



A Workshop on the Monitoring, Research, and Management for Northern Forest Birds (BCR 12)

MARCH 4 – MARCH 6, 2015,
Marquette, MI

Vision: Our coordinated leadership in monitoring, research, and management actions ensures thriving, diverse northern forest bird communities across Bird Conservation Region (BCR) 12.

- We offer recommendations for monitoring and research protocols, data management, and study design specifically for Northern Forest Birds.
- We grow awareness of Northern Forest Bird monitoring and research programs, objectives, and techniques to support coordination and collaboration and help communicate success or needs for future research/monitoring.
- We collaborate with resource management groups on conservation strategies for Northern Forest Birds.

WEDNESDAY, MARCH 4:

Background on the Midwest Coordinated Bird Monitoring Partnership and Northern Forest Birds (BCR 12) Working Group – Katie Koch and Erin Giese

1. Midwest CBM Partnership focuses on the following states: IA, IL, IN, MI, MO, MN, OH, and WI
 - a. Since 2009, they have held eight regional workshops – serving as information clearing house for bird monitoring and conservation in region.
 - b. There are eleven active working groups.
 - c. Approach: an iterative, adaptive process that makes a difference on the ground.
2. Northern forest birds are a working group within the Midwest Coordinated Bird Monitoring Partnership.
 - a. Many BCR's across the region. Coniferous/hardwood forests. Warblers common to the BCR 12 region, as well as many migrant species.
 - b. History – started with Katie holding meetings with USFS
 - c. Point of the BCR 12 forest birds working group is to allow for larger inferences of bird populations in the region.
 - d. Priority activities: 1) shared objectives and methodologies, 2) investigate cause and effect relationships between management and birds, 3) expand use of MWADC, and 4) Develop online web community

Expanding, Sharing, and Using Northern Forest Bird Data in Management Decisions – Katie Koch

1. Avian Knowledge Network (AKN) originated in 2006 with NSF grant: www.avianknowledge.net. Goal is to merge science, people, data, and technology to enable bird conservation solutions.
2. Midwest Avian Data Center (MWADC) is a regional node of the AKN.
 - a. Data Life Cycle: **Capture** the data (metadata), **Maintain** the data over time (changes; different levels of access), **Analyze** (analyses of your data), **Deliver** (how can people use your data – are they maps? Or summary tables?)
3. Data Management System (8 steps)
 - a. Create a project; Assign protocols and/or create new protocols; Create sampling units; Add researchers and/or invite people to register (i.e., who has access to the data – you as the project creator have control to do that); Add events and observations; Proof events and observations; Assign AKN data sharing level; Analyze observations (exploring!)
4. There are three different roles in the data management system
 - a. Biologist (data enterer); Project Leader (powerful leader of the data; can grant access to people; you also determine when data are ready to be viewed and shared);
 - b. Analyst (folks who may have nothing to do with field work collection but get to use the data; example: Katie is entering Ottawa NF data from her thesis and will grant Erin access to the data)
5. Data Access Levels
 - a. Raw (unreviewed, unedited), clean (data edited by biologist), restricted (data not available to 3rd parties – for sensitive or rare species that people don't want to share location information), and five different levels (1 = tell people your data exist, all the way to 5 = full dataset available through an AKN node)
6. Analysis and Reporting
 - a. Histogram Tool – by species, collection, and geography (state, county, NWR)
 - b. There are also analyst tools (Analyst Tool) to summarize your observations, species richness, species abundance, etc.
 - c. There are also great decision support tools (DST) available!
7. Sneak Peek: New Midwest Avian Data Center website
8. Questions:
 - a. Can you also include weather/habitat data? Answer: Yes – these are considered site condition data and need to be described using a protocol.
 - b. What about veg data collection for the marshbird working group – Katie said that they are starting to create a veg data platform right now since this group collects veg data in exactly the same way, which will be very useful.
 - c. Can MWADC store non-location specific data? Answer: Yes, but not necessarily in the same way as the other data that have specific templates.
 - d. You can also include assessments of management (such as with indicators) if they are based on bird data.
 - e. Is MWADC is also recording zero detections at bird surveys? Yes, they are.
 - f. Are there data quality checks? Yes.

Accelerating succession through forest management strategies - Tina Hall

1. “Working Laboratory – The Two-hearted River Watershed (THR)”
 - a. Two-hearted River Watershed: 130,000 ac (200 mi²), 135 river miles, contains bogs, northern hardwood forest, Seney NWR
 - b. TNC purchased over 2000 acres in the Two-hearted River Watershed from the ForestLand Group (TNC is the second largest landowner in the THR watershed)
 - i. This land was part of the Commercial Forest Act (CFA) ; Land uses = recreation and timber management – hardly anyone lives here
 - ii. In the northern hardwood forest part of the THR, it is a maple monoculture because loggers cleared every species except maple. So these forests are extremely NOT diverse, making it very vulnerable if anything attacked maple. To get an idea of how bad it is, there were 2 yellow birch trees per 80 acres of THR forest. THR forest has suffered severely from beech bark disease!
 - c. Management Goals
 - i. Restore and enhance ecological integrity of forest
 - ii. Promote and protect local jobs and timber thru sustainable forestry management.
 - iii. Protect the THR and waters of the watershed.
 - iv. Establish partnerships and demonstrate practices.
 - d. TNC is used to preserving lands, but this time they wanted to try to accelerate forest succession (rather than leaving it up to nature for the next 100 years) through different management strategies. They wanted to restore the ecological function of the forest using Key Ecological Attributes (KEA), which are a way to evaluate the managed forest.
 - i. Have 117 bird sampling points in the forest, randomly placed in the hardwood stands of the forest. It is WAY too soon to be able to evaluate the effectiveness of these strategies. Preliminarily, they have found that the 120 foot gap strategy seems to have the best effect.
 - ii. THR is FSC-certified (met 10 principals of FSC like environmental impact, management plan, etc.) – this is important because it makes their forest bird-friendly.
 - iii. http://maps.tnc.org/web_maps.html <-- cool data viewer to look at veg and bird plots, timber cuts
 - e. They have also been removing blockages in streams (culverts for ATVs) to improve connectivity, which added many more fish stream miles. Also received Upper Miss JV funding for OSFL habitat.



