North American Ornithological Atlas Committee Meeting

AOS & SCO-SOC Joint Conference | August 8, 2023 9:00–16:00

Attendees

- Julie Hart, New York Breeding Bird Atlas III
- Gabriel Foley, Maryland & DC Breeding Bird Atlas 3
- Allisyn-Marie Gillet, Indiana Department of Natural Resources
    - Planning an atlas to begin in 2025
- Ashley Peele, Virginia Breeding Bird Atlas 2
- Nick Anich, Wisconsin Breeding Bird Atlas 2
- Mike Burrell, Ontario Breeding Bird Atlas 3
- Catherine Jardine, Birds Canada
- Kaelyn Bumelis, Ontario Breeding Bird Atlas 3
- Carol Foss, New Hampshire Audubon
- Masanori Tatani, Tohoku University, Japan
- Chris Elphick, Connecticut Bird Atlas
- Amber Wiewal, Pennsylvania Breeding Bird Atlas 3
- LeeAnn Latremouille, Saskatchewan Breeding Bird Atlas
- Ian Davies, eBird Project Coordinator
- Laura Kearns, Ohio Breeding Bird Atlas 2
- Jenna McDermott, Newfoundland Breeding Bird Atlas
- Catherine Dale, Newfoundland Breeding Bird Atlas
- Chris Regan, Willistown Conservation Trust
- Adrienne Leppold, Maine Bird Atlas
- Evan Adams, Maine Bird Atlas
- John Carpenter, North Carolina Bird Atlas
- Scott Anderson, North Carolina Bird Atlas
- Charles Francis, Environment and Climate Change Canada

Introductions

- Round-robin style
- Name, Atlas connection, and favorite/cutest baby bird (lots of shorebirds!)

Workshop overview

- Workshop vision, goals, and outcomes
- Workshop etiquette

Role of atlas projects in the future

- Big picture, why the expense and effort of an atlas is still worthwhile
- What is the relevance and value of atlases that other projects don't already provide?
    - Arguments why Atlases are no longer necessary
        - We are in the era of big data (eBird)
        - If we can modify birder behavior and get effort in low-effort areas, atlases may not be needed (this perspective may be biased towards smaller regions with higher population density); birder density impacts usefulness of eBird data without atlas data
        - <u>Action: Investigate whether our assumptions about the need to spread effort out are true</u>
    - Arguments why Atlases are still necessary
        - Atlas efforts get people to places that aren't normally birded, e.g., northern Canada
            - But this doesn't mean we need to do atlases the same way
                - CT did their Atlas in 3 years
                - If had a rolling atlas, could crank up effort every 5th year
            - <u>Action: Investigate how Atlas effort influences ecological modeling? Does it improve it? Is it worth the cost?</u>
        - Atlas data have been used for a wide range of projects because they are a snapshot in time
            - <u>Action: Look at data uses across Atlas projects</u>
        - If we had a rolling atlas, could keep people engaged more and maintain coverage in more remote areas
            - Should NatureCounts leave portals open?
            - BTO has atlases and then in intervening years has other projects for volunteers to stay engaged
            - Could have focal species during inter-atlas period to help with volunteer retention
        - Atlases show different population trends than BBS and eBird data
            - <u>Action: Investigate which datasets give more accurate trend results</u>
            - BBA and BBS have a different set of skills and interest level, so using BBA as a way to recruit BBS volunteers may be of limited value; however, this may not apply as much to younger birders
        - Atlases emphasize behavioral observations, which influences community priorities

        - Get point counts at standardized locations that can be sampled again in the future
        - Fill temporal gaps; summer months have less birding
        - Atlases provide more breeding evidence and phenelogy information (than passive eBird use)
            - But do we use code information? Yes, see “Uses of atlases” section below
            - Not many studies investigate if breeding codes are necessary
                - Point counts and nesting data give very different results, e.g., Saltmarsh Sparrow studies in Connecticut
                - <u>Action: Ideas for Data Analysis Working Group to investigate</u>
                    - Compare all codes vs just confirmed codes
                    - Difference between early/late season codes (i.e., late season singers more likely not to have a mate)
                    - Is there a threshold at which all codes are of value?
                        - Confirmed codes generally have a different value than other codes in models
                        - S7 may not be valuable for Saltmarsh Sparrow but other probable codes useful
                    - Are possible codes useful in a more historical perspective?
                    - Is there value in having breeding vs behavior codes?
                    - Is there a big psychological process that volunteers tap into with upgrading codes?

