

**North American Ornithological Atlas Committee (NORAC)****2008 Workshop Meeting Minutes**

Monday, August 4 2008, 09:00-17:30

Portland Hilton, Oregon

Ballroom Level, Parlors A/B/C

**Overview of Outcomes:**

- Many states/provinces are actively working on breeding bird atlases, with many undertaking or planning to undertake second round atlases in the near future
- Originally, atlases were largely focused on mapping distribution of confirmed breeding records, but increasingly data are used for a wide variety of purposes related to both conservation planning and research and other information such as abundance, habitat associations or precise geographic locations becoming increasingly valuable.
- Most participants recommend that when planning a second atlas, should not be constrained by compatibility with first atlas, but rather focus on developments that will improve current and future use (e.g., for comparisons with third atlas)
- Internet is an essential part of modern atlases, and accepted by most atlasers
  - o majority of data entry online is now the norm
  - o Rapid feedback of results motivates volunteers (and is now expected!)
  - o Improved modern mapping techniques have affected many aspects of atlases
    - Easier to generate planning maps for atlasers
    - Easy to generate interim results
  - o Several existing online systems are available that can potentially be adapted to new atlases
- Other new technologies are also leading to enhancements, and could be used to even greater advantage
  - o Atlasers now using GPS to record locations
  - o Internet and other technology based training tools can help build atlaser skills
  - o Should consider greater use of digital recorders/microphones by atlasers to assist with surveys, help verify song IDs, etc.
- Atlases should aim to collect more, rather than less information
  - o Atlasers are generally willing to collect additional information, especially if the value of the data is clear
  - o For example, if possible, collect dates for all observations, not just first observation, or date that highest breeding evidence was obtained – gives much more flexibility and power for analyses, and internet data entry reduces costs of handling data
  - o Also, ensure that adequate precise information on species at risk are collected to incorporate data into recovery plans, Conservation Data Centers, etc.
- All of these advances point to the need for an updated Atlas handbook to provide guidance to new atlasers
  - o A draft outline of chapters was developed at the NORAC meeting
  - o Need to dedicate time and resources to completing a handbook for publication on the NORAC website

## Detailed Minutes:

**Participants:** Charles M. Francis (Canadian Wildlife Service), Andrew Couturier (Bird Studies Canada), Paul Adamus (Oregon and Maine atlas), Mark Wimer (USGS), Becky Stewart (Maritimes atlas), John Ozard (NY atlas), Kevin McGowan (NY atlas), David Hussell (Ontario Ministry), Adam C. Smith (Ottawa atlas), Lynn Wickersham (Colorado atlas), Jean Woods (Delaware atlas), Anthony Gonzon (Delaware atlas), Kitt Heckscher (Delaware atlas), Nancy Drilling (South Dakota atlas), Joan Walsh (Massachusetts Audubon), Dan Reinking (George M. Sutton research centre), Jean-Sébastien Guénette (Regroupement Québec Oiseaux), Dan Brauning (Pennsylvania atlas), Bob Mulvihill (Pennsylvania atlas), Christopher DiCorrado (British Columbia atlas), Rob Butler (British Columbia atlas), Pete Davidson (British Columbia atlas), Rick West (Louisiana atlas), Catherine Ortega (Colorado atlas)

### Introduction (Discussion lead: Charles Francis)

- a) Reviewed recommendations from 2006; many not yet accomplished, except:
  - i) update of NORAC webpages; framework for new materials.
  - ii) Rick West's promotional materials now posted
  - iii) Listserv set up – [BIRDATLAS-L@uark.edu](mailto:BIRDATLAS-L@uark.edu); instructions on NORAC website
  - iv) Meeting was held in Puerto Rico in association with Society for Study and Conservation of Caribbean Birds, but ended up with low attendance from outside region
- b) NORAC website has been updated (<http://www.bsc-eoc.org/norac/>) with new look and feel
  - i) As part of website, “purpose and roles of NORAC” rewritten by Charles Francis – group approved changes
  - ii) What's needed still; to be filled in; many of the materials on the site require updating, most notably the old Atlas Handbook (see discussion later).

### Short updates on current atlases (Discussion lead: Andrew Couturier)

Atlas representatives gave short updates on their projects, while emphasizing features that are new or distinctive in each atlas and that might be of particular interest to others developing atlases.

