UPPER MISSISSIPPI RIVER AND GREAT LAKES JOINT VENTURE

Sunset at Seney National Wildlife Refuge

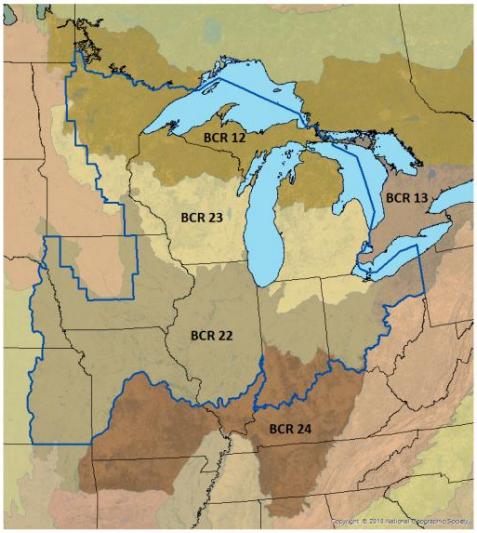
2012

Science Office Annual Report

Fifth 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.

UPPER MISSISSIPPI RIVER & GREAT LAKES REGION
JOINT VENTURE
Delivering bird conservation through partnerships

The UMRGLR JV 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 regions in the U.S.



OUR 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 and JV Coordination Staff, the 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

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SCIENCE PARTNERS

THE SCIENCE TEAM

The JV Science Team consists of 10 Technical Committee members plus several ad hoc members with expertise in bird habitat conservation and biological modeling. This team is responsible for developing and updating the JV Implementation Plan and associated Bird-group Strategies. With the exception of JV staff (Kahler and Soulliere), members serve on a voluntary basis. Their contributions and dedication reflect the best of the JV science partnership.

Waterfowl

Co-chairs:
John Coluccy[1], DU
Greg Soulliere[1], JV-FWS

Mike Eichholz, SIU
Bob Gates[1], OSU
Ron Gatti[1], WI DNR
Heath Hagy, IL NHS
Dave Luukkonen[1], MI DNR
Doreen Mengel[1], MO DOC
Charlotte Roy, MN DNR
John Simpson, WPMC

Shorebirds

Co-chairs:
Tom Cooper, FWS
Bob Russell, FWS

James Cole, TNC
David Ewert[1], TNC
Bob Gates[1], OSU
Katie Koch, FWS
Brad Potter, FWS
Greg Soulliere[1], JV-FWS

Waterbirds

Co-chairs:
Dan Holm[1], IL DNR
Steve Lewis, FWS

Ben Kahler, JV-FWS
Brian Loges, FWS
Mike Monfils, MI NFI
Bob Russell, FWS
Rich Shultheis, KS WPT
Greg Soulliere[1], JV-FWS

Landbirds

Co-chairs:
David Ewert[1], TNC
Tom Will, FWS

Andy Forbes, JV-FWS
Mark Nelson[1], USFS
Andy Paulios, WI DNR
Brad Potter, FWS
Greg Soulliere[1], JV-FWS
Wayne Thogmartin[1], USGS
Mike Ward, IL NHS

[1]**Member also serves on JV Technical Committee**

JV SCIENCE OFFICE STAFF

Greg Soulliere: Greg has served as JV Science Coordinator since 2004 and is chair of the Science Team. He is committed to improving the JV science foundation and applying business concepts to conservation decisions. He has a B.S. in Wildlife Biology, an M.S. in Wildlife Management and an M.B.A., with extensive experience in wetland ecology and waterbird habitat management.

Ben Kahler: Ben is a Wildlife Biologist/Spatial Modeler and has served the JV office since 2010. His work involves assisting the JV 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 will soon earn his M.S. in Natural Resources specializing in Wildlife Science.

Rachael Pierce: Rachael is a Wildlife Technician serving the JV and UMGL LCC since 2012. She provides GIS and technical science support to assist the advancement of the JV science office vision. 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 2012, our efforts and successes remained focused around these broad themes, as well as building our science foundation, improving information sharing, and strengthening science partnerships.

IDENTIFY HABITAT REQUIREMENTS FOR REGIONAL SPECIES OF CONCERN

- Completed 3 new species accounts (Pied-billed Grebe, Bobolink, and Bay-breasted Warbler) for species of greatest management concern in Region 3. These accounts include up-to-date demographic information and habitat suitability modeling to better target regional conservation efforts.