Uses of atlases

- Brainstorming session (extant and potential new uses)
    - Examples of usage
        - Legal protection
        - Critical habitat identification
        - Environmental assessment
        - Breeding phenology
        - SWAP planning
        - T&E listing updates
        - Changes in range (numbers increase and increase and then breed and range expansion), GWWA contraction
        - Provides richer eBird data after project ends (more codes added by public going forward)
        - Converts listers to observers
        - Education and outreach for atlasers
        - Convert people to care more about the environment

        - Provide technical guidance to projects
        - Improve understanding of bird identification of fledglings, fledgling sounds, and female songs
        - Improve understanding of phenology, habitat preferences, and community assemblies
    - Main categories of usage
        - Land management and regulatory review
        - Conservation
        - Environmental awareness and advocacy
        - Outreach and education
        - Policy making and legislation
        - Biological understanding and research

Pooling data for regional analyses

- What data is needed for a project to be included in large-scale analyses?
    - What do we want to model/investigate?
        - Distribution
        - Abundance
        - Breeding phenology
        - Climate change impacts
    - How do we make sure new atlases are compatible?
        - Have standardized block completion guidelines
            - Mostly for maximizing and spreading effort
            - This is particularly useful for incoming atlases to help with their planning/expectations
            - How best to gauge effort?
                - 8 hrs is recommended based on analyses done by CT and VA (using second PA data)
                - Confirmed codes most useful for gauging depth of effort
                - Cumulative species curves are different when using all data vs only confirmed codes
            - Should we have tiers of recommendations?
                - Tiered recommendations may be helpful for different observer densities (both within and between projects)
                - Triage and based on volunteer availability
            - <u>Action: Consider forming a working group to develop block completion guidelines</u>
        - Need to account for temporal variation of projects
            - Rolling atlases could help tie atlases together over time
            - <u>Action: Determine how to account for temporal variation of projects</u>
        - Can we standardize point counts?

        - <u>Action: Provide more detailed recommendations on how to conduct point counts</u>
    - Can we standardize grids?
        - E.g., California counties use a different grid than other US states
- Canada may be a good starting place to test ideas
    - Canada has all their data in one place and an R package to use it
    - Rnest - Project Nestwatch
    - Canada has 4 datasets per atlas project:
        - High-level rollup
        - Checklist data
        - Sensitive/significant species data
        - Point count data

NORAC organizational structure

- Current status
    - No formal structure
    - Atlases have different purposes and funding requirements so hard to have something more formal
- Do we need a more formal way to make decisions?
    - How do we handle disagreements?
    - Are minutes fine or should we have a voting setup?
    - **Decision: Operate by consensus**
        - No one is bound to follow, simply lay out different options and pros/cons so people can make informed decisions on how to run their Atlas project
- How to ensure continuity and progress?
    - Handbook is the repository for collective knowledge
        - <u>Action: Turn Handbook into a living document or at least make it possible to easily add new material/developments</u>
        - <u>Action: Retain 2018 Handbook PDF and have an eBook</u>
    - Terms of Reference may be most appropriate option
        - Should include meeting frequency and position turnover (terms should be overlapping)
        - <u>Action: Develop Terms of Reference</u>
- Value of NORAC
    - Network opportunity
    - Meetings
    - Discussions
- What should be our meeting frequency?
    - Regular virtual meetings
    - Opportunistic/annual in person meetings
- What positions do we need?
    - Webmaster
    - Secretary for meetings