Review of Bird Conservation and Monitoring Throughout BCR 12

Upper Mississippi River and Great Lakes Region JV Conservation Planning – Greg Soulliere

1. JVs are regional-scale self-directed partnerships for bird conservation
 - a. Originally formed to accomplish goals of the NA Waterfowl Management Plan
 - b. But now, the JVs are “All-Bird” focused.
 - c. There are 18 JVs across the USA. Our JV is located in the Midwest (BCRs 12, 22, 23).
 - d. Management Board includes USFS, USGS, COE, BIA, FWS, Ducks Unlimited, etc.
2. Functions of JVs:
 - a. Move from continental goals and achieving them through partner coordination, planning and landscape design, and project development.
 - b. JV is made up of a management board (provides general program direction) and science team (provides mgmt. team with information on how to conserve birds).
 - i. Science Team consists of smaller teams: Waterfowl, shorebirds, waterbirds, and landbirds
3. Developed bird-group strategies (e.g., waterfowl, shorebirds) and all-bird implementation plan (2007)
 - a. Focal Species (Surrogate Species) are used to represent habitat types
 - b. How did they select them?
 - i. Population status and priority
 - ii. High economic importance (e.g., MALL)
 - iii. Represent a community type (guild of species)
 - iv. Good potential to monitor populations
4. JV Focal Species
 - a. Northern woodland bird: CAWA, WOTH, AMWO, GWWA, PIWA
 - b. JV State x BCR Assessments (available online at <http://www.uppermissgreatlakesjv.org/StateBCRs.htm>)
 - i. Purpose: Provide an update to people, particularly about new information about land cover types (used NLCD 2001, which is a bit dated) and recent landscape change.
 - ii. Compare key cover types to bird objectives.
 - iii. Provided management implications related to land cover trends and population and habitat objectives. They don't want to implement management for one species that negatively affects another.
 - iv. They evaluated land cover change in northern WI using NLCD 2001 and 2006.
 1. A lot of upland forest converting to wetlands (due to immediate water level changes in cutting forest), grasslands/hay/pasture, and shrub/scrub. A lot of this conversion occurred on private lands, not public!
5. Questions/comments:
 - a. It is important to choose forest bird focal species that represent *functions* of a forest ecosystem that is driving forest structure and change. Think about the importance of forest structure and disturbance to biodiversity, and don't forget about species that use coniferous habitats.
 - b. Upland species selected by the JV is limited. Need to include conifer species.

An overview of select BCR 12 bird monitoring projects – Katie Koch

1. Long-term monitoring programs
 - a. NA BBS, CBC, FIA, state gamebird, state natural heritage monitoring, international shorebird survey, MAPS, Hawkwatch, GL breeding colonial waterbird survey, etc.
 - b. Breeding Bird Atlases: MN is just about finished with their first atlas, MI has completed two atlases, and WI is starting their first
 - c. National Park Service Great Lakes Network Inventory and Monitoring Program; US FWS Inventory and Monitoring Program
 - d. National Forest Bird Monitoring (Superior, Chippewa, Chequamegon-Nicolet, Ottawa, Hiawatha, and Huron Manistee) has been going on
2. Newer monitoring programs?
 - a. eBird, Secretive marshbird surveys, owl/nightjar surveys, GL offshore waterbird surveys, Midwest Landbird Migration Monitoring Network
 - b. Katie asked the audience if she missed any
 - i. Crane counts; Whitefish Points Waterbird Survey; endangered species (PIPL, LETE)
3. In terms of this working group, the way for things to work is *coordination*!
 - i. Broader perspectives, scalable inferences, enhanced data and information, and greater confidence in our actions and results.

Integrated monitoring in BCRs (IMBCR): History, Design, Methods, and Products - David Hanni

1. IMBCR
 - a. Designed to meet partner needs at multiple scales
 - b. One of the largest breeding bird monitoring programs in the nation (~13%, >253mill ac)
 - c. Based on NABCI: Opportunities for improving avian monitoring
 - d. They had issues with vegetation stratification due to cover type change, west bark beetle, climate change, wildlife, etc. Birders also misidentified veg types.
 - i. Switched from transect-based data points to grid-based (within BCRs). By making this switch, they have been able to get better trend data across time, measuring bird density. Using Bayesian statistics. Hope to publish the results soon, and can present by the end of June 2015 if interested in a presentation.
 - ii. They have been able to collect data at smaller scales, making inferences at that level, but also roll up the smaller, local-scaled data to make larger, regional inferences.
 - iii. Bird Point Counts: 6-min point count, 10min intervals
 - iv. They are also conducting counts on private lands (ask for permission first, alert landowner of time of survey, and then follow-up with a bird list from their property and a gift). So far they have conducted surveys on 516 properties!
 - e. There are a TON of funding partners (>20): USFS, NPS, NWR, CO Parks and Wildlife, NM Game & Fish, JV, etc.). They are also collaborating with Avian Science Center, MT Natural Heritage Program, the Univ. of Montana, etc. Everyone is working together to share data and information, by using the Avian Knowledge Network and avian data management portal (Rocky Mountain Avian Data Center). Currently they have over 2 million records.
 - f. Benefits of this Coordinated, Collaborative Effort?
 - i. Increase collaboration
 - ii. Decrease monitoring costs

- iii. Ability to compare bird trend to habitat trend
- iv. Ability to compare local estimates to broader scale estimates
- v. Increases precision (can combine data across efforts)
- vi. Ability to focus management efforts using habitat and distribution maps

2. Questions

- a. Difficulties in protocol changes?
 - i. It wasn't easy...spent about a week in a room together to figure out how to coordinate. And over the long term it really was beneficial to be more coordinated!