- Developed landscape models for Piping Plovers found in coastal areas of the Great Lakes and for marsh birds found in the JV Region.

- Worked with regional avian ecologists to update research and monitoring priorities for waterfowl and waterbirds and also compiled a list of climate-change related JV research needs. These priorities provide a framework for prospective JV-supported projects whose outcomes will be used to refine the JV Implementation Plan.

- Assisted several JV partners in developing research and monitoring proposals and completing ongoing evaluation projects. These projects improve our understanding of population dynamics and habitat requirements of JV focal species which strengthen the science foundation upon which our conservation strategies are based.

- Hosted a marsh bird monitoring and conservation workshop that culminated in establishment of a Midwest Marsh Bird Working Group (currently Chairing) that developed conservation goals and objectives for this bird group of management concern.

- Participated in 2012 marsh bird population and habitat surveys in Michigan; this is part of a national effort to improve demographic information and inform marsh bird habitat conservation at the national and regional level.

- Coordinated and provided GIS support to create the map of areas having greatest continental significance for waterbirds and revised the map of areas with continental significance to waterfowl. These maps are used by the NAWCA Council in scoring NAWCA standard grants.

- Served (Co-Chaired) the 'Focusing Resources' Committee of the NAWMP Science Support Team (NSST), currently developing decision support tools to target conservation and achieve 2012 NAWMP goals.

PROVIDE TECHNICAL ASSISTANCE AND IMPROVE THE JV BIRD HABITAT CONSERVATION PARTNERSHIP

- Served on the national 8-person writing team for the 2012 revision of the North American Waterfowl Management Plan (NAWMP) and the accompanying Action Plan.

- Provided technical expertise to partners and other regional and national initiatives that focus on bird conservation such as state Bird Conservation Initiatives, the Upper Midwest and Great Lakes LCC, the Midwest Coordinated Bird Monitoring partnership, the NSST, the Tri-initiative Science Team (national planning group for non-waterfowl bird species), and the Midwest Marsh Bird Working Group.

- Regularly communicated and collaborated with regional Migratory Bird Staff and other FWS programs such as the LCCs, Ecological Services, Partners for Fish and Wildlife, and National Wildlife Refuges; provided technical expertise on efforts such as grant applications, conservation plans, surrogate species, wildlife and wind energy development, ongoing contaminant evaluation of the Kalamazoo River (MI), and refining conservation priority areas for Copperbelly water-snake.

- Provided statistical sampling and GIS support to the Central Hardwoods JV and Missouri River Bird Observatory (MRBO) for their monitoring effort of marsh birds of management concern, many of which breed in our JV region. Collaborated with other regional JV scientists, particularly those in regions sharing bird resources with our JV region (Lower Miss, Gulf Coast, Black Duck, and Sea Duck).

- Provided statistical sampling and GIS support to the Michigan marsh bird monitoring effort, expanding the program to include testing whether waterfowl management activities affect local marsh bird occurrence and abundance.

- Networked with non-FWS members of the JV Science Team and other science partners located within the JV region in an effort to provide science support and improve information sharing. Project involvement included waterfowl energy acquisition, foraging thresholds of spring-migrating dabbling ducks, coastal waterfowl carrying capacity, and Black Duck habitat use and survival on the lower Great Lakes.