- a) **New York 2<sup>nd</sup> atlas** (Kevin McGowan)
  - started in 2000-2005 (20 years later)
  - repeat atlas exactly same as first atlas to enhance comparability
  - captured effort data collected in first atlas
  - virtually “perfect” geographic coverage
  - 5335 blocks in first atlas (missed 5)
  - Second atlas covered all but 1 block
  - See presentation in conference symposium for analyses of atlas
  - Book to be published Nov or Dec 2008 (Cornell University press vendor table)
  - (now available)
  - Challenges:
    - o How to represent change over time - dealing with, representing and displaying change
- b) **Massachusetts 2<sup>nd</sup> atlas** (Joan Walsh)

- started 2<sup>nd</sup> atlas in 2007 (35 years later – passive resistance)
  - Data collected in 2 separate layers
    - o Primary atlasser – timed carefully, 20 hours of solid work detecting species, not worrying about confirmation of breeding,
    - o Secondary atlasing – do as much as you want
    - o First atlas had no effort data collected
  - Joan discussed the possibility of multi-state regional atlases in the Northeast, under the umbrella of NE coordinated bird monitoring (NE coordinated bird monitoring meeting at Patuxent, 4 Oct. 2007). Benefits to conducting atlases together (larger scale patterns, economy of scale for analyses and management, saved resources, larger scale to test GAP models, also possibility of between-atlas efforts).
    - o State people talking about different ways to measure bird populations
    - o Assess interest in participating in regional analysis to compare atlas 1 with atlas 2
    - o Aligning timing of atlas in NE – advantages and disadvantages
    - o For smaller states, may be many logistic advantages to coordinating projects with larger states
    - o Also can make better conservation decisions at regional levels, because analyses have potential to detect geographic shifts in birds which may appear as declines (or increases) in individual atlases
    - o Economy of scale with statisticians, publications, (data bases)
    - o If standardized can feed into models:
      - Climate change atlas (see U.K.)
    - o Everybody was interested in continuing discussion on regional atlases
    - o Challenges:
      - money, people, time, merging data spatially and temporally, differences in protocols, estimating confidence that absence is real (occupancy models)
      - How to quantify, compare
    - o Recommendation on Actions:
      - Bring this to NORAC
      - Work towards synchronizing atlases
      - Occupancy framework models
      - Aligning Relative Abundance Methods
        - Subcommittee needs to get moving!
- c) **Maritimes 2<sup>nd</sup> atlas** (Becky Stewart)
- 2<sup>nd</sup> atlas for Maritimes (20 year interval)
  - 2006-2010
  - Numerous partners
  - Added point counts for relative abundance
  - Data so far (mostly from first 2 years):
    - o 850 volunteers; 5484 point counts
    - o declines in detection rates for some species (e.g., BARS & TRES)
    - o expansion of TUVU and Palm Warbler
  - Web mapping tools allow viewing changes between atlases very quickly
  - Good promotion for atlasers to get them enthused
  - Emphasized online tools as an improvement from last time - 95% of data is being entered online

- Co-marketing campaign – bird friendly coffee with Maritimes atlas
  - o Maritimes to Mexico
  - o Promotion extends beyond atlasers
- Hired teams for “remote” areas & financial support to atlasers
- Workshops – 750+ atlasers since 2006 (some duplicates so probably at least half that number of different people)
- Access to forestry landholdings
- Special guide to atlasing for Species at Risk
- d) **British Columbia** (Rob Butler)
  - 2008-2012 (first atlas for BC)
  - same procedures, DBMS, mapping systems as Ontario and Maritimes (coordinated by Bird Studies Canada)
  - \$250k budget for 2008
  - ~700 participants so far
  - 10,000 squares (10 x 10 km squares)
  - Hope to get people into ~half the squares
  - Some areas extremely remote - working with float plane companies, rafting companies, etc. May be constrained by budgets
  - Will need to work to get specialized teams
  - Least Bittern now confirmed as a breeding species
- e) **Colorado 2<sup>nd</sup> atlas** (Lynn Wickersham)
  - 2<sup>nd</sup> atlas started in 2007 (first in 1987)
  - Both years designed as 5-year effort, but first atlas took 9 years to complete
  - Lynn took over in 2008
  - On track to complete by 2011, but may need some paid atlasers to ensure adequate coverage
  - Distribution, habitat use, abundance, breeding phenology
  - Initial idea was to repeat what was done in first atlas
  - Since first atlas, Colorado has developed a state-wide program to estimate abundance, etc.
  - Improve information on range of dates for breeding
  - In first atlas, once a species was confirmed, data were no longer collected
  - This atlas encouraging collecting all breeding records to get better phenology data
  - 75-80% of volunteers entering online – using Cornell system
  - Many species now breeding earlier than original “safe” dates
  - Landuse changes. A lot of open space is being developed, including energy development. How is this impacting birds?
  - 1900 7.5’ “quad” maps
  - Eastern Colorado is largely unpopulated – most people around Denver, Boulder
  - Planning to create a book
  - Planning to supplement with a website data base = online version of book
  - Senior level computer programming students at university helping to create website as part of their projects
  - ~40% of blocks to be covered
- f) **Delaware 2<sup>nd</sup> atlas** (Anthony Gonzon)
  - went from 222 in first atlas to 265 blocks (any block with any part of state)

