

UPPER MISSISSIPPI RIVER AND GREAT LAKES REGION JOINT VENTURE



Photo by Noppadol Paothong

2014

JV Science Office Annual Report

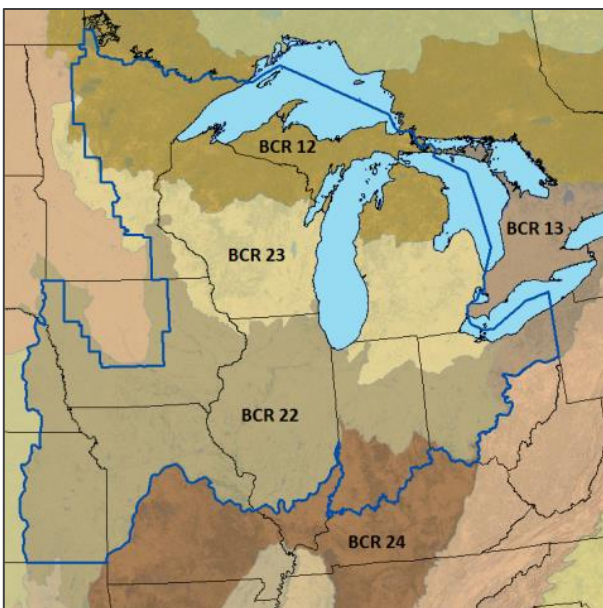
Seventh Annual Report: Developed to inform and update on the role, vision, and recent accomplishments of JV science staff and partner biologists forming the JV Science Team.



The UMRGL JV region encompasses all or portions of Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, Ohio, and Wisconsin. At over 240 million acres it is one of the largest and most diverse JV regions in North America.

JV MISSION: The Upper Mississippi River and Great Lakes Region Joint Venture will deliver a full spectrum of bird conservation through regionally based, biologically driven, landscape-oriented partnerships. The JV strives for sustainable populations of all birds through regionally coordinated conservation actions based on the best scientific information and techniques available. Explicit bird population goals, decision tools, and an implementation plan are used to guide resources for efficient conservation delivery, research, and evaluation.

SCIENCE OFFICE VISION: Working with partners, the JV Science Office will help achieve regional population objectives for priority bird species and increase habitat conservation efficiency and effectiveness. JV scientists will integrate bird population and environmental trends in a proactive approach to conservation planning, design, and evaluation. Efforts will result in expanded bird viewing and hunting opportunities plus other societal values (improved water quality, flood reduction, and carbon sequestration) associated with healthy plant and wildlife communities. Superior outcomes will result from strong partner relationships built on trust, common purpose, and mutual support, exemplifying the synergy of an effective joint venture.



CONTACT INFORMATION

Upper Mississippi River and Great Lakes Region
Joint Venture Science Office
U.S. Fish and Wildlife Service
2651 Coolidge Road, Suite 101
East Lansing, MI 48823-6316

SCIENCE PARTNERS

THE SCIENCE TEAM

The Joint Venture Science Team consists of 10 Technical Committee members plus several ad hoc members with expertise in bird habitat conservation and biological modeling. There are four committees, one for each primary bird group. With the exception of JV staff (Forbes, Kahler, and Soulliere) Science Team members serve on a voluntary basis. Their contributions and dedication reflect the best of the JV science partnership.

Waterfowl	Shorebirds	Waterbirds	Landbirds
Co-chairs: John Coluccy¹, DU Greg Soulliere¹, JV-FWS	Co-chairs: Tom Cooper, FWS Bob Russell, FWS	Co-chairs: Dan Holm¹, IL DNR Steve Lewis, FWS	Co-chairs: David Ewert¹, TNC Tom Will, FWS
Mike Eichholz, SIU	David Ewert ¹ , TNC	Ben Kahler, JV-FWS	Andy Forbes, FWS
Bob Gates ¹ , OSU	Bob Gates ¹ , OSU	Brian Loges, FWS	Mark Nelson ¹ , USFS
Ron Gatti ¹ , WI DNR	Katie Koch, US FWS	Mike Monfils, MI NFI	Brad Potter, FWS
Heath Hagy, IL NHS	Ben O'Neal, FC	Bob Russell, FWS	Charlotte Roy, MN DNR
Dave Luukkonen ¹ , MI DNR	Brad Potter, US FWS	Rick Schultheis, KS WPT	Greg Soulliere ¹ , JV-FWS
Doreen Mengel ¹ , MO DOC	Greg Soulliere ¹ , JV-FWS	Greg Soulliere ¹ , JV-FWS	Wayne Thogmartin ¹ , USGS
John Simpson, WPMC			Mike Ward, IL NHS

¹Member also serves on JV Technical Committee

(Abbreviations: DU-Ducks Unlimited, DNR-Dept. of Natural Resources, DOC-Dept. of Conservation, FWS-U.S. Fish and Wildlife Service, NFI-Natural Features Inventory, NHS-Natural History Survey, OSU-Ohio State Univ., FC-Franklin College, SIU-Southern Illinois Univ., TNC-The Nature Conservancy, USFS-U.S. Forest Service, USGS-U.S. Geological Survey, WPMC-Winous Point Marsh Conservancy, WPT-Wildlife Parks and Tourism.)

JV SCIENCE OFFICE STAFF



Greg Soulliere: Greg has served as the JV Regional Science Coordinator since 2004 and is the chair of the JV Science Team. His primary goal is to improve the JV science foundation, achieving greater conservation efficiency and effectiveness. He has a B.S. in Wildlife Biology, an M.S. in Wildlife Management, an M.B.A., and 30 years of experience as a wildlife biologist and wetland scientist.