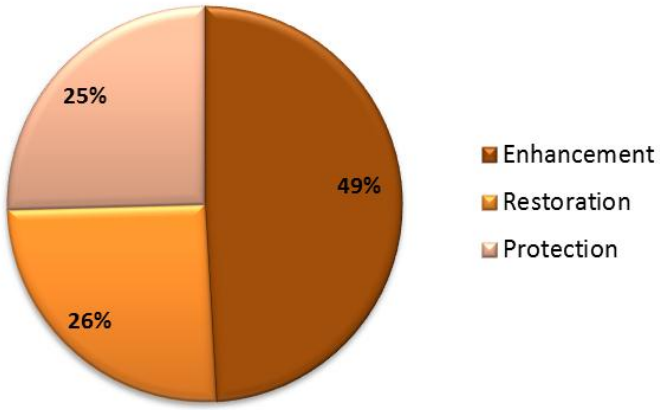
Lake Michigan shoreline

MEASURING HABITAT DELIVERY

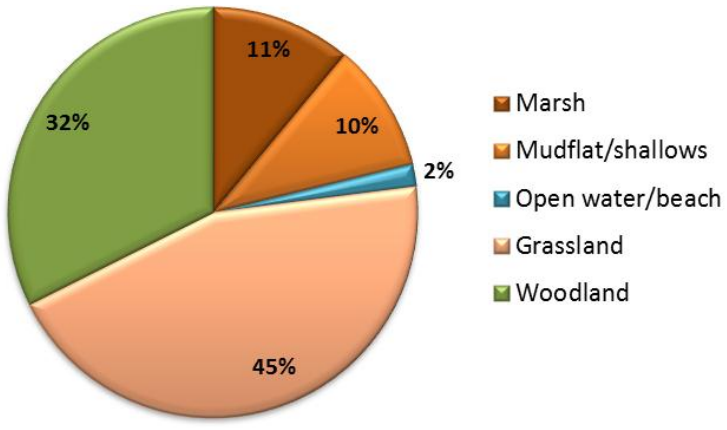
Each year JV partners submit on-the-ground bird habitat accomplishments to the JV Science Office. Tracking regional habitat conservation actions provides a measure of expended funding and the amount of bird habitat influenced relative to goals stated the JV Implementation Plan. The JV Science Team endeavors to measure annual losses as well as gains in bird habitat, to better gauge the "net influence" of JV conservation efforts.

2012 HABITAT ACCOMPLISHMENTS

CONSERVATION TYPE



COMMUNITY TYPE CONSERVED



- Partners reported accomplishments on 347,754 acres of bird habitat.
- Accomplishments included habitat enhancement, habitat restoration and habitat protection.
- Partners reported $144 million dollars spent, averaging $414 dollars/acre.

See JV Habitat Accomplishment Report for more detail.

PROJECT COMMUNICATIONS

2012 SCIENCE OFFICE PUBLICATIONS

Brasher M.G., M.J. Petrie, G.J. Soulliere, and J.M. Tirpak. *In review*. **How Does This Affect our Day Job? Joint Venture Perspectives on Conservation Planning Amid Scientific Uncertainty.** Ecology and Conservation of North American Waterfowl Symposium Proceedings (extended abstract, plus oral presentation), Memphis TN, USA.

Denton, J.C., C.L. Roy, G.J. Soulliere, and B.A. Potter. 2012. **Current and projected abundance of potential nest sites for cavity-nesting ducks in hardwoods of the north central United States.** Journal of Wildlife Management 76(2):422–432; DOI: 10.1002/jwmg.271.

Denton, J.C., C.L. Roy, G.J. Soulliere, and B.A. Potter. 2012. **Change in density of duck nest cavities at forests in the north central United States.** Journal of Fish and Wildlife Management 3(1):76–88; e1944-687X. doi: 10.3996/112011-JFWM-067.

Monfils, M.J., P.W. Brown, D.B. Hayes, G.J. Soulliere, and E.N. Kafcas. *In review*. **Breeding bird use of diked and undiked coastal wetlands in Michigan.** Journal of Wildlife Management.

Denton, J.C., C.L. Roy, G.J. Soulliere, and B.A. Potter. *In review*. **Nest site availability for cavity-nesting ducks in the Midwestern U.S.** Ecology and Conservation of North American Waterfowl Symposium Proceedings (extended abstract, plus oral presentation), Memphis TN, USA.

Dugger, B., M.G. Brasher, J. Eadie, J. Farrand, L. Naylor, M.J. Petrie, G.J. Soulliere, J.M. Tirpak, J. Vest. *In review*. **The science underlying winter conservation planning for waterfowl: evidence for food limitation and introduction to carrying capacity models.** Ecology and Conservation of North American Waterfowl Symposium Proceedings (extended abstract, plus oral presentation), Memphis TN, USA.

Monfils, M.J., D.B. Hayes, B.M. Kahler, and G.J. Soulliere. 2012. **Evaluating relationships between habitat variables and marsh bird use of Great Lakes coastal wetlands at multiple scales.** Michigan Natural Features Inventory, Report Number 2012-07, Lansing MI, USA.

NAWMP Writing Team. 2012. **North American Waterfowl Management Plan 2012: people conserving waterfowl and wetlands.** Canadian Wildlife Service, U.S. Fish and Wildlife Service, Secretaria de Medio Amiente y Recursos Naturales.

NAWMP Writing Team. 2012. **NAWMP Action Plan: A companion document to the 2012 N. A. Waterfowl Management Plan.** Canadian Wildlife Service, U.S. Fish and Wildlife Service, Secretaria de Medio Amiente y Recursos Naturales.