- started in 2008; first atlas 1983-1987
- first atlas done in conjunction with Maryland
- include all observations outside of safe dates that not confirmed
- daily field records – daily field check sheet
  - o some people feel it is too much work, but 85-90% feel OK
  - o recording every species on every date that it is detected
  - o using USGS data base system
- block completion – aiming for 75% for confirmed or probable
- plan to aim for a certain percentage of anticipated species (based on species accumulation curve)
- >100 participants (small state)
- g) **Pennsylvania 2<sup>nd</sup> atlas** (Bob Mulvihill)
  - All blocks to be covered, but special species efforts in a priority block system
  - Carnegie Museum hosts website
  - Final year is 2008
  - 95% of records were entered online; they also had a toll-free data submission number
  - Small number of field cards and other types
  - Web/online entry great, but is not a “hand’s off” experience – still requires attention, e.g., a lot of glitches in online data entry – much time spent “putting out fires”
  - Newsletter is printed
  - Insisted on a book and not just a website
  - Website provides positive feedback to atlasers
  - Biggest difference:
    - o Rather than making first atlas directly comparable
    - o More important to set stage for 3<sup>rd</sup> atlas
    - o Collecting data in a way that will allow for much more refined spatial analyses
    - o Selected records could be precisely spatially referenced
    - o Can compare with existing land cover data to look at habitat associations of birds, etc.
    - o Needed to convince atlasers to collect data with more precision
    - o For rare species, will take all records and pinpoint them
  - Using Cornell Lab data base
    - o Capability to georeference individual records
    - o Either through interactive plotting tool (e.g. eBird) or through GPS
    - o Sense of “when is a block complete” often based on hours of effort; % of expected records (e.g., once reach 75 species) – similar targets for all squares.
    - o For second atlas went with predicted species totals based on existing gap models. Calculated predicted # species for 4,900 blocks and aim for 75%.
    - o Tracking effort
  - Tried special surveys in some blocks (“block 6s”)
    - o General feeling is that first atlasers did very well at getting nocturnal and marsh birds – not that much more new information with specialized surveys
  - About 1000 more volunteers than first atlas
    - o Important to get new people
  - About 10 more species compared to first atlas
  - Point Counts

- 8 per block
  - “true” abundance estimates by using both time of detection (“removal”) and distance sampling models to adjust for detectability
  - ~35,000 point counts done by professionals
- h) **Alabama 1<sup>st</sup> atlas** (Rick West)
- priority sampling scheme with CE block in quad (7.5° x 7.5° quadrangle divided into 6 “blocks”) as the focus, but every other quad in coastal areas
  - completed in 2006; just about ready to post maps on website:  
<http://www.una.edu/faculty/thaggerty/BBA%20website/Index.htm>
  - challenge: not enough volunteers to do every square
  - Also identified some blocks (e.g. yellow X) with special features (non-random)
  - Also encouraged to collect data from any additional blocks
  - Challenging to map these data because of incomplete coverage
  - Developed some criteria for shading squares
  - Used a “Standardized Distribution” by aggregating data up to quad level
- i) **Puerto Rico 1<sup>st</sup> atlas** (Rick West)
- Followed GAP project using 24 km<sup>2</sup> hexagons as sampling unit – matches vegetation data from GAP project, therefore easy to use and incorporate
  - GAP people want to be coeditors of data and help with analysis to look at bird/habitat relationships
  - Finishing 4<sup>th</sup> year; progress map available on website (pink squares have no coverage)
  - Prediction was 30 species per hex on average. Data indicates many hexes have 40-50 species
  - Can generate field cards on website
  - Volunteers welcome – you can come and see all the endemics! (15 out of 16 or all 16 if you count the Puerto Rican parrots)
  - Rick is there as an advisor; somebody else handles website
  - Preliminary results:
    - Puerto Rican Tanager – highlighted 4 hotspots
    - Puerto Rican Nightjar – intensively studied before, but all in one area. Atlas has doubled known distribution
  - Differences from N. American atlases:
    - Most species resident, year-round breeding for many species
    - Fall breeding for some species (waterfowl, exotic finches)
    - Some species found in every block – not always very exciting
    - Little (or unknown) movement for many species (e.g., woodpeckers – are they moving around?). Christmas Bird Count and other data included in data base. But some uncertainty of this.
    - Some species are mobile, e.g., Yellow-shouldered Blackbirds apparently breed only in mangroves, but spread out all over when not breeding. Some doves may be the same.
  - A few species there all year round that are thought to be migrants
  - Could not use “safe dates” but used “preferred dates” (accept data from other times)
  - Joe Wunderlee is writing book – challenges
  - Better to use the terms “wildlife survey” than “bird atlas” as many locals don’t even know what an atlas is