    - Editor for handbook?
    - Advisory board/oversight committee?
- What working groups should we form?
    - Potential breakdowns of working groups:
        - Based on Handbook updates
            - Standard block completion
            - Targeted species protocols and analysis
            - Have handbook working group have reps from each of the other groups
        - Split into things to consider before, during and after atlas
            - Could include a timeline in handbook to help guide new atlases
        - List all needs, prioritize them, and turn top priorities into working groups
        - Continue groups formed in past
            - Data analysis working group
            - Archival group (Joan Walsh & Dan Brauning)
            - Data review working group
            - Website committee
    - Most people are interested in being a part of a working group, but it's unclear what working groups we need right now.
    - <u>Action: Julie and Gabriel to list and prioritize actions, then determine the best way to complete them.</u>

Core atlasing approach

- Are we recording behaviors or local breeding? Nest location vs habitat use?
    - An atlas's goals are important in this discussion
        - Many projects think they are doing both depending on situation
    - Does a possible category mean that it's a low probability of that individual breeding or a low probability that the species is breeding in that block? What is the likelihood that that individual will make a nest and lay eggs?
        - Is it within the realm of possibility/potential habitat? Yes
        - Confirmed codes are cherry on top for atlases with low effort
        - Do we want to change the language of breeding code definitions?
        - Also depends on location within the block, since the nest site is more discrete
    - If we agree that blocks are necessary for tracking effort and motivating volunteers, and we want to track habitat use, how do we best record where birds are breeding, esp. if they are using two blocks?
        - Blocks are a tool for motivating people to spread out effort
        - Blocks have been a traditional metric for change maps
- Are observed/possible/probable/confirmed categories still relevant? What about an observed/possible category for things like flyover Turkey Vulture?
    - Short presentation by Nick–What is the boundary between Observed and Possible?

- The Problem
  - Get different maps for Turkey Vultures based on evidence from higher codes vs actual data vs coded up within safe date
  - Big problem is looking at change over time which is driven by the arbitrary assignment of H–present but who knows if breeding there?
  - 14% of all codes are confirmed, 60% are obs/poss
- The Solution
  - WI is using an “Obs/Poss” code for species that are wide-ranging (esp. colonial) or have a prolonged migratory period, e.g., Spotted Sandpiper, gulls, terns, cormorants, herons and egrets, Turkey Vulture, Bald Eagle, Osprey, Whooping Crane
  - “Other observations” is what OH used
- How it solves the problem
  - Terns not breeding there, but still using habitat = middle ground
- Discussion
  - If you are using it for species for which you wouldn’t use a Possible code in the typical sense, then you could just use Possible code and it means something slightly different
  - Should include guidance for these scenarios before starting an atlas
  - May be useful for observers to have a new code because it makes sense to them, or could split H code into foraging, roosting, brooding, etc. (but that becomes unwieldy)
  - Could try to model imperfect detection (of breeding) for these difficult species

Website Demo

- Website being moved onto new BirdsCanada server
  - We will be seeking feedback on layout and content–stay tuned!
  - We will also ask for content and photos to share
  - Suggestion to have the 2018 handbook translated into Spanish
  - We will look into making a new Zotero group for NORAC and linking the bibliography to the website

Analysis deep dive

Background: Can we come up with recommendations (to include in the NORAC handbook) for these three topics: point counts, ARUs, integrated abundance models? Or can we come up with topics for the Data Analysis Working Group to work on?

Topic 1: Point counts

- Why collect abundance info?