Ben Kahler: Ben is a Wildlife Biologist/Spatial Modeler and has served the JV since 2010. His work involves assisting the partnership with wildlife habitat and population models and organizing and distributing GIS data. He has a B.S. in Fisheries and Wildlife Management, a B.A. in Anthropology, and an M.S. in Natural Resources specializing in Wildlife Science.



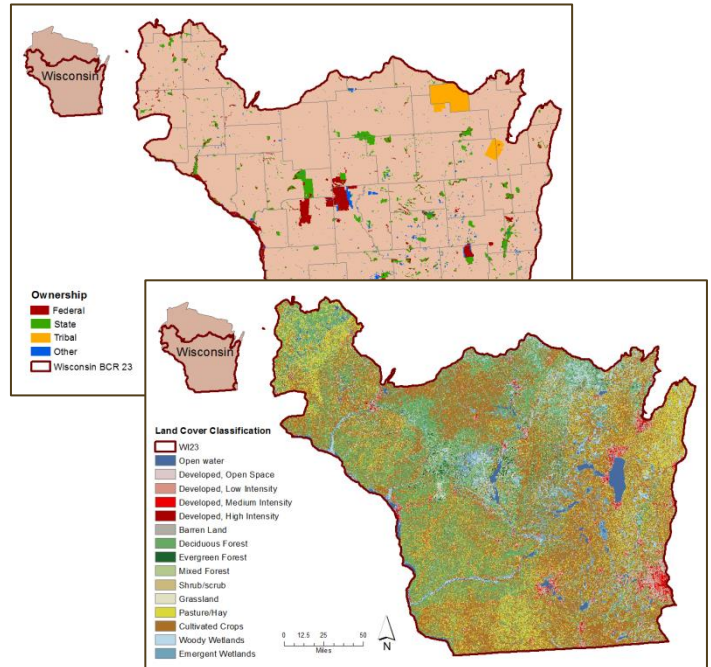
Rachael Pierce: Rachael is a Wildlife Technician serving the JV and the Upper Midwest Great Lakes Landscape Conservation Cooperative (LCC) since 2012. She provides GIS and technical support to advance the JV science office and LCC visions. She has a B.S. in Zoology and Environmental Biology and an M.S. in Environmental Biology with an emphasis on waterbird and wetland ecology.

SCIENCE ACCOMPLISHMENTS

The JV Science Office is recognized for bird habitat planning and spatial modeling expertise. In 2014 our efforts remained focused around these broad themes, plus building our science foundation, improving information sharing, and strengthening JV science partnerships.

IDENTIFIED HABITAT NEEDS FOR REGIONAL SPECIES OF CONCERN

- ❖ Completed assessments for 17 State x BCR's (Bird Conservation Regions) encompassing most of the JV region. Assessment documents are stepped-down versions of the 2007 JV Implementation Plan, with new spatial information related to broad land-cover types most important to birds and land cover trends for each State x BCR polygon. State x BCR Assessments compare established habitat objectives for JV focal species to available area of key land-cover types (i.e., bird habitat associations). These data and ownership patterns are used to evaluate the regional conservation estate for birds.
- ❖ Completed species accounts for Virginia Rail, Grasshopper Sparrow, and Brown Thrasher, three species of management concern occurring in FWS Region 3. Accounts include updated demographic information and landscape suitability models based on habitat requirements. These documents will be used in JV and "surrogate species" planning updates.
- ❖ Conducted a species-habitat analysis for the Great Lakes Piping Plover that identified habitat associations and predicted landscape suitability across the current breeding range. Produced a JV technical report describing the analysis and how results can be used to target future monitoring and restoration efforts.
- ❖ Served on the Upper Midwest and Great Lakes Region Surrogate Species Technical Team;



developed a process for surrogate selection and identified surrogate species to represent primary ecological systems within the UMGL geography.

- ❖ Completed outlines and began literature review for the JV Waterbird and Waterfowl Habitat Conservation Strategy revisions (completion target for both is late 2015).
- ❖ Coordinated two meetings of the JV Waterfowl Committee which focused on revising the JV Waterfowl Habitat Conservation Strategy.
- ❖ Participated in the Midwest Marsh Bird Working Group, which included evaluation of habitat variables for predictors of marsh bird occupancy. This new information will be used when revising the JV Waterbird Habitat Conservation Strategy.

PROVIDED TECHNICAL ASSISTANCE AND EXPANDED REGIONAL SCIENCE PARTNERSHIP

- ❖ Served on several conservation committees and provided technical expertise to JV partners and other regional and national initiatives focused on bird conservation, including State Bird Conservation Initiatives, the Upper Midwest and Great Lakes Landscape Conservation Cooperative (LCC), the Midwest Coordinated Bird Monitoring Partnership, the Tri-initiative Science Team (TriST; planning group for non-waterfowl bird species), the Midwest Marsh Bird Working Group, and multiple sub-committees of the North American Waterfowl Management Plan Science Support Team (NSST).
- ❖ Served on the Upper Midwest and Great Lakes LCC Coastal Wetland Conservation Working Group; provided expertise related to proposed conservation measures for coastal wetlands and near-shore uplands important to birds, other wildlife, and people.
- ❖ In cooperation with the UMGL LCC, we developed a white paper describing the relationship between surrogate species and the implementation of Strategic Habitat Conservation (SHC).
- ❖ Provided technical assistance to the National Wildlife Refuge program at a Structured Decision Making workshop to develop a system for prioritizing future land acquisitions.
- ❖ Working with the JV Landbird Committee,