Soulliere, G.J., B.M. Kahler, T.A. Bowman, M.G. Brasher, M.A. Johnson, R.S. Holbrook, M.J. Petrie, J.L. Vest, and S.M. Slattery. 2012. **Process for developing the 2012 NAWMP map -- geographies of greatest continental significance to North American waterfowl.** North American Waterfowl Management Plan Science Support Team Technical Report 2012-1.

Soulliere, G.S., B.M. Kahler, and B.A. Potter. 2012. **Upper Mississippi River and Great Lakes Region Joint Venture Science Office 2011 Annual Report.** U.S. Fish and Wildlife Service, Bloomington MN, USA.

Soulliere, G.J., B. Loges, and E. 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.

Soulliere, G.J. and B.M. Kahler. *Draft*. **Harvest and hunting**, chapter *in* North American Scaup Conservation Plan. USFWS, Service Report.

2012 SCIENCE OFFICE PUBLICATIONS (CONTINUED)

Soulliere, G.J., B. Loges, and E. Dunton. *Draft.* **Midwest waterfowl monitoring during the non-breeding period: priorities and recommendations.** Journal of Fish and Wildlife Management.

Soulliere, G.J., B.M. Kahler, J.E. Austin. *Draft.* **Trends in scaup harvest and hunting community: implications for harvest management and sustaining scaup hunting traditions.** Wildlife Society Bulletin.

2012 SCIENCE OFFICE PROFESSIONAL PRESENTATIONS

Kahler, B.M. July 2012. **Results from the 2012 Midwest marsh bird monitoring priorities survey.** Presentation at the Midwest Bird Conservation and Monitoring Workshop, Milwaukee WI.

Kahler, B.M. and V. Cavalieri, February 2012. **Great Lakes Piping Plover: multi-scale habitat modeling.** Presentation to USFWS Region 3 staff, Bloomington, MN.

Kahler, B.M., V. Cavalieri, and F. Cuthbert, March 2012. **Predicting plover presence and productivity: a case study from the Great Lakes.** Presentation to the Michigan Bird Conservation Initiative Workshop, Tustin MI.

Kahler, B.M., G.J. Soulliere, and R.L. Pierce, November 2012. **Ranking monitoring priorities for secretive marsh birds across the Midwest.** Poster presentation at Upper/Western Great Lakes Waterbird Meeting, Sault Ste. Marie MI.

Kahler, B.M. and G.J. Soulliere, July 2012. **From AMBI to YERA: Ranking monitoring priorities for secretive marsh birds across the Midwest.** Poster and oral presentation at the 2012 Midwest Bird Conservation and Monitoring Workshop, Milwaukee WI.

Luukkonen, D.R., E.N. Kafcas, B. Shirkey, S. Winterstein, and G.J. Soulliere. May 2012. **Impacts of Dreissenid Mussels on diving duck distribution and abundance on Lake St. Clair.** Waterfowl and Wetlands Research, Management and Conservation in the Lower Great Lakes: Partners Forum, Long Point Waterfowl, Port Rowan, Ontario, CAN.

Soulliere, G.J. January 2012. **Focusing resources on important landscapes: achieving NAWMP 2012 recommendation 6.** Presentation to the North American Waterfowl Management Plan Science Support Team, Charleston SC.

Soulliere, G.J. July 2012. **Revising the North American Waterfowl Management Plan geographic significance map.** Presentation to the Mississippi Flyway Council Technical Section, Peoria IL.

Soulliere, G.J. July 2012. **Monitoring waterfowl in the Midwest during non-breeding periods – results of the 2011 CBM workshop.** Presentation to the Mississippi Flyway Council Technical Section, Peoria IL.

Soulliere, G.J. August 2012. **Collaborative conservation and monitoring of Midwest secretive marsh birds – Workshop Review.** Presentation at the 2012 Midwest Bird Conservation and Monitoring Workshop, Milwaukee WI.

Soulliere, G.J. August 2012. **Monitoring non-breeding waterfowl in the Midwest – 2011 workshop.** Webinar presentation to the Integrated Waterbird Management and Monitoring (IWMM) Science Team.

Soulliere, G.J. August 2012. **The 2012 NAWMP Revision is signed: How can the JV help implement it?** Presentation to the Upper Mississippi River and Great Lakes Region Joint Venture Management Board, Green Bay WI.

Soulliere, G.J. and B.M. Kahler. January 2012. **Revising the North American waterfowl geographic significance map.** Presentation to the North American Waterfowl Management Plan Science Support Team, Charleston SC.