    - Bird observations tied to a point so you can get habitat associations
    - Provides a baseline to monitor pop change
    - Occupancy doesn't show all the changes
    - Get density info for conservation decisions
    - State planning is focused around population estimates
    - Predictive modeling is better with point counts
- Field protocols
    - General
        - Have it funded ahead of time
        - Focus on safety
        - Lodging and getting land access permissions are big issues
    - Considerations
        - Paid vs volunteer techs
        - On- vs off-road
        - Time bands vs distance bands (time has more votes)
    - VA
        - Had a lot of funding for point counts
        - Halved intensity of PA (went for 50% of blocks with point counts)
        - 8 pts per block
        - Collected regular atlas data later in day
        - 35 techs total
        - Techs all 5 years
        - Nocturnal effort
        - Safety issues for female during nocturnal effort
        - Mostly road-based, off-road in last year
        - Using time bands, not distance data (even though distance bands were collected)
    - ME
        - All technician effort
        - Sent them out in July for regular atlasing/blockbusting
        - 5 points/block, 3 blocks/quad
        - Techs all 5 years
        - Special surveys for nightjars, montane, marsh
    - WI
        - Everyone took a test to determine qualification
        - Techs all 5 years
    - PA
        - Wants to replicate last effort
        - Using volunteers
        - 4 points/block, one point in each quarter of a block
    - ON
        - Self-assessment of ability
        - Coverage goal = 25 pts per square, 5 of those off road
        - 15 on-road points are repeats of BBA2, plus 5 new points

            - Off-road points are located based on proportion of available habitat
            - 35k pts in first 3 years, most volunteer
            - Has option of using a digital recorder for point counters
                - 5000 digital point counts in first 3 years
            - 5 min, 3-2 (to integrate BBS) and 3 distance bands (only 10% of observers do distances)
            - 100% of squares in southern part, 5% of squares in northern roaded area, 2% in un-roaded
        - SK
            - Similar methods to Ontario, but less ambitious
            - Lot of volunteers (>50%) did point counts
            - 50% of point counts were done by volunteers
            - 12-15 pts per square
        - NF
            - 15 pts per square, on and off road
            - 40% of squares with point counts/hrs
            - Mostly staff (due to logistics)
            - Accommodation issue
        - CT
            - Randomized on roads and stratified by habitat
- Data management
    - Canadian atlases use NatureCounts
    - US atlases using different strategies since nothing available that suits our needs
- Sampling design
    - GRTS (but tends to put points on edges of roads)
- Analysis
    - At what point is it useful to use an integrated model? With less data

Topic 2: ARUs

- Goal is to include more detail than what is currently in handbook
- ARU = Autonomous Recording Unit
    - Only use ARU for the programmable units that are deployed for long periods of time
    - Use “Digital recorder” for handheld units used by point counters
- Canada uses Zoom recorders
    - ON
        - Mainly to fill in gaps in northern third of province, some will be incorporated in central ON
        - Deploying 200-300 ARUs/year
        - Dropped from helicopter and retrieved in fall or following spring
        - New coverage compared to past projects (especially in far north, now sampling away from rivers)
        - Recordings are varying lengths at different times of day

        - Stationary counts
        - If 5 min, bring in as point count
        - Photos at each point
    - SK
        - Similar to ON
        - Winter deployments
        - Had good luck with industry partners
    - Digital recordings and ARUs sent to same contractor, WildTrax
        - "Digital point counts" are from hand-held zoom recorders, tagged as bio-acoustic surveys
        - Avoided using phone recordings in favor of using Zoom recorders so that recordings were better standardized and were recorded in stereo
            - Stereo allows some estimation of abundance
- Pros of ARUs
    - Can deploy units on bad weather days
    - Good for nocturnal and early season stuff
    - Can spread out effort by deploying in winter and retrieving in fall
    - Don't need skilled humans to retrieve
    - Can increase coverage in remote areas
- Cons of ARUs
    - Need to listen to the recordings and process them (still human validated) which is expensive
    - Humans get flyovers and other behaviors that ARUs don't
    - Logistical challenge to manage data, maintenance, dropping and retrieving
    - Need to be treated separately from human point counts in analyses (need more complex models)
    - eBird doesn't have great way to handle ARU data…yet
    - Metadata critical for ARUs and digital point counts, but recorders need to be set up correctly to collect this information
- Other similar Atlas projects
    - WI camera trap survey
        - 20,000 records but only 12 unique additions
    - NC has similar digital recording surveys for bats (NABat)
        - Volunteers are assigned equipment and drive a route at <20mph.
        - That project has similar processing/volunteer management challenges.
        - Can imagine implementing something like this post-atlas to keep folks engaged.