- Special parrot surveys on St. Lucia – maybe can turn into an atlas
- j) **Oklahoma Winter Bird Atlas 2003-2008**, (Dan Reinking)
  - Breeding atlas done in 2001; wanted comparable data in winter
  - Sample was 1/6<sup>th</sup> of every other quad map, same as BBA
  - Each block ~ 5 x 3.5 miles
  - Winter is defined as 1 Dec to 14 Feb to exclude most migrants
  - Recorded abundance in order of magnitude estimates
  - Special supplemental Lake Surveys
    - o people chose their own lakes
    - o these were ground surveys
  - Special interest species reports
    - o Rare or local in nature
    - o Report details regardless of where they saw them
  - Just completed 5<sup>th</sup> year this past winter; sample 99% complete as of 2008
  - Will publish a book to complement Breeding Atlas
- k) **South Dakota 2<sup>nd</sup> BBA** (Nancy Drilling)
  - began field work in 2008 (20 years after first)
  - major difference in block selection this time
  - striving towards a spatially balanced random sample
  - determine current breeding distributions and compare with first
  - first atlas selected 124 random blocks plus many additional non-random blocks (total 425)
  - this time aiming for 425, but wanted them all randomly selected
  - 3 x 3 miles (based on townships)
  - Want a spatial balanced sampling design to minimize clumping to maximize information when data are spatially autocorrelated
  - Many areas use GRTs (U.S. EPA), they used RRQRR (David Theobald, CSU)
  - Cell-based algorithm in GIS
  - Again using 3 x 3 mile cells
  - Oversampled (800) and then picked first 300 (also repeating same 124) (selection picks blocks in sequence)
  - Incorporate “reality” into algorithms – cannot always get there, or get permission. Many private ranches, tribal land, etc. – when blocks have access issues, they are able to throw them out. You can also just add effort; but it must be in order of sample as output from algorithm.
  - First summer visited 90 blocks. Two were denied access, replaced with next two.
- l) **Oregon 1<sup>st</sup> atlas** (Paul Adamus)
  - completed 1995-1999 – not yet ready for round 2! (probably repeat in about 7 years)
  - results published on an interactive CD containing atlas maps, habitat maps, BBS routes and other features; selling copies for \$20; proceeds go towards an ornithology research fund.
  - Steering Committee chose not to put resources into publishing a book
  - But other people published “Birds of Oregon” that includes much of material, but not produced by atlasers
  - At time Internet/web was not as practical as a CD-ROM
  - Steering Committee burnout

- NO paid employees – done by Oregon field ornithologists. Purely a volunteer effort
  - Miniscule project budget – raised some funds to print materials
  - Used hexagons as sampling frame because of existing statewide GAP project
  - In addition, used 1 km<sup>2</sup> squares in SE corner of each hexagon
  - Hexagon allowed bringing in land cover information
  - 400 hexagons, each with a square
  - Covered all hexagons and most squares
  - County-level atlas from Lane County (Eugene, Oregon) included in CD because was never published separately.
- m) **Ontario 2<sup>nd</sup> atlas** (Andrew Couturier)
- 2001-2005; book published late 2007; copy on hand at workshop
  - Decided to repeat breeding evidence methodology from first atlas (1981-1985) and to add a new protocol for abundance data
  - Full pilot year of field testing and statistical analysis conducted to decide on sampling approach (compared point counts; area searches within 1km cells; considered others)
  - Point Counts chosen – more than 65,000 conducted during the project
  - Maps of relative abundance in the book and on the website
  - Change between atlases:
    - o Maps – dots placed within squares to show change (superimposed on top of squares shaded by Breeding Evidence category)
    - o Histograms – probability of detection shown for each atlas project, corrected for atlas effort using species accumulation over number of hours.
  - Abundance estimates – developed method to estimate total number of individual birds per species based on relative abundance maps, adjusted by detection probability
  - Data are being used in a variety of ways for bird conservation

**What is the purpose of an atlas** (Discussion Lead - Charles Francis)

- a) Kevin M. stated that we are not just thinking about conservation uses, but also science in general. Knowledge of distribution is just that.
- b) How do BBS results relate to atlases with respect to change? What different do they tell us? In Canada, they do not entirely overlap for coverage, but in southern Canada and in US, they do generally overlap. We know that two data points (from 1<sup>st</sup> and 2<sup>nd</sup> atlases) give us only two points for a trend, so it's not as good as BBS for trends. But what other data?
- c) Social value & training of atlasing is still undersold; people are educated and become more aware of birds and their habitats. Surveyors are trained. This needs to be included in handbook/guidelines as part of the reason for doing atlases. However, relative to cost of atlas (at least for those with professional staff), it's a small benefit – so it's simply an “added benefit” as far as funders are concerned. Nevada example of starting with too few people for RBC, but when they were done they had a lot of trained observers to do other monitoring. Australian atlas turned into an ongoing monitoring program for same reasons. Could atlases lead to statewide bird monitoring programs?
- d) What data are most useful?
  - i) Do we really need to distinguish the levels of breeding evidence? How often are data analyses restricted to confirmed data? Don't we lump the categories for most uses? Could effort be saved if less time spent trying to confirm records?