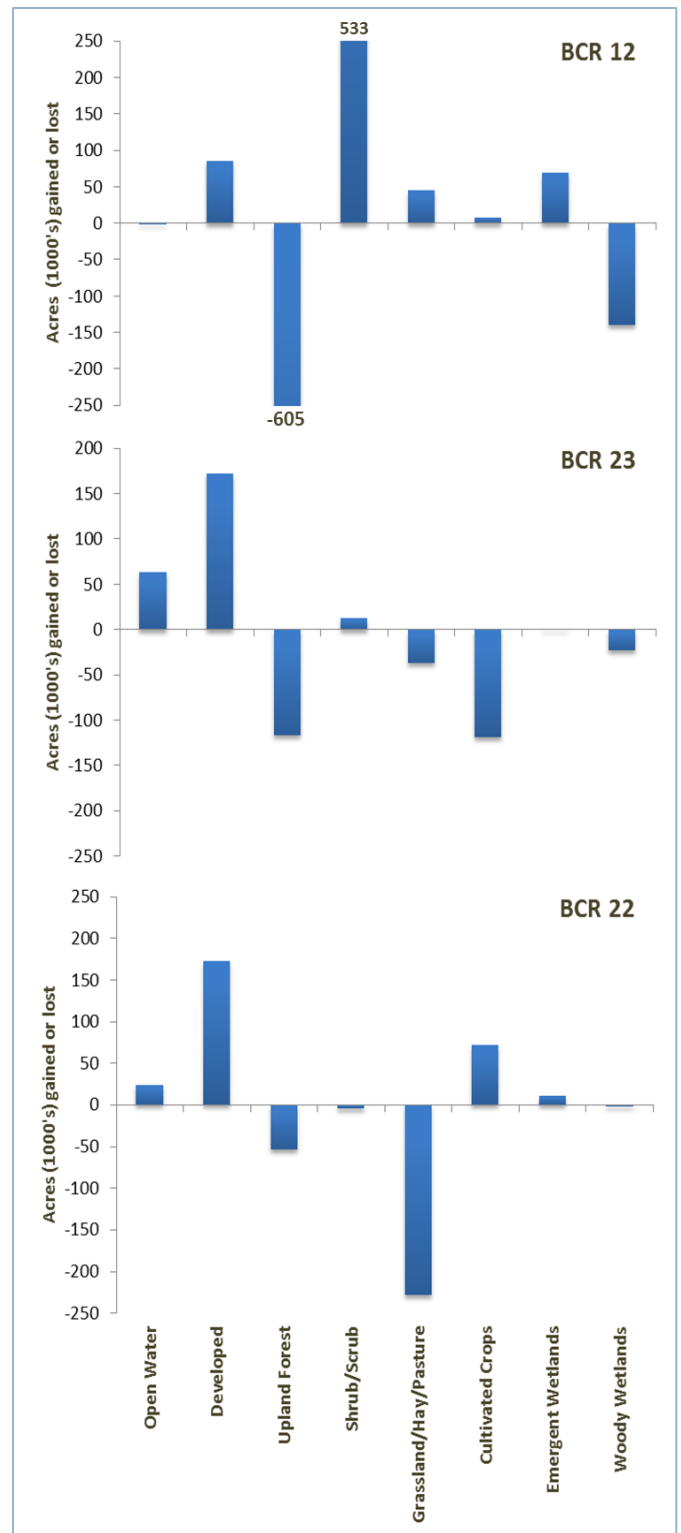
developed and administered a stakeholder survey designed to determine essential information needs to be included in a future revision of the JV Landbird Habitat Conservation Strategy.

- ❖ Networked with members of the JV Science Team as well as other regional science colleagues in an effort to provide science support and improve information sharing. Projects included monitoring waterfowl during the non-breeding period, documenting and evaluating carrying capacity models used for waterfowl habitat planning, identifying marsh bird monitoring priorities, evaluating factors determining diving duck condition, examining national trends in Scaup harvest, and assessing habitat associations for Piping Plovers.
- ❖ Continued collaboration with Midwest scientists developing and refining research and monitoring proposals that address priority evaluation needs identified by the JV Science Team.



COMPLETED LAND COVER CHANGE ASSESSMENTS

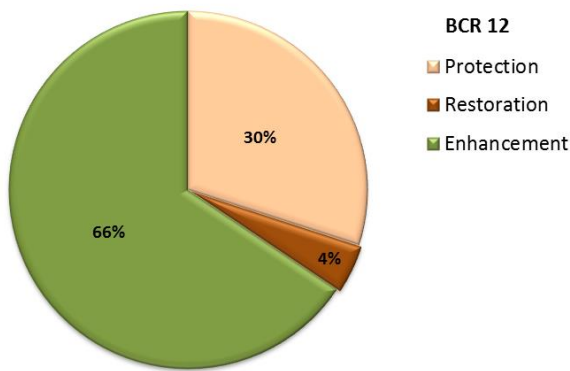
- ❖ In 2014, the JV Science Office conducted several analyses of landscape change, using National Land Cover Data (NLCD), to identify trends in broad categories of bird habitat (landscape cover types) within the region.
- ❖ The greatest cover type expansion in recent years across the JV region occurred in the urban development category. Total gains in “developed” land between 2006 and 2011 were about 430,000 acres, with a majority occurring in BCR’s 22 and 23. In most cases, conversion to developed land represents habitat loss for JV focal species.
- ❖ NLCD suggests a decline in forest cover across all BCR’s, especially in BCR 12. However, much of this conversion in BCR 12 resulted in a corresponding increase in shrub/scrub, most likely resulting from timber harvest. This change in woodland cover types may be only temporary, plus shrubland provides habitat for a suite of birds experiencing long-term decline and in need of habitat conservation.
- ❖ Grassland/hay/pasture declined across much of the JV landscape, with loses totaling more than 260,000 acres. The exception was BCR 12, which saw an increase with (temporary) conversion from forest following harvest.
- ❖ Emergent wetland area was stable or increasing across BCRs in the JV region; conversely, woody wetland area generally declined.