Soulliere, G.J. October 2012. **Upper Mississippi River and Great Lakes Region Joint Venture: establishing waterbird research and monitoring priorities.** Presentation at Western / Upper Great Lakes Waterbird meeting, Sault Ste. Marie MI.

RESEARCH AND MONITORING

The JV Science Team developed and prioritized a list of research and monitoring needs for each primary bird group when completing the JV Implementation Plan. Science partners use this list to generate proposals for projects that fill information gaps and test assumptions stated in the Implementation Plan; lists of evaluation needs are periodically updated as new information is obtained. The following projects had significant support from the JV in 2012. All will provide useful information for better targeting bird habitat efforts and improving JV conservation strategies.

COMPLETED PROJECTS

Dunlin stopover ecology and shorebird management at inland sites in the Great Lakes region

This project examined the stopover ecology of Dunlin during spring and fall migration at Shiawassee National Wildlife Refuge in Michigan's south-central Lower Peninsula. Researchers assessed bird abundance, timing of migration, and movement patterns within the refuge both currently and historically. They also determined the average number of days these birds stayed in the refuge and quantified habitat use and prey availability. Investigators provided recommendations for best management strategies using water level manipulations to produce stopover sites with high value to Dunlin and other shorebirds during migration.

Distribution and abundance of diving ducks on Lake St. Clair, Detroit River, and western Lake Erie

Using historic and current diving duck survey data, researchers compared Scaup, Canvasback, and Redhead abundance and distribution on U.S. and Canadian waters of the Lake Erie region with emphasis on Lake St. Clair. Scientists discovered a relationship between Dreissenid (zebra and quagga) mussels, increased water clarity, and human disturbance, but with some species-specific differences. Increased water clarity following mussel invasion resulted in expansion of submerged aquatic plants and increased canvasback use of new vegetation zones in the U.S. However, when boat traffic was higher in the U.S., canvasbacks shifted to Canada and little human disturbance. The JV planning assumption that food is the most limiting factor for non-breeding waterfowl appears to have been invalidated at this critical diver staging area.

Stopover ecology of American Golden-Plover

This study addressed basic questions associated with the stopover ecology of American Golden-Plovers in agricultural landscapes of central Illinois and western Indiana during migration. Researchers determined the period plovers were present in the area, average stopover duration, and whether molting occurred during their stay. Migratory behavior such as arrival and departure timing and synchronicity, and the departure direction was examined. Habitat use was also investigated to determine if specific fields were preferred based on crop type, agricultural practice (tilling technique), and amount of food available. These data were synthesized to determine factors most limiting American Golden-Plovers stopping over in the Midwest; investigators provided management strategies to improve stopover habitat.

ONGOING PROJECTS

Evaluating factors limiting blue-winged teal production and survival in the Great Lakes region

Scheduled Completion: 2013

This study was developed to better understand survival, vital rates, brood size and recruitment success, and habitat characteristics of breeding Blue-winged teal in the Great Lakes region. Project location and emphasis is Bird Conservation Region (BCR) 23, the Prairie Hardwood Transition. Female teal were captured at two locations in Wisconsin and marked with radio transmitters from 2007-2009 and again in 2012. Researchers tracked these birds and their use of wetland and upland communities on a daily basis. Project results will help JV partners understand habitat characteristics associated with successful vs. unsuccessful females and will be used to refine the JV Blue-winged Teal habitat model.

Habitat use by spring migrating landbirds within the Great Lakes basin with special emphasis on shoreline habitats

Scheduled Completion: 2014

Past research suggests landbird migrants concentrate along the Great Lakes shoreline during both spring and fall. However, our understanding of the types of coastal habitat used by landbirds and factors driving these bird-habitat relationships is limited. This study will map landbird distribution to identify important stopover areas, quantify broad-scale patterns in migration phenology, as well as flight height and direction, and model how landscape-level factors influence migrant distribution. Investigators will also conduct habitat surveys to determine which factors most influence specific bird species and use stable isotopes to determine the extent of aquatic insect foraging taking place. Results from this project will improve our understanding of migrant habitat selection throughout the Great Lakes Basin, allowing JV partners to better predict landbird habitat needs and target conservation areas.

Aerial observer's identification guide and training manual for surveying North American waterfowl

Scheduled Completion: 2014

The objective of this project is to create a high quality multi-media guide to improve aerial waterfowl identification and standardize survey training and protocols. It focuses specifically on aerial surveys with a "top-down" perspective of birds and will include all North American waterfowl and some waterbirds routinely encountered during aerial surveys. High resolution digital still photos and high definition video will be used to highlight key features for waterfowl identification and to clearly illustrate techniques and protocols of primary waterfowl surveys. The overall project goal is to improve accuracy of waterfowl monitoring, which is critical to effective waterfowl management.