- (1) Mostly important for rare (e.g., threatened and endangered) or edge of range species – those outside of main breeding range. PA wanted georeferencing for confirmed evidence. Maybe that's just for rarity forms?
- (2) The “salting” of distribution map with confirmations gives reader more confidence in fact that distribution represents actual breeding (Rick West). Bob M however, thought that could be misleading, because people may infer things like greater abundance from confirmations. Dan B pointed out that level of confirmation is largely a function of effort. While in a lot of places, Possible (PO) and Confirmed (CO) are no different, but near edge of range, it matters. Although, an unmated singing bird way out of range could get a PR that isn't valid by some definitions (much greater chance it is a lone male).
- (3) Attempt to get more confirmations did accomplish multiple visits (Kevin M) which in turn led to better coverage through season. But spending time on successive visits looking for a nest still takes away from seeing more species on those repeat visits – tradeoff is still there.
- (4) Breeding phenology, if a goal, requires the CO codes of course. In SD (Nancy D) there is more interest in knowing when all birds start breeding, so that permitting (e.g. for cutting trees) can take into consideration those data.
- (5) Date should be collected for all data; but detailed options needed in guidance.
- (6) Brits in subsequent atlases reduced complexity of breeding codes.
- ii) Rarity data: (Charles) – possibly a need to separate types of information, i.e. if an atlas wants location data for a species, don't make them fill out full rarity form that includes a bird's description, e.g. Hooded warbler in ON.
- iii) Tradeoffs in data entry effort or complexity in field protocols, is always something to be aware of. But as observers use internet more, they may be more open to entering more data. And more scientific protocols might appeal to different people if they see the reason for collecting a piece of information.
- iv) Habitat data
  - (1) CO and SD (and NM) are collecting habitat data per species row on field card. Note that this allows observer to place bird in right habitat that isn't at location where observer is standing.
  - (2) How many habitat categories are needed to provide useful return of data?
  - (3) How can atlaser-collected habitat data be used in conjunction with remotely sensed data, e.g. if observations are geo-referenced?
  - (4) More work is needed in this area, but a discussion without an analysis of what's being collected will not yield much.
  - (5) Who will follow up?

**What data need to be recorded to ensure that changes in bird populations can be reliably monitored?** (Open discussion)

**Issues:** What data are needed to detect change? What kind of change? Abundance, distribution? What is a change in distribution when one individual or a thousand are represented as the same presence on a map?

- a) Charles: a quantitative method of measuring change is needed. Map of abundance vs breeding evidence shows lack of concurrence in terms of “confirms” showing where common. REVI example.

- b) Conservation use: which region has the most REVI, and which regions should focus on preserving them? Only a rel. abundance map can be used for that – having the most range and having the most birds is a different thing. Presence – absence data at a 10 x 10 km scale not that useful in determining where a species is most common.
- c) Nancy D pointed out that increased cost in collecting abundance data should be weighed against gain. Charles: “enormous gain in collecting abundance data”.
- d) Problem still exists with 20-year spread of two data points. Without relative abundance we don’t have a good picture of distribution.
- e) (Kevin): why does MD and DE need to do another atlas? Is it worth the expense?
- f) Atlas change data may be of different value for birds that are common (CHSP), versus uncommon, versus hard-to-detect (rails).
- g) Extension of atlas protocols, using specialized species surveys, can lead to more. Is it worth doing the Marshbird survey as part of the atlas? Probably the marshalling of volunteers does make it worth it.
- h) The stopping of effort means a “defranchising of volunteers”; and that every 20 years might not be the best way to use the trained volunteers. Compare Great Backyard Bird Count to eBird; the former leads to more entries into the latter.
- i) The funding, the marshalling of volunteers, the extent of coverage, these are atlas features on which we can hang a lot.

-----Lunch-----

### **Logistics of running an atlas and organizing volunteers (and keeping them happy and motivated) (Open discussion)**

Presentation by Becky Stewart (Maritimes 2<sup>nd</sup> Atlas)

- a) Web-based tools allow an atlaser to get up-to-date information they might need to go into the field, without asking a coordinator. Compare new atlas/old atlas data, find habitat information, etc. Getting atlas volunteers to use tools appropriately; training may be key. But human contact is still vital; phone calls are still needed.
- b) Additional tools include:
  - i) Toll-free (1-800 number) (for recruiting, eg.)
  - ii) RC meetings
  - iii) Workshops and presentations
  - iv) Newsletters, electronic and otherwise.
- c) Training tools, e.g. Dendroica CD; multiple pix & photos with variety helps to train participants. Also has functional training mode (high trillers, etc) and quiz mode.
- d) Atlasing for species at risk training guide: supplemental material.
- e) Personal (e.g. phone or in-person) emphasized again and again.
- f) Coverage by local media to raise awareness and increase interest
- g) Mail-in postcard and similar informational materials
- h) local atlas listservs and/or online groups also helpful.
- i) clickable maps to see what data are already entered
- j) volunteers can get quick feedback on what has been done in a square
- k) can decide whether or not to do a particular square or what to look for
- l) Coordinators can e-mail all the atlasers in their region