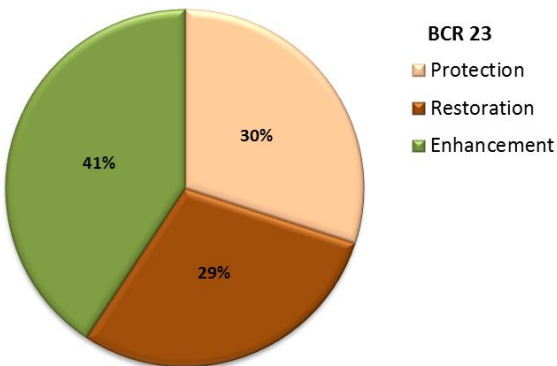
JV PLAN IMPLEMENTATION

JV partners have submitted on-the-ground bird habitat accomplishments to the JV Science Office since 2007, providing a means to track JV Plan implementation. Based on these data, conservation has been more focused on woodland cover in the north (BCR 12), grassland and emergent marsh in middle part of the JV region (BCR 23), and grassland, mudflat, and marsh in the south (BCR22).

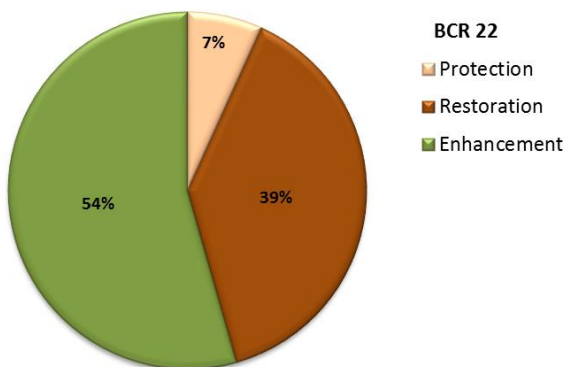
CUMULATIVE HABITAT ACCOMPLISHMENTS BY BIRD CONSERVATION REGION (BCR), 2007-2013



❖ BCR 12 partners have reported 93,700 acres of bird habitat protected, 13,700 acres restored, and 205,100 acres enhanced since 2007. A majority (70%) of the reported restoration and enhancement effort concentrated on woodland communities (forest, shrub/scrub). Grassland and emergent marsh (16% and 13% of acres, respectively) accounted for most of the remaining restoration / enhancement focus. Annual conservation delivery has been heavily weighted toward enhancement projects in this region.



❖ In BCR 23, partners reported 86,300 new acres of bird habitat protected, 84,300 acres restored, and 117,200 acres enhanced since 2007. Over half the restoration and enhancement was reported for grasslands, 27% was emergent marsh acreage, and 15% was woodland. In recent years, annual area of conservation delivery for protection and restoration has dramatically declined in this BCR, whereas acres of enhancement increased.



❖ Partners in BCR 22 have reported protecting 75,700 acres of bird habitat since 2007, restoring 434,000 acres, and enhancing 608,200 acres. The majority (74%) of restoration and enhancement effort was focused on grasslands. In recent years, annual area of conservation delivery for protection and restoration has declined whereas enhancement effort has remained relatively steady.

