THE ROLE OF BIRD ATLASSES IN MONITORING AND CONSERVATION

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What is a bird atlas?

• An active survey to map the distribution and relative abundance of birds in a specific time period (e.g., 5 years)
• Usually involves a mixture of amateurs (volunteers) and professionals collecting data
• Intensity of sampling can be adjusted to land area and human resources
Advantages of an atlas project

• Provides detailed distribution information for conservation planning
• Can give information on habitat relationships
• Valuable for monitoring when repeated
• Participants can engage at many different levels from beginner to expert:
  – Every record counts: observations, breeding evidence (e.g., nests), or quantitative surveys (e.g., point counts or checklists)
Atlas Design

- Survey area can vary from a county to a province/state to a whole country
- In Canada, typically a province (Ontario) or group of smaller provinces (Maritimes)
- Intensity of coverage may vary within region
Ontario atlas 2001-2005
Sampling unit = 10 x 10 km squares

Target coverage:
• South:
  – All squares
• Roadded north
  – 5% squares
• Roadless north
  – 2% squares
• Coverage = minimum 20 hours per square + 20 point counts
• Targets were mostly achieved, often exceeded
Breeding vs. year-round atlas

• In northern countries, bird atlases traditionally focus on breeding birds only
• But similar approach works for year-round atlasing of breeders, winter visitors and passage migrants – more appropriate for Caribbean or Latin America
• A few changes to methods:
  – Keep track of all species seen on each visit
  – Schedule visits in each season of the year
• Can still record data on breeding
Estimating Relative Abundance

- First round of atlases focused mainly on distribution and breeding evidence
- But now realize that data on relative abundance greatly increase value of an atlas:
  - Highlight concentration areas
  - Increase power for detecting population change
Breeding Evidence map suggests that Ovenbirds occur nearly everywhere in Southern Ontario
Point count data indicate much higher densities in heavily forested areas of north.
Detecting change over time

- Ontario has had two repeat atlases:
  - 1981-1985
    - Recorded species presence and search effort (number of hours)
  - 2001-2005
    - Also carried out point counts (69,000!)
    - However, comparison with first atlas limited to presence data (controlled for effort)
• Very large expansions (500%), such as House Finch in Ontario, readily detected by presence data (red = new records)
Change over time: 1981-85 vs 2001-05

- Even 50% decline hard to confirm with just presence data – would be much more reliable with relative abundance data. Available for next time!
Estimating Relative Abundance

• Some options for estimating relative abundance:
  – Point Counts (statistically most powerful for singing birds)
  – Standardized area search (limited to accessible areas)
  – Daily checklists with abundance, effort and search area recorded (most flexible)

• Choice of method may depend on objectives (year-round vs. breeding) and resources (number of skilled birders)
Rare/Priority Species

- Atlases have great flexibility to collect extra detailed information on rare species
- Can ask for precise locations, numbers, habitat, etc. for priority species
Products of an atlas project

- Data base: well-organized, permanent
- Analyses: maps, trend information
- Published in book or on Internet
Starting an atlas – data management

- Several web-based systems available (e.g., Cornell, Patuxent, Bird Studies Canada) that can be fairly easily adapted to new area
- Many advantages:
  - Participants can enter own data
  - Interactive data verification tools
  - Data security
  - Display results rapidly including maps
  - Helps with planning (e.g., mapping gaps in coverage)
Organizing an atlas, continued

- Resources for participants
  - Maps
  - Training tools (e.g. bird song CDs/CD-ROM)
  - Instruction manuals
  - Data forms
- Many of these can be distributed on web
Organizing an atlas, continued

• Coordination and Volunteer Management
  – Promotion, recruitment, data management and data quality control
  – Dedicated coordinator (volunteer or paid)
  – Assistant coordinators (usually volunteer)
  – Web-based tools facilitate process

• Can combine a passive checklist program (e.g., eBird) with active targeting of poorly covered areas
Conclusions

• Atlases are a valuable tool for conservation
• Much would be gained by developing more atlas projects throughout the Caribbean and Latin America
  – Obtain critical distributional, habitat and relative abundance information for conservation both of residents and migrants
  – Valuable way to recruit new people into bird conservation