**Other issues:**

- how to run a workshop
- variable technical abilities (e.g., web-based)
- need org. structure with regional coordinators
- need to develop protocols, documents, etc.
- how to generate maps for volunteers

**Other ideas for volunteer coordination:**

- web-based assignment and tracking of squares
- Participation is increasing over time in many second atlas projects – at least partly due to the rapid feedback these second generation atlases provide
- In first atlases, a generation ago, participation declined in latter stages of project
- Penn. Used postcard to give out contact information (based on Ohio)
- Got landowners asking people to come and survey their land

**Advertisements in local newspaper and media**

- interest many casual birders
- can benefit atlas

**Developing atlases in Latin America and the Caribbean** (Discussion lead - Rick West)

- a) Cost is an issue – need better idea of what the priorities are within the region.
- b) In MX, goals may not mesh with priority needs of Mexicans. However, there have been misperceptions as to what an atlas is.
- c) Need to communicate better about atlases and their value.
- d) What seasonality to cover? Reasons may be different from temperate atlases.
- e) North Americans could assist, through materials & guidance provided by NORAC, through data management, and through volunteers to vacation/survey.
- f) For that matter, Europeans and others could contribute, e.g. through the “Neotropical Bird Club” or BirdLife International
- g) Learnings from Puerto Rico atlas should be discussed and shown as an example of how such data can be used for a tropical country
- h) Virgin Islands & St. Lucia could be good bets for an atlas. St. Lucia currently getting ready for a parrot survey
- i) For ongoing atlases, opportunistic approach might be suitable for some areas, if full atlas structure cannot be managed effectively. People just submit data if they encounter something (see Australia example). Has advantage of flexibility for participants, but challenge to maintain staffed oversight.

**RMBO**

- does a lot of work in Mexico
- person who coordinates this – initial reaction was lukewarm
- issue of funding, finding qualified people
- “competing with their priorities”
- Probably worth doing one state at a time

**Recent advances in data management and analysis tools** (Discussion lead – Andrew Couturier)

Presentations from the three major online Atlas data management systems:

- BSC system
  - Patuxent system
  - Cornell system
  - Alabama/Georgia/Puerto Rico – desktop system (no web data entry/management)
- a) Bird Studies Canada system (demonstrated by Andrew Couturier)
- Andrew detailed point count methods and sampling as used in Ontario, the Maritimes and BC, and the use of technology to guide adherence to protocols.
  - new features for B.C. atlas
  - dynamic mapping tool allows users to zoom in and view the predefined point count locations with orthoimagery and other layers (target habitats, roads, water, etc.) as background
  - predefined point counts can also be downloaded as a .csv file and uploaded to GPS
  - Also provide topographic maps
    - o Pdf maps – all downloadable on web
    - o Provincial governments produced hard copies of maps and gave out to atlasers
  - B.C. and Maritimes – 40 randomly generated point count locations along roads
  - Target is to get 15 point counts done per square
  - Not all locations are suitable for doing point counts
  - Pick lowest numbered 15 points that were safe
  - Issues for gated roads and rough terrain
  - Ask people to do off-road points for habitats that are undersampled along roads
  - Other features – rapid feedback (weekly updates on maps)
  - Uses Google maps to see imagery for a particular location and get coordinates

For book publication:

- BSC developed an online manuscript management system
- Developed in year 5 as project was coming to an end
- Even with only 4 authors, this system could have been very valuable (Maine)
- They are willing to share with others.

b) Patuxent system (demonstrated by Mark Wimer)

- started in 2001 to build a repository of atlases
- also decided to build a data entry and management system
- one system does not fit all
- historic data sets are all very different
- ease of implementing Google map system
  - o need to develop more to meet atlasser expectations
  - o meet the needs of increasingly sophisticated atlasers
- need to enhance development of metadata standards
- get a set of standards developed in conjunction with rest of guidelines
- need to adhere to objectives of atlas

## Guideline document on data standards

- Mark Wimer developed a document in 2003
  - Perhaps can use that as a starting point for a new document
  - Differences in resources
  - Rick West's is probably most economical
  - Some areas cannot afford a fancy atlas
  - Other end of spectrum – systems that spent a lot of money
    - o But now can be rolled out and shared with others
  - Need to indicate what are the options and why?
  - What are advantages to online data management vs. managing on a PC
  - Patuxent started with Maryland atlas
  - They ran on “history” – assumed everybody knew what they were doing and did it the same as the first time
  - Need to remind people that computer can't do everything – atlases are very much about managing and communicating with people
  - Integrate tools with users
  - Not everything can be automated.
  - <http://www.pwrc.usgs.gov/bba>
  - May have 90% similarity with Cornell or BSC, but that 10% may be important
  - Data standards can be used and applied
  - 7 state atlases and 2 county atlases being managed at Patuxent site
  - Developing tools to bring atlas data together
  - Question from Rob Butler: why is USGS doing this?
  - Many different uses:
    - o Would save a lot of time
    - o Want to ensure that state level atlas data are archived properly and used widely
  - Many issues such as temporal range:
    - o 1974 for first atlas
    - o 2010 or later for latest first atlas
  - How to statistically manage atlases down the road
  - Advantages of regional atlases
- c) Cornell System (demonstrated by Bob Mulvihill)
- Bob Mulvihill – used Cornell data management system for Pennsylvania
  - Many tools could be used from eBird
  - Subsequently made this tool available to other atlassing groups
  - PA suffered most from the “growing pains” of tool, but were very pleased with the end result
  - As with any system, many ways it could have been made better
  - Ohio, Pennsylvania, Colorado currently using Cornell system
  - Online system can save money and time because many tasks are time intensive
    - o Have not actually tracked this
    - o Still a lot of time that goes into coordinating any atlas
    - o May not save so much time, because time spent differently
    - o Expectations are higher\$
  - Many of biggest advantages