PROJECT COMMUNICATION

2014 JV SCIENCE STAFF PUBLICATIONS AND REPORTS

- Beatty, W.S., E.B. Webb, D.C. Kesler, L.W. Naylor, A.H. Raedeke, D.D. Humburg, J.M. Coluccy, and G.J. Soulliere. *Accepted*. **An empirical evaluation of landscape energetic models: mallard and American black duck space use during the non-breeding period.** *Journal of Wildlife Management*.
- Ewert, D.N., C.L. Roy, G.J. Soulliere, and R.L. Pierce. 2014. **Stakeholder input for revision of the Upper Mississippi River and Great Lakes Region Joint Venture Landbird Habitat Conservation Strategy.** Upper Mississippi River and Great Lakes Region Joint Venture Technical Report No. 2014-2, Bloomington, MN, USA.
- Kahler, B.M. 2014. **2013 Upper Mississippi River and Great Lakes Region Joint Venture habitat conservation accomplishments.** U.S. Fish and Wildlife Service, Bloomington, MN, USA. [[pdf](#)]
- Kahler, B.M. and V.S. Cavalieri. 2014. **Modelling Great Lakes Piping Plover habitat selection during the breeding period from local to landscape scales.** Upper Mississippi River and Great Lakes Region Technical Report No. 2014-1. Bloomington, MN, USA. [[pdf](#)]
- Kahler, B.M., R.L. Pierce, and G.J. Soulliere. 2014. **State by BCR Assessment: Indiana 22 - Eastern Tallgrass Prairie.** Upper Mississippi River and Great Lakes Region Joint Venture, U.S. Fish and Wildlife Service, Bloomington, MN, USA. [[pdf](#)]
- Kahler, B.M., R.L. Pierce, and G.J. Soulliere. 2014. **State X BCR Assessment: Iowa 23 – Prairie Hardwood Transition.** Upper Mississippi River and Great Lakes Region Joint Venture, U.S. Fish and Wildlife Service, Bloomington MN, USA. [[pdf](#)]
- Kahler, B.M., R.L. Pierce, and G.J. Soulliere. 2014. **State by BCR Assessment: Kansas 22 - Eastern Tallgrass Prairie.** Upper Mississippi River and Great Lakes Region Joint Venture, U.S. Fish and Wildlife Service, Bloomington, MN, USA. [[pdf](#)]
- Kahler, B.M., R.L. Pierce, and G.J. Soulliere. 2014. **State by BCR Assessment: Missouri 22 - Eastern Tallgrass Prairie.** Upper Mississippi River and Great Lakes Region Joint Venture, U.S. Fish and Wildlife Service, Bloomington, MN, USA. [[pdf](#)]
- Kahler, B.M., R.L. Pierce, and G.J. Soulliere. 2014. **State X BCR Assessment: Ohio 13 – Lower Great Lakes / St. Lawrence Plain.** Upper Mississippi River and Great Lakes Region Joint Venture, U.S. Fish and Wildlife Service, Bloomington MN, USA [[pdf](#)]
- Kahler, B.M., R.L. Pierce, and G.J. Soulliere. 2014. **State X BCR Assessment: Ohio 22/23 – Eastern Tallgrass Prairie and Prairie Hardwood Transition.** Upper Mississippi River and Great Lakes Region Joint Venture, U.S. Fish and Wildlife Service, Bloomington MN, USA. [[pdf](#)]
- Kahler, B.M., R.L. Pierce, and G.J. Soulliere. 2014. **State X BCR Assessment: Wisconsin 23 – Prairie Hardwood Transition.** Upper Mississippi River and Great Lakes Region Joint Venture, U.S. Fish and Wildlife Service, Bloomington MN, USA [[pdf](#)]
- Kahler, B.M., G.J. Soulliere, and R.L. Pierce. *Draft*. **Identifying marsh bird monitoring priorities in the Midwest United States.** Upper Mississippi River and Great Lakes Region Joint Venture Technical Report, Bloomington MN, USA.
- Monfils, M.J., P.W. Brown, D.B. Hayes, G.J. Soulliere, and E.N. Kafkas. 2014. **Breeding bird use and wetland characteristics of diked and undiked coastal marsh in Michigan.** *Journal of Wildlife Management* 78(1):79-92. [[link](#)]

- Monfils, M.J., P.W. Brown, D.B. Hayes, and G.J. Soulliere. *Draft. Autumn bird use and wetland conditions of diked and undiked coastal wetlands in Michigan.* Waterbirds - The International Journal of Waterbird Biology.
- Monfils, M.J., D.B. Hayes, B.M. Kahler, and G.J. Soulliere. 2014. **Evaluating marsh bird habitat use at multiple scales to inform conservation design.** Michigan Natural Features Inventory Report Number 2014-03, Lansing, USA.
- Pierce, R.L., B.M. Kahler, and G.J. Soulliere. 2014. **State X BCR Assessment: Illinois 22 – Eastern Tallgrass Prairie.** Upper Mississippi River and Great Lakes Region Joint Venture, U.S. Fish and Wildlife Service, Bloomington MN, USA. [[pdf](#)]
- Pierce, R.L., B.M. Kahler, and G.J. Soulliere. 2014. **State X BCR Assessment: Indiana 24 – Central Hardwoods.** Upper Mississippi River and Great Lakes Region Joint Venture, U.S. Fish and Wildlife Service, Bloomington MN, USA. [[pdf](#)]
- Pierce, R.L., B.M. Kahler, and G.J. Soulliere. 2014. **State X BCR Assessment: Iowa 22 – Eastern Tallgrass Prairie.** Upper Mississippi River and Great Lakes Region Joint Venture, U.S. Fish and Wildlife Service, Bloomington MN, USA. [[pdf](#)]
- Pierce, R.L., B.M. Kahler, and G.J. Soulliere. 2014. **State X BCR Assessment: Michigan 12 – Boreal Hardwood Transition.** Upper Mississippi River and Great Lakes Region Joint Venture, U.S. Fish and Wildlife Service, Bloomington MN, USA. [[pdf](#)]
- Pierce, R.L., B.M. Kahler, and G.J. Soulliere. 2014. **State X BCR Assessment: Michigan 23 – Prairie Hardwood Transition.** Upper Mississippi River and Great Lakes Region Joint Venture, U.S. Fish and Wildlife Service, Bloomington MN, USA. [[pdf](#)]
- Pierce, R.L., B.M. Kahler, and G.J. Soulliere. 2014. **State X BCR Assessment: Minnesota 12 – Boreal Hardwood Transition.** Upper Mississippi River and Great Lakes Region Joint Venture, U.S. Fish and Wildlife Service, Bloomington MN, USA. [[pdf](#)]
- Pierce, R.L., B.M. Kahler, and G.J. Soulliere. 2014. **State X BCR Assessment: Minnesota 23 – Prairie Hardwood Transition.** Upper Mississippi River and Great Lakes Region Joint Venture, U.S. Fish and Wildlife Service, Bloomington MN, USA. [[pdf](#)]
- Pierce, R.L., B.M. Kahler, and G.J. Soulliere. 2014. **State X BCR Assessment: Nebraska 22 – Eastern Tallgrass Prairie.** Upper Mississippi River and Great Lakes Region Joint Venture, U.S. Fish and Wildlife Service, Bloomington MN, USA. [[pdf](#)]
- Pierce, R.L., B.M. Kahler, and G.J. Soulliere. 2014. **State X BCR Assessment: Wisconsin 12 – Boreal Hardwood Transition.** Upper Mississippi River and Great Lakes Region Joint Venture, U.S. Fish and Wildlife Service, Bloomington MN, USA. [[pdf](#)]
- Powers, N., M. Brouder, S. Blomquist, B. Potter, J. Dingedine, C. Deloria, G. Soulliere, T. Kerr, and K. Steiger-Meister. 2014. **Selecting Surrogate Species for Strategic Habitat Conservation in the Upper Midwest Great Lakes Geography.** U. S. Fish and Wildlife Service, Midwest Region Technical Report, Bloomington, MN, USA.
- Soulliere G.J. and R.L. Pierce. 2014. **Upper Mississippi River and Great Lakes Region Joint Venture Science Office 2013 annual report.** U.S. Fish and Wildlife Service, Bloomington MN, USA.
- Soulliere, G.J., B.M. Kahler, and J.E. Austin. *In review.* **Trends in scaup harvest and hunting community: implications for harvest management and sustaining scaup hunting traditions.** Journal of Fish and Wildlife Management.
- Williams, C.K., B.D. Dugger, M.G. Brasher, J.M. Coluccy, D.M. Cramer, J.M. Eadie, M.J. Gray, H.M. Hagy, S.R. McWilliams, M. Petrie, G.J. Soulliere, J.M. Tirpak, and E.B. Webb. 2014. **Estimating habitat carrying capacity for migrating and wintering waterfowl: considerations, pitfalls, and improvements.** Wildfowl – Special Issue, Wildfowl and Wetlands Trust, United Kingdom.