Topic 3: Integrated abundance models

- Evan Adams gave a short talk about the Data Analysis Working Group's status and future direction
- NORAC tries to share lessons learned and solutions to known problems
- Goals

    - Research
    - Coordination
    - Guidance
- Collaborating on atlas modeling and visualization
    - Density modeling
    - Breeding evidence modeling
    - Atlas comparisons
- Developing methods for data integration
    - Intensive concurrent data collection lends itself well to integrated models
    - Integrating different data types
    - Integrating independent surveys across atlases (in space or repeat atlases)
- Assessing atlas study design
    - Opportunity to assess current efforts and provide guidance
    - What are the key research/monitoring questions?
    - The questions you want to ask determine survey design
- Non-breeding atlases
    - Guidance is lacking
    - Winter atlases are becoming more common
    - Methods/goals differ widely
    - What are the questions?
- NORAC Guidelines Updates
    - Survey design
        - SAC using PA data
    - Data visualization
    - Atlas data analysis
    - QAQC
    - Atlas comparisons
    - Atlas data integration
    - GitHub repo
    - Data archiving with unique DOIs and metadata
        - Dryad
        - ScienceBase
- Discussion–What resources do atlas coordinators need?
    - Analysis guidance
        - Not much included in handbook yet
        - Helps set up new projects
        - Least well understood aspect of conducting an atlas and requires expertise
    - Tools for QAQC
        - Part of the eBird development question is where the data review step should happen–on front end (by users) or later on, but there is basic biology that is agreed upon and then it's a matter of at what stage we want to review the data

            - A fairly straightforward but impactful task would be to standardize the applicable breeding codes for North American species
- Action: Contact Evan if you want to get involved in this group: evan.adams@briwildlife.org

Wildcard discussion

- Demo of NatureCounts app
    - Can put in exact locations for rare species
    - Point counts have time bands and timer on top
    - Can map the location of each observation on a satellite image
    - Data review page looks like eBird review
    - Each user puts in their username and then pushes info to eBird
    - Drawbacks
        - Needs to improve caching of base maps
        - If change data in eBird, doesn't get pushed back to NatureCounts
        - Can't upload media

Main Takeaways

- Next meeting
    - Jan 2024
- Governance
    - Develop terms of reference
        - Julie & Gabriel to draft and send out for review this fall
        - Approve terms at January meeting
- Working groups
    - Data analysis (chair: Evan Adams)
        - NORAC DAWG Agenda 08/2023
        - Summary of analysis recommendations
        - Atlas perspective article on why atlases still matter
        - Set up central GitHub repository
    - Data archiving (co-chairs: Joan Walsh and Dan Brauning)
        - Determine where and how to archive data (potentially with NatureCounts)
        - Track down old datasets
        - Dataset standardization
    - Data review (potential co-chairs: Mike Burrell/Chris Elphick/Nick Anich?)
        - Standardize expected breeding codes for North America
        - Best practices for QAQC
    - Methods standardization (hold off for a year)
        - Targeted species protocols

        - Block completion standards
        - Point count and ARU guidance
- Handbook updates (expected outcomes from working groups)
    - Make handbook a living document
    - Develop guidance document for data analysis
    - Expected breeding codes for North America
    - Block completion recommendations
    - Targeted species protocols
    - Point count guidance
    - ARU guidance
- Website update
    - Make the new website live (with redirect from old website)
    - Recruit a webmaster
    - Set up Zotero group for bibliography
    - Make handbook “living”
    - Set up Atlas Toolbox
    - Interactive map with data downloads