Breakout Group Activity: Scope and Objectives

1. Geography:

- a. Canada already has a Bird Conservation Plan – we could easily coordinate with them, although it would be difficult logistically in a face-to-face manner. We don't want to leave them out but would rather phase them in with a basic discussion on what their objectives are, methods they are using, etc. But we also don't want to lose sight of what our focus is. Don't want to reinvent the wheel on both sides.
 - i. Not an issue if we fully work together but rather coordinate some if possible to make data sharing possible in the future. Data sharing is important.
- b. Leaning towards involving Canada sooner because that way we don't have to reinvent the wheel and it is better to work with them at the get-go.
 - i. Important to recognize the entire region because it is the boreal-transition zone, and we are going to see the front lines of climate change. So look at the entire region.
 - ii. Have a sub-committee feel out where Canada is at and figure out what they are doing and how easy it would be to work with them

2. Which species?

- a. Do we focus just on forest birds? Yes that makes the most sense because other groups are already working on them, unless there is a species lacking monitoring that is non-forest. We should choose focus species that are struggling for breeding habitat.
 - i. Should look at stressors and threats (mgmt. schemes, oversimplification of habitat, and invasive species) to species. Do we need to focus on species like GWWA that are well studied? Yes because we still need monitoring data.
 - ii. We want to select birds based on habitats.
 - iii. Breeding forest birds dependent on habitat/structure to make sure that habitat types are well represented (transition zones, barrens), and choose assemblage based on functional roles of the forest ecosystem.
- b. Focus more on the criteria aspect of it. Focus on structure and bird species guilds, NOT single species. There are limitations with single species indicators.
 - i. Think about habitat type, threats, transition pathways, realistic management options, and functional role/niche.
- c. Focus on breeding birds, but don't forget that there is migratory stopover habitat for those species that are vulnerable (blue category of Rachel Pierce's matrix).

- d. Prioritize those species that are not being monitored using current protocols and existing monitoring efforts.
 - e. Choose focal species that may be limited by factors in the breeding season (identify threats, then species).
3. Knowledge Gaps?
- a. Monitoring low density, patchily-distributed species.
 - b. Climate change effects (on landscape and species)
 - c. Future threats/issues to the “forest bird nursery” that is BCR 12.
 - d. Identify areas to protect and ensure habitat connectivity.
 - e. Comparing private v. public land management and effects on birds.
 - f. Does adequate breeding habitat infer adequate migratory stopover or wintering habitat?
 - g. Structural, spatial, and temporal (full avian annual cycle, within season habitat selection) habitat requirements, especially when trying to choose indicator species.
 - h. Incorporating land management and ownership will be a challenge. It is impressive that those at the Rocky Mountain have been able to coordinate with private land owners.

DAY ONE WRAP UP

1. **Geographic Scope:** Having a US-focused BCR 12 group would be easier but there would be good reasons to connect with Canada for climate change issues, data sharing, etc. We should keep the door open to Canada. We should at least start the conversations with Canada. Katie mentioned that she has already spoken to Canada and found out that they are interested. Also important to look at private lands and engage private forest land holding companies.
2. **Focal Species:** Agree to work on forest birds! Need to look at different forest types and successional stages. This has started a good conversation though. Do we only want indicators of these forest types or successional types? What about edge of range? Many have talked about what’s happening to birds on the breeding grounds (as opposed to migration and overwintering). Need to think about the threats to these birds by forest types. We should also work on species that are not well monitored or captured by other groups.
3. **Knowledge Gaps:** We made great progress on identifying knowledge gaps! Big one = inform effects of climate change on birds; having better information on patchily distributed birds; how do we build a resilient landscape; how do we manage for a full annual cycle of birds – are we an important landscape for overwintering birds? What about ownership and management strategies and how they compare between private and public landscapes (small woodlots or commercially managed forests)
4. **Closing Comments:**
 - a. It is been great to meet today. Getting to meet new people and get connected. We had some really interesting presentations starting with the broader scale and then narrowing down into our BCR 12 working group.
 - b. The day went really well. It has been needed to work on forest birds in this area, especially in the Great Lakes. We are on the front lines of climate change being in the boreal-transition zone. He is glad that attention has been brought to this region.
 - c. “Upper Midwest LCC Northern Forest Working Group” would benefit from collaborating with us to help them find more direction.
 - d. It is nice to have a group working on the northern forest birds when they actually live in the north woods.