2014 SCIENCE OFFICE PROFESSIONAL PRESENTATIONS

Beatty, W., E.B. Webb, D. Kesler, A. Raedeke, L.W. Naylor, G.J. Soulliere, D. Humburg, J.M. Coluccy. January 2014. **Modeling mallard and American black duck movement using energetics.** Presentation at Midwest Fish and Wildlife Conference, Kansas City MO.

Beatty, W., E.B. Webb, D. Kesler, A. Raedeke, L.W. Naylor, G.J. Soulliere, D. Humburg, J.M. Coluccy. October 2014. **Effects of landscape energetics on mallard and American black duck movement.** Presentation at The Wildlife Society annual conference, Pittsburg PA.

Kahler, B.M. and R.L. Pierce. August 2014. **Building bird friendly landscapes in the Midwest.** Plenary presentation at the Bird Conservation and Monitoring Workshop, Port Washington WI.

Luukkonen, D.R., E.N. Kafcas, B. Shirkey, S.R. Winterstein, and G.J. Soulliere. March 2014. **Diving duck distribution and abundance on Lake St. Clair before and after invasion by dreissenid mussels.** Presentation to the Michigan Chapter of The Wildlife Society, Grayling MI.

Pierce, R.L, B.M. Kahler, and G.J. Soulliere. February 2014. **State x BCR assessments: stepping-down and testing the JV plan.** Webinar presentation to the Upper Mississippi River and Great Lakes Region Joint Venture Science Team and Region 3 Migratory Bird Staff.

Soulliere, G.J. June 2014. **NAWMP map and targeting wetland bird conservation.** Presentation at North American Wetland Conservation Council meeting. Saginaw MI.

Soulliere, G.J. and J. M. Coluccy. August 2014. **Joint Venture Waterfowl Habitat Conservation Strategy revision.** Presentation to the Upper Mississippi River and Great Lakes Region Joint Venture Management Board. Bloomington IN.

Soulliere, G.J. December 2014. **Scoping Wetland Conservation Projects: St. Johns Marsh Great Lakes Restoration Initiative (GLRI) proposal review.** Presentation to Ducks Unlimited and Michigan Dept. of Natural Resources Wetland Wildlife staff. Ann Arbor MI.



RESEARCH AND MONITORING

The JV Science Team established prioritized lists (one for each primary bird group) of research and monitoring needs to test assumptions and fill information gaps identified when developing the 2007 JV Implementation Plan. Science partners use these lists of evaluation needs to generate research proposals for potential JV financial support, and the lists are periodically updated as information from completed projects becomes available. The following projects all had significant funding from the JV in 2014. Ultimately, JV-funded projects should have application for better targeting bird conservation and refining JV bird habitat conservation strategies.

ONGOING PROJECTS

Red-headed woodpecker habitat use in upland and floodplain areas

Lead Organization: *Illinois Natural History Survey*

Partners-In-Flight established a goal for doubling the Red-headed Woodpecker population. However, information about factors influencing habitat use, demography, or the relative contribution of different habitat types to state and regional populations are lacking in the Midwest. In this study, researchers have used radio-telemetry to determine home-range size required for breeding pairs in upland and floodplain woodland communities. Floodplain forest area is relatively more stable and this community type may provide an increasingly important habitat base for the Red-headed Woodpeckers. Results will provide information critical to understanding the potential of existing habitat for supporting this species within Illinois and throughout the Midwest as well as how management can best contribute toward state and regional population goals.

Audubon Prairie Bird Initiative

Lead Organization: *National Audubon Society*

Grassland birds have experienced the most precipitous population declines of any bird group in North America. The vast majority of tall- and mixed-grass prairie throughout the central plains has been lost to habitat alteration and this trend continues in most states. Federal and state agencies and NGO's have targeted grasslands for protection and restoration. However, with the majority of grasslands

in private ownership, conservation efforts must focus on individual private landowners in order to achieve landscape-scale habitat conservation for grassland birds. To address this need, partners have initiated the Prairie Bird Initiative (PBI) and a goal to provide cattle producers with increased economic incentives for bird-friendly habitat management. In this study, researchers performed preliminary surveys for grassland birds on private lands in Missouri, Kansas, and Nebraska. These surveys were intended to provide a snapshot of bird communities on private lands prior to bird-oriented management actions initiated by landowner-PBI partnerships. Survey data will be used to illustrate the importance of these lands to bird conservation.