Red-headed woodpecker habitat use in upland and floodplain areas
Scheduled Completion: 2014

Most conservation plans for the Red-headed woodpecker include a goal of doubling the population. However, information about factors influencing habitat use, demography, or the relative contribution of different habitat types to state and regional populations are almost entirely lacking, especially in the Midwest. This project will use radio-telemetry to determine home-range size required for breeding pairs in upland and floodplain habitats, habitat and landscape factors influencing home-range size, and habitat features important for habitat selection at multiple spatial scales. Results will provide information critical to understanding the potential of existing habitat for supporting Red-headed Woodpeckers within Illinois and throughout the Midwest, as well has how management may affect this potential and contribute toward state and regional population goals.

Foraging ecology of migrating shorebirds in the Lake Erie basin
Scheduled Completion: 2014

A primary assumption used in the JV Shorebird Habitat Conservation Strategy is that food energy is a potentially limiting resource to migrating shorebirds during non-breeding seasons, particularly during spring. This research aims to obtain empirical evidence to test this assumption. Researchers will examine changes in body mass of individually banded shorebirds to estimate rates of change in body mass per day of migration stopover and estimate stopover duration of migrating shorebirds. Invertebrate abundance and habitat conditions at banding sites and distribution, movements, and habitat use of color-marked birds will also be assessed during autumn and spring migration.

Waterfowl abundance and productivity in the Great Lakes: assessing and refining biological models for conservation planning
Scheduled Completion: 2015

In the JV region waterfowl abundance is estimated by various methods: breeding surveys, BBS data, or banding and harvest data. Inconsistencies 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 will evaluate roadside surveys as a cost-effective alternative to obtaining basin-specific data on waterfowl pairs. Researchers will assess 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. Project results will be used to develop enhanced suitability models for common waterfowl species of the region and will allow JV scientists to test existing models and develop more effective conservation targeting maps.

Audubon Prairie Bird Initiative:
Scheduled Completion: 2015

As a guild, grassland birds have had the most precipitous population declines of any 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. Habitat management for grassland-obligate species is therefore of highest conservation priority. Federal, state, and NGO's have targeted grasslands for purchase 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 answer 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. Additionally, survey data can be provided to landowners to illustrate the importance of their land to bird conservation.

Missouri marsh bird monitoring program
Scheduled Completion: 2013

Several species of rail are of conservation concern throughout their ranges and breeding rails are considered "imperiled" in Missouri. Two of these species (Sora and Virginia Rail) are hunted during the migration period with 25% of harvested rails in the Mississippi Flyway being taken from Missouri. However, information on marsh bird abundance and population trends is almost entirely lacking. The goal of this project is to monitor marsh bird species (King Rail, Yellow Rail, Virginia Rail, Black Rail, Sora, and American and Least Bittern) with a history of occurrence in Missouri by implementing the North American Marsh Bird Monitoring Program. This study will address lack of data for these secretive species and provide a foundation for future hypothesis-driven monitoring and management. Results will contribute to long-term monitoring efforts of marsh birds occurring at regional, state and local scales and will provide information on abundance, population trends, and management impact for marsh birds of conservation concern in Missouri.

GOALS AND FUTURE EFFORTS

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

- Continue to collaborate on research and monitoring critical to regional bird conservation. Key science partners include the JV Science Team, North American Waterfowl Management Plan Science Support Team (NSST), Midwest Regional Coordinated Bird Monitoring (CBM) Team and related Marsh Bird Working Group, and science partners associated with the Upper Midwest / Great Lakes and Eastern Tall-grass Prairie Landscape Conservation Cooperatives (LCCs).
- Develop and refine GIS planning products as new information is acquired from projects funded by the JV. Priority focus will be enhanced bird habitat delivery by partner organizations.
- Implement effective monitoring necessary to measure JV influence and goal achievement and to understand net changes to landscapes (key bird habitats); expand monitoring effort of focal-species populations.
- Begin implementing the 2012 North American Waterfowl Management Plan which includes identifying and integrating regional waterfowl population and habitat objectives with ecological goods and services important to society.
- 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.

Long-term Goals (>2 years)

- Establish 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 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.

Sunrise at Seney National Wildlife Refuge