THURSDAY, MARCH 5:

Identifying Best Practices for Monitoring Northern Forest Birds

Ten Steps to Successful Bird Conservation through Improved Monitoring - Katie Koch

1. Establish a clear purpose for monitoring (define the problem, identify and consult w/ stakeholders, and set a conservation goal [very important step – need to be very explicit], establish monitoring objectives, and set targets for power and precision in terms of statistics)
2. Determine if there is an existing program or protocol that meets your needs (avoid reinventing the wheel; try using the same programs or protocols for increased chances of data sharing; many resources on MADC, Registry of Midwest Bird Monitoring Programs; SE PIF Monitoring Evaluation Tool – bird monitoring evaluation tool – <http://evaluation.sepif.org/index.html>; start a new program only if it can be funded over time, addresses a need, and meets basic standards)
3. Assemble a team of collaborators w/ complementary interest, skills, and assets (avoid redundancy)
4. Summarize the relationship of target populations to other ecosystem elements, processes, and stressors.
5. Develop a statistically robust approach to sampling and data analysis.
 - a. ID procedures to analyze trend, occupancy, and/or ecological relationships.
 - b. Delineate sample frame (# of points, frequency).
 - c. Determine and appropriate method for selecting units.
 - d. Determine sample size requirements for meeting quantifiable objectives (i.e., ID imppt response variables and covariates)
6. Design standardized field protocols that minimize error and bias.
 - a. Screen observers, train observers, simplify methods, test protocol, obtain peer review. Mentioned Birder Certification Online.
7. ID or develop a data management system (MyMWADC!)
8. Implement the program (the fun part!)
9. Present results in formats that enable conservation decisions.
10. Use results to make better and more cost-effective management decisions.
 - a. Report your accomplishments. Increases public awareness and potential funding sources.

Lessons Learned from Long-term Forest Bird Monitoring Programs on GL National Forests -

Hannah Panci

1. Background and Goals
 - a. Chippewa and Superior NFs bird monitoring program started in 1991. Goals:
 - i. Detecting population trends
 - ii. Assess conservation status and habitat associations
 - iii. ID threats (disturbance and climate change)
 - b. Designed to be complimentary to BBS
 - c. Designed as proportionally-stratified random design to habitat acreage
2. Methods
 - a. 3 points per stand (>250m apart)
 - b. 329 stands sampled in 2014: 953 total point counts
 - c. 3-5 stands grouped into a 'compartment' (9-15 counts/morning)
 - d. 10-min unlimited distance point counts

3. Summary of Results
 - a. Chippewa: 64 spp were tested; 89% were stable or increasing
 - b. Superior: 81% stable or increasing
 - c. 85% of both Chippewa/Superior are stable or increasing
 - d. Lowland conifer species seems to be declining (OSFL, SWTH, YBFL, CONW)
4. A few things we have learned
 - a. Matsuoka et al. 2014 following Ralph et al. 1993, 1995
 - i. Can still compare the BBS
 - ii. Can always collect additional information in the field and then only use what you need to later. Makes data more useful and shareable.
 - b. Unlimited Distance Point Counts
 - i. Tendency of birders to heap birds outside 100m when they weren't actually
 - ii. >330,000 observations are outside 100m!! NOT just crows, jays, etc. are missed outside 100m, but GCKI, CSWA, OVEN, WIWR, and HETH
 - c. Testing and Training is really important.
 - i. 85% proficiency on 86 song test, hearing is tested, and there is a 3-day of field camp to standardize data collection
 - ii. Personnel turnover
 - d. Data entry/management
 - i. Data Entry: Double entry to ensure quality using and online entry system for data entry and error checking – also don't enter 2-3 days in a row - space it out
 - ii. Relational Database
 1. Using MS Access but have now switched to an online database tool
 2. Makes it easy to document how you use and manipulate it through time.
 - iii. Integrating processes – integrate database, data analysis into processes that can be iterated annually (statistical analyses, graph-making)
 - e. Utilizing the Data
 - i. Meeting with NFs and stakeholders annually - Ensure data are useful, direct connection between monitoring and management, and annual report for disseminating results/conclusions

MGRS and USNG as standard sampling and analysis grid - Ed Laurent

1. These recommendations have been endorsed by NABCI – use of MGRS and USNG in monitoring programs and project.
 - a. NABCI agencies have agreed to implement these standards throughout the continent.
2. Spatial grain – mismatches between where bird is detected, point center, area sampled for veg measurements, etc.
 - a. Dividing the landscape into equal area units helps reduce this bias or mismatch when sampling ecological data
3. Traditionally, each project has created its own independent grid
 - a. Makes data integration more difficult since custom grids rarely align
 - b. Solution = use grid standards (requires grid products that allow for variation, clipping to smaller areas, and be downloadable)
 - c. Many shorebird and waterbird groups are using EMAP hexagons. Problem – hexagons cannot be readily nested.
4. Square grid systems

- a. MGRS (global, available in GPS units, smartphone app) works fairly well, although you end up with zipper cells (RMBO has come up with some unique ways to tackle that); used for emergency purposes. Canada uses MGRS for their BBA (used throughout the country). Available at <http://mgrs-data.org>
- b. US National Grid (USNG) – used throughout the US, often as a snap grid for raster data. Available at <http://usngcenter.org/portfolio-item/usng-gis-data>
- c. These are essentially the same grid with a 2-m difference on the ground
- 5. Final version of Grid Recommendations available at <http://griffingroups.com/file/view/22261/standard-sampling-grids-for-avian-monitoring-programs-july-2013>
- 6. Griffin Group – “MGRS and USNG grid standards” – online web community for people to learn more about using grids and get help/recommendations
- 7. edlaurent@connectingconservation.org – contact him for questions.