Waterfowl abundance and productivity in the Great Lakes: assessing and refining biological models for conservation planning

Lead Organization: University of Minnesota

In the JV region waterfowl abundance is estimated by various methods: breeding pair surveys, BBS data, or banding and harvest data. Inconsistency in methodologies among states, however, produce estimates that vary from each other by orders of magnitude and that are rarely correlated. To improve abundance estimates, this project is evaluating roadside surveys as a cost-effective alternative to obtaining basin-specific data on waterfowl pairs. Researchers are also assessing potential bias in current predictive models resulting from sampling frame and sightability issues as well as sightability-adjusted brood:pair ratios as a potential method to monitor waterfowl abundance and distribution. Project results will be used to develop enhanced habitat suitability models for common waterfowl species of the region and will allow JV scientists to develop more effective conservation targeting maps for future iterations of the JV Waterfowl Conservation Strategy.

Factors influencing breeding female Mallard survival in the Great Lakes region

Lead organization: Ducks Unlimited

Female Mallards incur exhaustive energetic demands and are exposed to a number of ecological risks during the breeding season that impact survival. Previous studies conducted in the mid-continent prairie region have shown breeding-season survival is influenced by female age and nesting effort. Understanding how breeding season survival is impacted by age, nesting effort, and condition in the Great Lakes region can provide waterfowl managers information to better understand which components of the breeding season most impact survival. Using data collected during the Great Lakes mallard study (2001–2003), researchers are estimating breeding season survival rates for female mallards, evaluating the effects of landscape features (e.g., wetland, grassland, forest, grassland, cropland) on survival probability, and evaluating the effects of hen-related parameters (e.g., age, condition, nesting effort) on survival probability.



Historical and current Black Tern habitat relationships in the Great Lakes region

Lead Organization: University of Minnesota

Improved knowledge of Black Tern habitat associations is needed for effective conservation to help reverse current population declines for this species.

Researchers completing this project will analyze factors affecting Black Tern habitat use in the Great Lakes region from both historical and contemporary perspectives. They will use long-term colony occupancy data to determine what habitat-related changes have been most closely associated with changes in Black Tern colony-site use (colonization and abandonment) over the past thirty years. In addition, to improve predictions of current habitat use, researchers will validate the JV's habitat suitability model and identify additional landscape-level habitat factors that can improve the model's effectiveness in targeting conservation.



Intrinsic and extrinsic factors determining diving duck condition and habitat quality during spring migration in the Upper Midwest

Lead Organization: Illinois Natural History Survey

The goal of this project is to concurrently measure population abundance, behavior, food abundance, food use and selection, and levels of stress hormones, environmental contaminants, and blood plasma metabolites of Lesser Scaup and Canvasbacks during spring migration through the JV region. JV habitat quality assumptions for these focal species will be evaluated and study results should inform future habitat models for these and other species of diving ducks with similar life history requirements. Work will be conducted at major spring-migration stopover locations of Lesser Scaup and Canvasback in BCRs 22 and 23. Investigators will determine utility of above factors as indicators of habitat quality, determine energetic carrying capacity of emergent and riverine wetlands, identify food use and selection, and evaluate the JV assumption that energetic carrying capacity is related to condition of foragers and a suitable surrogate for foraging habitat quality.

Using agent-based waterfowl movement models to identify conservation solutions to large-scale environmental variation and land use change

Lead Organization: USGS Missouri Coop Unit

Using location data from transmitter-marked Mallards and American Black Ducks, researchers will develop and parameterize spatially explicit agent-based models of movement and habitat selection during the nonbreeding period. The accumulated effects of habitat selection and movement decisions made by individual birds ultimately determine waterfowl population dynamics and distributions. This project will combine quantitative movement metrics with existing information about habitats, landscapes, energetics, weather, and demography in migratory waterfowl populations. New models will be used to evaluate alternative approaches to managing migratory waterfowl and their habitats under a range of potential future land-use scenarios. Investigators will also identify timing and locations of critical waterfowl resources most at risk due to environmental variability and land use changes, as well as management practices and conservation strategies and locations most likely to promote conservation effectiveness under a range of environmental conditions.

NEW PROJECTS IN 2014

Understanding the wintering, migratory, and post-breeding periods of the Kirtland's Warbler annual cycle: Moving towards full-life cycle conservation

Lead Organization: Smithsonian Migratory Bird Center

This project will use light-level geolocators to search for unknown wintering locations on poorly surveyed Bahamian islands and track the birds throughout their annual cycle. Tracking data will provide researchers with information related to spring departure and arrival dates and whether these parameters are correlated, migration speed and routes, and will allow for the quantification of migratory connectivity. Tracking data will also be used to inform future searches for new wintering locations after the completion of this study. Additionally, radio transmitters and extensive surveying will be used to track juvenile and adult Kirtland's Warblers during the post-breeding period to quantify survival rates, identify sources of mortality, and investigate the possibility that some individuals use different habitats post-breeding before moving to their wintering areas.