- Data visualization
- Feedback to volunteers
- Other Advantages
  - Can manage more data without incremental management costs
  - Easier to track activities of an atlas at all scales with data base
  - Very efficient record verification system
  - Maintain complete review history
  - Major time saver
  - Project can define which records need to be reviewed
  - Regional vs. state rarities, etc.
- Some functions restricted to certain users
- Very helpful for keeping track of progress
  - If aiming for 5 years (or whatever) can track how well you are doing
  - Give motivation to get there
  - Tracked registered block “owners”
- Pennsylvania switched block boundaries this year to go with Delorme road atlas instead of county boundaries – still used 1/6 of a USGS topo map as standard for square
- Change maps – allow quantification of results
- Tool to identify quickly what square you are in - allows looking up blocks by home address, zip code, etc.
- Could click a plot location link on their screen
- Original misgivings about volunteer adoption – turned out not to be a major concern
- Still a LOT of phone and E-mail time
  - Need good support from the developers

#### Discussion:

- These systems may be more important in MX
- Key point from Charles: online entry distributes cost, so that there is no longer “too much data” to enter
- Other languages are needed for use in some areas; French and Spanish
- always cheaper to build on what already exists
- can add features incrementally as the need arises
- great deal of similarity among the three major online systems, plus complementary aspects
- A lot of exciting things that can be done with this atlases

#### **Publishing your atlas – is it worth making a printed book?** (Discussion lead – Andrew Couturier)

##### Ontario 2<sup>nd</sup> Atlas (Andrew Couturier)

- First atlas (1981-85) self published – two print runs; second print run took a very long time to sell out; informed print run for second atlas
- Made decision to publish book from very beginning of project
- Print run is 4500, expect to recover direct costs of \$330K

- (however, major unexpected cost was ruling that due to Canadian federal government funding support, needed to published in French and English – French version will incur major additional cost that will not be recouped)
- Loan from provincial government to pay up-front design and printing costs
- Pre-sale conducted; this helped determine print run numbers
- Self-published, but contracted out layout & design
- Full colour; 900+ maps; 400 photos; FSC paper; decision to print in Canada even though cost would be higher
- Photos donated by amateur and professional photographers
- Wide variety of authors for species accounts (750 words)
- System of scientific editors, general editors, copy editors, map, database, etc.
- Online manuscript management system developed in-house to manage the writing & editing process
- Website re-designed to coincide with book launch; contains breeding evidence maps and data for free download
- More goodies planned for website after the book's initial print run is sold

#### Massachusetts Atlas (Joan Walsh)

- Mass atlas – first atlas done in U.S.
- Took about 30 years before it was printed
- May have affected sales
- Printed 2000; sold 540; 200 given away
- Purchased all illustrations in book
- \$60k total cost (\$30k for print and layout)
- Not counting data management costs
- >\$40k loss
- Before began second Breeding Bird Atlas
  - o Quite shy of printing 2<sup>nd</sup> atlas as a result

#### New Jersey Breeding Bird Atlas (Joan Walsh)

- atlas data incorporated into “Birds of New Jersey” book
- black and white, illustrations donated
- \$19 printing/layout cost per unit – B&W drawings, kept it cheap
- Out the door within 18 months of data collection
- No web presence
- 4000 printed; more than 2000 given away as membership gifts
- No counts of numbers sold or remaining

#### Massachusetts Audubon also not keen on these numbers

- first task with Mass. Audubon was to make an on-line version
- page captures from printing
- scanned images
- cost about \$10k to launch IT version
- more than 5000 hits in first year
- clearly reaching many more people

#### New York Atlas (John Ozard)

- Why a book? Some concern that electronic versions (e.g., CD) may not have same longevity
- Also state would support publication through special income tax fund

- Important – state support meant that book could be sold for a reasonable amount – wanted to make book affordable so that it would be accessible
- Did not want to self-publish – pain to get rid of last copies; hence went with Cornell University Press
- First atlas – print run 3000
- 2 full-time editors in 2005-2008 (mostly 06-07 – 2 years or so)
- Many DEC staff (incl. John Ozard)
- Steering Committee developed a publication timeline
- Steering committee met monthly up until handed over book to press
- Commissioned original B&W drawings to depict various aspects of breeding
- Supplemented with original habitat paintings
- Species accounts 650 words
- Used BBS, CBC (owls) or DEC (dept of env. Conservation) data for trends
- CU press authorized web version after 2 years
- Traveling museum exhibit to promote atlas
- Timetables and cost summaries to be used as examples in new NORAC handbook
- Q: Is it worth making a printed book? A: It depends.