Best practices for monitoring Northern Forest Birds: Integrated long-term bird monitoring and incorporating legacy data - Ted Gostomski

- 1. Great Lakes I & M Network (NPS) is one of 32 networks in the country; includes 9 parks.
 - a. Landbird monitoring had support within the parks; Ted’s role was to work on standardization, help with data management and provide other technical support.
 - b. Surveys varied in protocol, start date, etc. Lots of legacy data!
 - c. For the most part, the parks were following some version of the Ralph et al. protocol
 - d. It took some work to get each of the parks to collect the same base data in the same way.
 - e. Agreed to the following modifications:
 - i. Minute-by-minute data recording
 - ii. Detection type (singing, calling, visual, flyover, non-vocal)
 - iii. Distance measurements – used laser range finders (0-50m, 51-100m, >100 m)
 - f. As they are having turnover in long-term observers, they are requiring new people go through the Birder Certification program.
 - g. Central Database was developed through NPS (most parks had been using excel spreadsheets and access databases on their own computers)
- 2. US Fish and Wildlife Service
 - a. 2010 – funding for I & M initiative, similar to NPS
 - b. Rely on refuge staff to do the work
 - c. NPS Landbird protocol was developed in concert with Melinda Knutson’s Landbird Protocol for NWRS.
 - d. Working on standardized way to incorporate vegetation measures.
 - i. NLCD classification will be required going forward, with NVCS as a secondary option.
 - ii. Working towards large-scale vegetation mapping effort at refuges.
- 3. Questions:
 - a. Is the NF group collecting data similarly to NPS? Yes
 - b. One participant felt that 10-min was a LONG time to do a survey. He thinks you can complete more surveys and cover more ground if you keep the survey closer to 5-min. There is a publication on why longer surveys are a better choice than shorter ones.

Breakout Group Activity: Monitoring Methods and Integration

1. Monitoring Method Recommendations:

- a. Birder Certification Website
- b. National Sampling Grids (?)
- c. Enabling tablet and mobile device data capture
- d. Standard protocols
 - i. Unlimited distance to reduce observer bias (and flexible analysis)
 - ii. 10-minute count period still turns up birds after the initial five minutes (and it's especially valuable if you have put a lot of time into traveling to the point).
- e. Data Management Standards
- f. Library of Protocols – who's using what, and why?
- g. Clear objectives – guide protocol selection
- h. Consider your questions and landscape context.
- i. Use the 10 Steps and Matsuoka 2014 as a guide.

2. Shared Goals:

- a. Good idea, but we don't want to be coordinated at the expense of addressing unique needs and mandates.
- b. We want monitoring that has management applicability.
- c. Share success stories of how data have been useful (and to continue supporting these programs)
- d. Combining programs may help offset funding shortfalls or inform other questions/purposes.

3. Questions/Concerns about modifying existing programs

- a. What do you do with older data after changing a protocol? How to integrate for analysis, or publish and move on?
- b. Sampling Grids:
 - i. How to integrate existing programs into the grid?
 - ii. Phased approach for programs (feasibility analysis)
 - iii. How do we use a grid given the very heterogeneous landscape in BCR 12?
- c. Having statistical expertise/support – this seems to be a capacity gap in BCR 12
- d. Need a direct tie to management! We need to communicate the value of data/monitoring program to garner support.

4. Collaboration!

- a. Identify and connect around shared goals.
 - i. Tabulate goals/objectives to look for overlap and identify who wants to coordinate at a larger scale?
- b. Promote networking – seek new, non-traditional partners
- c. Coordinate non-game forest bird monitoring on stat lands (follow IMBCR approach)
- d. Identify research priorities to attract/fund independent researchers.
- e. Do we take a top-down or bottom-up approach?
 - i. Develop as a community from the bottom up (think Facebook)
 - ii. Create a platform for engagement instead of rigid structure.

Full Annual Cycle Climate Change Vulnerability Assessment for Migratory Birds of the Upper Midwest and Great Lakes Region – Tom Will

1. Migratory birds are complex – they are highly mobile – does that make them more resilient to climate change?

2. Other research has demonstrated that conditions on the wintering ground drives survival, abundance, and reproductive success.
3. Existing assessment tools don't account for full annual cycle, use year-round climate summaries from the breeding season, etc.
4. Most long-distance migrants spend ¾ of their life outside of the breeding season
5. Focused on Upper Midwest and Great Lakes LCC Geography
6. Assessment Framework
 - a. Background risk
 - b. Climate change exposure
 - c. Climate change sensitivity
 - d. Adaptive capacity to climate change
 - e. Migratory connectivity – BBL encounter database!
7. Well-documented rule set for each of the vulnerability categories.
8. Who's most vulnerable?
 - a. Red-necked Grebe, Forster's Tern, Whip-poor-will, Yellow-bellied Flycatcher, Worm-eating Warble, Caspian Tern, Nashville Warbler
9. What's driving vulnerability? Poor adaptive capacity (especially high breeding site fidelity)
10. CONCLUSIONS
 - a. We must include full annual cycle in conservation planning – especially for migratory animals
 - b. Ideally, used info on linked populations
 - c. Large information gaps on migratory connectivity remain
 - d. Very different patterns of migratory connectivity
 - e. Most species had medium vulnerability
 - f. Combined effect of background risk and climate change may exacerbate vulnerability for some species
 - g. Temperature increases will be most important in Great Lakes region; drying may be most important in Mexico and the Caribbean
11. Adaptive Management
 - a. Upgrade conservation status of some species
 - b. Prioritize conservation of habitat that's needed for highly vulnerable species
 - c. Prioritize conservation for species that winter in southeast US, Mexico and Caribbean; partner with conservation organizations in those regions

Managing for thriving, diverse northern forest bird communities – Case studies of successful decision support tools and conservation programs/practices in BCR 12

Partners in Flight Species Assessment and Population Estimates Databases – Tom Will

1. All of the JVs are the implementation units for bird conservation, and they are broad partnerships.
2. They receive direction from continental plans developed for waterfowl, waterbirds, landbirds, and shorebirds.
3. Partners in Flight: Helping species at risk, Keeping common birds common, Voluntary partnerships for birds, habitats and people, Paved the way in assessing vulnerability of birds
 - a. Assessment – vulnerability
 - b. Prioritization Scheme – different process than assessing vulnerability
4. Species Vulnerability Assessment
 - a. Size of population