An adaptive management pilot project identifying influences of management strategies on resource provisioning and harvest success of waterfowl

Lead Organization: Southern Illinois University

Waterfowl managers in several Midwest states are questioning the value of flooded cornfields vs. natural plant communities (moist-soil plants, semi-permanent marsh) for providing habitat to migrating dabbling ducks. Natural plant communities are proven to provide greater nutritional benefits and habitat value to ducks and other wetland birds during the annual cycle, but flooded croplands are perceived to provide superior hunting opportunity. Thus site managers are reluctant to modify cropping strategies without clear evidence that modifying management practices will not negatively influence harvest opportunity. In this small scale study, researchers will compare use and duck hunting success between wetlands containing planted corn and those managed for natural foods to determine which are most effective at attracting ducks (for hunting) as well as forage provision during the migration and wintering periods. Although initial

evaluation will be completed in southern Illinois, this pilot project could lead to a more informed and wider scale project in other Midwest states where draining and cropping wetlands is a common practice.

Marsh bird response to hydrologic alteration and restoration of wetlands in the Boreal Hardwood Transition - BCR 12

Lead Organization: Michigan Natural Features Inventory

Marsh birds are thought to have variable responses to hydrologic conditions depending on species. Understanding differential responses of species to hydrologic alteration and restoration can help managers better assess the potential trade-offs for marsh birds associated with wetland restoration and management. This study will compare breeding marsh bird use (occupancy/relative abundance) among four hydrologic categories of wetlands: (1) altered – raised water level (managed impoundments); (2) altered – lowered water level (affected by ditches or upstream dikes); (3) restored (ditch plugs, dike breaching); and (4) reference (no hydrologic alteration). Additionally, marsh bird associations with vegetation structure and other wetland variables will be investigated to determine if differences in wetland structure and hydrology differentially affect marsh bird use.

Estimating behavioral multipliers to American Black Duck and Lesser Scaup resting and metabolic rate to better estimate daily energy expenditure and carrying capacity

Lead Organization: University of Delaware

Joint Ventures use model-based estimates of forage requirements to generate regional habitat objectives for waterfowl during non-breeding periods (migration and winter). Accurate assessment of "Daily Energy Expenditure" for birds is crucial in this process. Because energy needs of waterfowl vary depending on activity or behavior, calculating overall energy used on a daily basis can be complicated. This research will build on previous work by investigating whether historic estimates of "behavioral multipliers" to resting metabolic rate are reasonable. Specifically, this research will focus on multipliers for typical daily behaviors using American Black Ducks and Lesser Scaup, JV focal species representing dabbling and diving duck guilds, which will likely allow for extrapolation to additional species.

Seasonal fecundity and post-fledging survival and habitat selection of Henslow's Sparrow
Lead Organization: University of Nebraska

Henslow's Sparrow (*Ammodramus henslowii*) has received increasing attention for conservation because of long term, range-wide population declines associated with the loss of grassland. Much is known about the breeding habitat preferences of adult Henslow's Sparrows, however important gaps remain in our understanding of the overall productivity and habitat requirements of this species. Researchers on this project will mark adult females and fledglings with radio tags to quantify seasonal fecundity as a function of fledging brood size, renesting rates, and nest survival. Post-fledging survival and resource selection will also be evaluated. This study will produce baseline data providing improved understanding of the habitat breeding requirements of the species and will allow for better quantification of habitat features that maximize Henslow's Sparrow productivity.

Linking waterfowl distribution and abundance to spatial and temporal distribution and abundance of wetland habitat

Lead Organization: Missouri Dept. Conservation & University of Missouri

The Missouri Department of Conservation is revising its 1989 State Wetland Plan, which will provide a model-based, adaptive framework to guide habitat, population, and public-use decisions focused on wetlands and wetland-dependent wildlife. Models developed in this process will provide the framework from which predictions can be made and evaluated about management and planning decisions. Successful implementation of the revised Missouri Plan and accomplishments related to JV plans will require both evaluation of existing monitoring tools and development of new monitoring tools that enable managers to determine if predictions are correct, if objectives are being achieved, and if model assumptions are accurate. This project focuses on improving monitoring methods of waterfowl abundance and distribution, as well as forage quantity and availability, to better predict and evaluate waterfowl response to habitat restoration and management.



GOALS AND FUTURE EFFORTS

JV Science Office Near-term Goals (<2 years)

- ❖ Complete draft JV Waterbird and Waterfowl Habitat Conservation Strategies by the end of 2015.
- ❖ Begin working on potential revision of JV Landbird Habitat Conservation Strategy.
- ❖ Continue collaboration with key science partners on bird research and monitoring critical to regional conservation planning.
- ❖ Develop and refine GIS planning products important to enhance bird habitat delivery as updated and new spatial data and associated information becomes available.
- ❖ Continue working toward the three integrated goals of the 2012 North American Waterfowl Management Plan related to waterfowl populations, habitat, and people.
- ❖ Seek means for regional bird conservation to complement societal initiatives, concerns, and trends, including a focus on mitigation and adaptation to landscape and climatic change.

Long-term Goals (>2 years)

- ❖ Expand knowledge of bird ecology, contemporary conservation practices, measuring landscape change, and the potential impacts of climate change on priority bird species. New information will be used to develop and refine JV species accounts, bird-habitat conservation objectives, planning documents, and bird habitat accomplishment reporting.
- ❖ Grow JV partnership as a national leader in bird conservation by continually improving scientific foundation, efficiency, and effectiveness of conservation initiatives in the JV region. Strategic Habitat Conservation (SHC) via monitoring-planning-implementing-evaluating will be central to improving JV conservation approaches over time.
- ❖ Identify regional bird-habitat conservation projects important to counter environmental threats to birds and human populations. Working with others, determine whether targeting conservation to benefit birds can also provide significant values to society. The potential exists to communicate / market JV conservation actions to people and help assure sustainable financial and political support for bird-habitat conservation programs in the future.