and space).

Location: Room 1

- 8:30** Welcome and Introduction – Why are we here? Deliverables from this workshop? (Greg Soulliere)
- 9:00** Integrated Waterbird Management and Monitoring Overview (Brian Loges – U.S. Fish and Wildlife Service)
- 9:20** Integrated Waterbird Management and Monitoring Field Application (Mick Hanan – U.S. Fish and Wildlife Service)
- 9:40** Using Abundance, Distribution, and Chronology for Bioenergetics Modeling: Generating Habitat Objectives for Non-breeding Waterfowl (John Coluccy – Ducks Unlimited)
- 10:00** Mid-Winter Waterfowl Surveys (Eric Dunton – USFWS Region 3)
- 10:20** **Break**
- 10:40** Aerial Surveys of the Illinois and Mid-Mississippi Rivers (Aaron Yetter – Illinois Natural History Survey)
- 11:00** Wabash River Survey (Mike Eichholz – Southern Illinois University)
- 11:20** Missouri Department of Conservation Fall Surveys (Brian Loges for Doreen Mengel – Missouri Department of Conservation)
- 11:40** Application of Non-Breeding Period Surveys by State Partners (Ron Gatti – Wisconsin Department of Natural Resources)

12:00 Lower Great Lakes Surveys for Diving and Sea Ducks (Michael Schummer – Long Point Waterfowl)

12:20 Question / answer period regarding morning presentations

12:30 Lunch

1:30 Lake St. Clair and Detroit River Diving Duck Survey (Brendan Shirkey – Michigan Department of Natural Resources / Michigan State University)

1:50 Saginaw Bay / Lake Huron Waterfowl Survey (Mike Monfils – Michigan Natural Features Inventory)

2:10 Additional question / answer period regarding presentations

2:20 Breakout Session (worksheets provided)

Big Rivers Landscape (Chair and Recorder, Brian Loges and Dan Holm)

Lakes Region (Chair and Recorder, Brad Potter and Eric Dunton)

4:00 Rivers and Lakes Regional sub-group reports and discussion

4:40 Closing Remarks – Where do we go from here? (Brian Loges and Greg Soulliere)

5:00 Adjourn

Workshop Contacts: Eric Dunton (Eric_Dunton@fws.gov)
Brian Loges (Brian_Loges@fws.gov)
Greg Soulliere (Greg_Soulliere@fws.gov)