- b. Size of breeding distribution
 - c. Relative Density
 - d. Size of non-breeding distribution
 - e. Assessment of threats (into the future)
 - f. Population trend
 - g. Regional Priorities
 - i. Specific rulesets exist for each level (species of continental concern in region, species of regional concern, species of continental stewardship in region, and species of regional stewardship).
 - h. This is a decision support tool for those people asking which species they should pay attention to with respect to vulnerability.
 - i. You can download the entire database as an Excel file for exploration on your desktop, or you can use the online tools.
5. PIF Population Estimates Database
- a. Estimates populations size from BBS data
 - b. Population size = sum (across BCRs)
 - c. Population estimates are probably lower than actual populations
 - d. You can use this to look at vulnerability and potentially the source of vulnerability

Forest Index of Ecological Condition Tool - Erin Giese

1. Objective – assess health of managed forests in western Great Lakes region
2. Method – quantify sensitivity of breeding birds to stressors and use bird occurrences to assess site condition (health)
3. Used to assess health of northern mesic forests in Great Lakes region
4. Bird-stressor relationships + Bird data (from 10-minute point count data) + Forest IEC Tool = Forest Health (Index of Ecological Condition; IEC) – score ranges from 0-10
5. Three steps to construct the model
 - a. Defined environmental reference gradient of condition (0-10) using a variety of landscape variables in ArcGIS
 - b. Bird data (n=949) across a variety of habitats and environmental conditions.
 - c. Quantify bird biotic response functions – they modeled over 100 species and selected 38 species most tied to northern mesic forests.
 - d. Calculate IECs for new hardwood forested areas using bird data – uses maximum likelihood model
 - e. Given what we know about bird species responses to disturbance, what's the most likely IEC of a forest that best fits an observed assemblage of bird species for an area?
6. Tool is available as an MS Excel spreadsheet or an R package – <http://www.uwgb.edu/biodiversity/forest-index>
7. Applications of Forest IEC Tool
 - a. Long-term forest monitoring
 - b. Establish FSC Certifications
 - c. Evaluate temporal and spatial changes resulting from ecological restoration projects
 - d. Wildlife management and conservation
8. Exploring model performance across western Great Lakes forests
 - a. Working with additional datasets from MN, WI, and UP to test the model from USFS, NPS, DNRs, Independent Researchers, etc.

An information exchange on wildlife in fire-dependent ecosystems of the Northern Lake States

– Shelby Weiss

1. LSFSC geography nicely overlays BCR 12
2. <http://www.lakestatesfiresci.net>
3. Knowledge gaps assessment was done of regional science information – lacking data linking fire details and effects to wildlife use of fire-dependent ecosystems
4. Fire Dependent Ecosystems
 - a. Created or maintained by fire (fire regime influences ecosystem function and processes which in turn influences composition of plant and animal species)
 - b. Upland forests, woodland-savannas, wetlands, etc.
5. Fire-dependent wildlife – distribution and abundance was historically or is currently linked with fire-dependent ecosystems – preference for vegetation patterns that emerged from fire
6. Identified fire-dependent vertebrate species – 46 birds, 15 mammals, and 13 reptiles
 - a. 14 of these species are hunted or trapped in at least one of three states
 - b. 20 of the species are state-listed species
 - c. 63 are SGCN
 - d. Six of these are Surrogate Species in the UMGL LCC
7. Information Exchange – now that they have identified species, now what?
 - a. Contribute citations
 - b. Share protocols and findings of inventory, monitoring, and research efforts.

Delivering conservation for young forest species on public and private lands - Amber Roth and Callie Bertsch

1. Conservation delivery begins with a clear vision
 - a. What is the desired outcome?
 - b. Who is involved?
 - c. Where will this be implemented?
 - d. What will be implemented?
 - e. How will it be implemented?
 - f. How will success be measured?
2. Young forest = forests dominated by seeding/sapling trees or shrublands, generally less than 20-years post-disturbance
3. Under Cover – Wildlife of Young Forests and Shrublands
4. Upper Great Lakes Young Forest Initiative = BCR 12 and 23 (transition from single species focus on AMWO to multi-species focus)
5. Also recognizes that young forests are important for mature forest associates too.
6. Making responsible choices
 - a. Erosion may be a problem
 - b. Avoid vernal pools and ephemeral wetlands
 - c. Avoid stands of high quality hardwoods
 - d. Don't want to negatively impact TES species
 - e. Manage young forests within the context of balanced age classes and forest types across the landscape
7. AMWO and GWWA focal areas have been identified
8. Need to differentiate between quantity (target = private lands) and quality (target = public lands)
9. Started with a Demonstration Area approach in Wisconsin; public lands have done a great job of creating young forest habitat and using best management practices.

10. Six-county pilot project in North Central WI in 2012 focused on private lands – now renamed and expanded to WI Young Forest Partnership
11. Lake Superior Landscape Restoration Partnership – objectives include fuels management, improving water quality, coaster brook trout, young forest species (GWWA, KIWA, STGR)
12. Success =
 - a. Clear vision and goal
 - b. Landscape approach
 - c. Integration across ownerships
 - d. Broad-based partnerships
 - e. Regular, clear communication
 - f. Strong leadership and organization
13. Callie Bertsch – focused on Northern Wisconsin private landowner
 - a. Delivering conservation private lands requires partnerships, outreach and implementation
 - b. Working towards a common goal – each partner provides unique opportunities for delivering conservation.
 - c. Conducted a survey and had a strong public response
 - d. Her job is really focused on education (after successful outreach) – simplify the best management practices
 - e. Funding available to create wildlife habitat on private lands – sometimes her role is to advise people who already have funding.
 - f. Make funding available to new landowners.
 - g. Site visits are invaluable for public relations and sustaining private landowner engagement