### **Non-breeding bird atlases** (Discussion leads – Rob Butler & Pete Davidson)

#### a) Winter atlases

- i) See winter atlas of UK & Ireland, round 2 now integrated into their Breeding atlas round 3. (<http://www.bto.org/birdatlas/>)
- ii) UK also has the London Atlas; their website makes use of Google maps too; check out their website <http://www.lnhs.org.uk/ornithology2.htm>
- iii) Oklahoma winter atlas already described (above); Ohio carried out a winter atlas from 2002 – 2008; Louisiana has a winter bird atlas underway, and there have been other efforts in various regions, including some county-level atlases.
- iv) Sampling framework generally taken from BBA in same area
- v) Relative abundance may require different methods for different guilds.
- vi) Opportunity exists to harness atlasing “bug” during winter months.

#### b) Marine atlases

- i) extend atlasing format over ocean
- ii) lots of work to do in design
- iii) monitoring efforts in Maine
- iv) BC planning to do a pilot Marine Atlas next year
  - (1) Not just birds, but marine mammals too
  - (2) Year round effort; monthly boat surveys

#### c) Other atlases

- i) European Climate Atlas
  - (1) worth a look at what they have done on bird distributions
  - (2) have started doing some predictive modeling of atlases
  - (3) predicting where species could be in the future, based on current bird distribution data and future climate scenarios

#### d) Ottawa Breeding Bird Count (Adam Smith)



- i) See website: <http://www.glel.carleton.ca/ottawabirds/>
- ii) Urban atlas, similar to Fresno and Tucson atlas efforts.
- iii) Three protocols:
  - (1) Nest monitoring
  - (2) Spot-mapping census plots
  - (3) Point counts (75m radius circle)
    - randomly selected points within each 1 x 1 km square
    - then aggregated into a mini BBS style route using the Farnsworth removal methodology
    - five two-minute period
    - used different colour pen for every 2 minute period
    - Much better than a more simple point count
    - Noise is a huge issue
    - Online database
    - 900 point counts – many points repeated
    - This may allow addressing detectability
  - (4) Training sessions were extremely popular - they're training the masses
    - Bird song ID course to recruit new volunteers
    - 55 people went every week for 6 weeks

**NORAC Handbook** (Discussion lead: Charles Francis)

Handbook: is an updated one needed? Yes, group agrees. New atlases just starting need updated information on available techniques, and an idea of what purposes the variations meet. This does not mean having a consensus of how to do things, but presenting options, and letting individual atlases decide. Audience is therefore project coordinators, steering committees, possible sponsoring organizations. Start with bigger picture context; delve into more technical topics in later chapters.

- a) Chapter 1: Uses of atlas data
  - i) Lead author: Charles Francis and Bruce Peterjohn
  - ii) Contributors:
- b) Chapter 2: Why use atlases rather than other sampling methods
  - i) Lead authors: Kevin McGowan and / or
  - ii) Contributors:
- c) Chapter 3: Quantitative sampling
  - i) Lead: Pennsylvania
  - ii) Contributors:
- d) Chapter x: Habitat data
  - i) Options: Volunteer recorded vs location and remote sensing.
  - ii) Lead: Nancy Drilling and Lynn Wickersham?
- e) Chapter x: Tools and tips for managing volunteers
  - i) Lead: Becky Stewart
- f) Chapter x – Data management systems
  - i) What are options and desirable features?
  - ii) Summarize key existing systems
  - iii) Mapping systems & tools – desktop & server

- iv) Lead authors: Mark Wimer, Andrew Couturier
- g) Chapter X: Data reporting and publication options – books/web
  - i) Pros/cons, compare Rick West's example too
  - ii) Lead: Andrew Couturier, Mike Cadman (?)
- h) Chapter X: Capturing data for rare species
  - i) Why?
  - ii) What minimum information needs to be captured? How relates to heritage program?
  - iii) A lot of information can be pre-populated
  - iv) Lead: BC atlas

**NORAC business session**

- a) Charles Francis – still chair
- b) Need a co-chair: Dan Brauning?? Andrew Couturier??
- c) Annual meeting still a good idea. Probably at AOU – Philly next year.
- d) Possibly we should have a promotion at joint AFO/WFO in Pitt, April 2008, even though it's not the main NORAC meeting.
- e) (NOTE: subsequently postponed to AOU/COS/SCO meeting in San Diego, Feb 2010)

Meeting adjourned at 5:30 p.m.