Keys to successful conservation of the federally endangered Kirtland's Warbler - Christie Deloria

1. Fine-filter approach to conservation (very species-focused)
2. KW 101 - Habitat
 - a. Christmas tree-sized jack pine stands – used to be regenerated naturally by wildfires
 - b. With fire suppression and increasing housing development in these fire-dependent areas, we have shifted to man-made plantations for KW
 - c. Unique collaboration among USFS, DNR and USFWS
3. KW 101 – Cowbird Parasitism
 - a. Intensive cowbird removal program, currently headed up by USDA Wildlife Services
4. Breed in northern WI, northern MI and Ontario; wintering in the Bahamas
5. Since 2001, the population has been above (and stayed above) the recovery goal.
6. It's a conservation reliant species – requires human intervention and actions to survive
7. Blazing a new trail in the ESA – public/private partnership to maintain a species once it's no longer listed.
8. KW Conservation – looking ahead
 - a. Kirtland's Warbler Alliance – group recently formed to advocate for the species and keep a priority for agencies and public
 - b. Dedicated Fund – to help offset the cost of the cowbird program once recovery dollars are no longer available
 - c. Agency Conservation Plan & Communications – getting land management agencies to make commitments into the future once the ESA protection goes away
 - d. Conservation Team

9. Keys to success
 - a. Thinking long term – look for the base hits (KW story has occurred over 40 years)
 - b. Power of Partnerships
 - c. Dedication of Individuals
 - d. Vision and Plan
 - e. Innovation

Breakout Group Activity: Developing successful bird conservation partnerships and decision support systems in BCR 12

Guidance on creating a successful Decision Support Tool – Tom Will

1. DSTs are the bridge between monitoring and management (help to integrate monitoring into management and explore cause and effect relationships between management decisions and bird community responses)
2. Recipe = science + people + data + technology (all provided by a good team of people)
3. Technology (MWADC provides this)
 - a. WE NEED A CONSERVATION QUESTION!!! There needs to be a decision (who makes the decision, what the decision is, when is it made, how is it made, etc.)
 - b. Support = data, science
 - c. Tool = not the decision; something that is used to help make the decision – a step towards a good decision
4. We want decisions to be transparent, defensible, based on good science, etc.
5. Engagement of decision makers and users in development of DST
6. Follow-through, training, and adaptive learning – it needs engagement with your user group – leads to tool improvement
7. Birds are GREAT INDICATORS of forest state and condition

How do we provide effective bird conservation decision support in BCR 12?

1. Raise awareness of existing tools (revisit the Forest Bird Habitat Matrix for WI); our working group could provide outreach and training for existing DSTs.
 - a. Using tools such as IEC and put together a report to reach out to land managers (State of Birds in BCR 12). Create BMPs and easy-to-use handouts from DSTs.
2. Talk to decision makers – find out what decisions are being made to potentially help those in making better decisions.
 - a. Identify the messengers best to reach out to decision makers
 - b. Integrate bird objectives with other multi-objective DSTs
 - c. Determine if scale of DST relate to scale of land management questions.
3. Solicit broad support from other groups to build partnerships
 - a. Need for an MOU to keep group on task
 - b. Have a sub-group focus on fundraising or grant writing
4. Centralize all the data being collected into singular database (MWADC)
 - a. Long-term – bring a position on to do data analysis which could then work with others in tool use/share data
5. Parcel prioritization tool – show us what lands are most important to focus work on/acquire.

FRIDAY, MARCH 6:

DAY TWO RECAP

1. **Monitoring Methods and Integration:**
 - a. Birder certification is a key practice;
 - b. Endorse 10 steps as programs get developed;
 - c. Directly tie to land management;
 - d. Some interest in national sampling grid (though concern over heterogeneity of landscape in BCR 12);
 - e. Identify and connect around shared goals.
2. **Successful Bird Conservation and DSTs:**
 - a. Role in decision support – communication could be key to working group; role of group could be simply to share what tools are available and help to train for use so land managers can adopt.
 - b. MOU (which surrounds the goals/objectives already established) – to create a balanced structure; 1 vote/organization.

Workshop Outcomes: Sustaining the Northern Forest Birds (BCR 12) Working Group

Group Discussion about Vision statement:

1. Review of vision statement – include something related to dissemination of information not just to our organizations; include partnership and support as part of vision statement. Include more groups – landowners, other organizations.
2. Maintain an emphasis on management and science!
3. There is some need from organizations to get more information about protocols/methods (clearing house of protocols/methods). Help smaller organizations identify how data are being used (BMPs, for example).
4. Include boreal hardwoods transition zone into vision instead of BCR 12. Hard to understand what BCR 12 is so habitat info could be more meaningful. Boreal transition forest may be more appropriate than boreal hardwood forests.
5. We are more than just communicators – we are also doing monitoring, research and management. The purpose of the overall group is to provide support.
6. “To facilitate effective interactions among diverse partners engaged in monitoring, research and management in service of forest birds in boreal hardwood forests.”
7. Don’t want to lose coordinated and leadership from vision b/c they are key to statement.
8. Keep vision statement broad – put the details in the niche objectives
 - a. Suggestion – review the list of projects and tasks that come out of this meeting and then revise niche objectives accordingly.

Question 1: Identify project ideas that emerged to focus on 2015-2016.

1. Decision tree or organizational tree of protocols (or online survey) (Tom Will by May 2015)
2. Create a list of existing monitoring projects within the BCR with defined metadata (Katie Koch, 15 April 2015)
3. Generate a list of focal species that are not well monitored (Skye Haas, April 30, 2015)
4. Have an online discussion forum where folks can ask questions for help
 - a. We already have a discussion forum on the working group page.
 - i. Have to be a member of the MCBMP webpage and have to be a member of the BCR 12 working group in order to participate in the discussion (though everyone can see it)
5. Generate a “needs” list of what is needed for bird monitoring in this region.
6. Generate a bibliography of bird monitoring papers specific to BCR 12 (Rich Staffen will take lead).
 - a. Good idea to put live links on the BCR 12 working group page (have to be 5MB or less)
7. Conduct a capacity assessment to identify different roles for organizations within the working group:
 - a. Provide monitoring guidance
 - b. Develop best management practices
 - c. Advocacy for issues and funding
8. Host regular webinars (perhaps quarterly). Katie suggested having a regular webinar series with the MCBMP and she'll have each working group give a webinar. This will attract attention.

Question 2: ID priority outcomes and next steps

1. Publish workshop materials (end of March 2015 – Katie will summarize notes; Erin will put together presentations)
2. Develop key talking points to leadership (Planning Team – end of March 2015)
3. Develop protocol structure and tool (Tom Will – will put a draft online and open it up to discussion forum on BCR 12 working group page)
4. Investigate connecting with Canada (Tom Will)
5. Design leadership team – see Question 3 below
6. Investigate the national sampling grid (Katie Koch – will ask Ed)

Question 3: ID leadership/coordination structure and ID the major players involved.

1. One coordinator (possibly only part time)
2. Have an MOU in place that helps us form a task-oriented steering committee.
 - a. Balanced representation; one vote per organization
3. Have WBCI staff member do task.
 - a. Maybe a good idea.
4. Nest in UMRGLR JV? Get money from groups such as LSFSC, LCC, JV, etc.
5. Discussion: Do we find the coordinator first or get a steering committee together? Ted (followed by everyone else) said we should get the steering committee together first using existing people involved in this effort and then seek out a coordinator. This is especially true because we haven't yet defined our group extremely clearly.

Question 4: Determine frequency of future meetings/calls/webinars/etc.

1. At first, people agreed that we announce calls and webinars on the working group page
2. Interim Coordinated Steering Committee: multiple states and agencies/big players and seek representation of those (e.g., USFS, FWS, universities, TNC, DNR) – Form this by the end of April
 - a. Katie, Erin, Dave, Bob (?), Peg (?), Gary Palmer, and Skye Haas have volunteered to participate.
 - b. We need to contact others not present today to determine if they are interested.

Question 5: How should this group report out on this workshop to influential decision makers and organizations?

1. Develop talking points to help report to decision makers.
2. Create expectations for organizations / working group.
3. How should we generate interest in this group, particularly within organizations, to get people on board?
 - a. A good way to do it is put together material (one-page document – or a decision support tool) that explains the advantage of coordinating and working together rather than alone.
 - b. It is also important that those who are members of this group be their own cheerleaders to their own agencies.

Question 6: What did participants get out of this workshop?

1. Amy Eagle: Will find tools from the MCBMP and this group would be very useful. We need to send out materials and generate interest.
2. Dave Fehringer: Glad to meet people he has been emailing. Interested in coordinating with people in this effort for his work.
3. Lauren Romstad: She really hopes that this group can continue moving forward because she needs support and help for the Ottawa NF bird monitoring. Likes MWADC being online and finds it will be helpful. It is nice to hear that people are working towards standardizing protocols.
4. Skye Haas: Has spent a lot of time doing bird monitoring work and has acquired a lot of thoughts on this subject so he likes that there is a group for which he can offer his opinions to. He really appreciates it. He wants to share the knowledge he has with others.
5. Gary Palmer: He doesn't have any formal affiliation with an organization and has developed a better understanding of agencies, so he learned a lot. He is leaving the meeting with more questions, which is a good thing. He wants to find a way to fit in with a group like that.
6. Tom Johnston: He has a much clearer understanding of this group as well as the resources that are available.
7. Hannah Panci: She didn't know much about this effort before coming but is excited to be a part of it through NRRI.
8. Tom Will: He is very optimistic for this group.
9. Kari Hagenow: Personally, she had explored the MWADC briefly but now has a better understanding of the MCBMP and working groups. She is thinking about how TNC can contribute and be a part of this group. She is excited to participate in the NWR network of bird monitoring.
10. Ted Gostomski: His thinking has changed regarding his database. He is excited to put data into the MWADC!! A big take-home message he got was thinking about birds' full life cycles.

11. Ed Pike: He learned a lot about databases and would like to investigate them more. He would like a repository of banding data that the BBL does not accept. Katie says that conversations like that are starting!
12. Jo Thurber: Good to learn more about MWADC. Much prefers in-person meetings because you can only get so much out of webinars and calls.
13. Rich Staffen: We get frustrated and concerned about birds. But it highlights the lacking information on other vertebrates like herps.
14. Dave Grosshuesch: When he got involved with this planning group, he wasn't sure where it was going to go. He is excited about the energy there is out there regarding bird monitoring. It was great to meet a lot of people that he didn't know very well and those whom he didn't know at all.
15. John Stuh: He was very surprised about the enthusiasm for this group, which is nice to see. But he also sees that this group has a lot of work to go.
16. Carol Stuh: She didn't understand the extent of how much bird monitoring efforts have grown. She was impressed by the tools, protocols, and people and how everyone is tied in. She likes hearing people talk about more than just birdwatching but using them as tools to look at forest condition.



*The **Northern Forest Birds (BCR 12) Working Group** was established in 2014 to provide coordinated leadership and guidance in monitoring, research and management actions that ensure thriving, diverse northern forest bird communities.*