

Short-term Monitoring Programs for the Mid-Atlantic States

Results of a workshop on January 6-7, 2004, to develop the Coordinated Bird Monitoring Program in the mid-Atlantic States

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A workshop was held on January 6-7, 2004, at Avalon, New Jersey, to review the Coordinated Bird Monitoring (CBM) approach and identify regional management issues that short-term monitoring programs can help address. The Coordinated Bird Monitoring (CBM) program is an effort to improve bird monitoring programs through better coordination. Bird monitoring specialists from Canada, Mexico, and the United States are working together to develop a comprehensive approach to bird monitoring by standardizing long-term and short-term programs. Attention is being given to all aspects of monitoring (goals, design, field surveys, data management, analysis and reporting) and spatial scales (local, Province and State, national, North American). This workshop was an attempt to apply CBM to states in the Mid-Atlantic region.

Biologists from each of seven states (NJ, DE, MD, NY, CT, VA, PA), USFWS and USGS identified management issues, that monitoring could help address, in their state. The lists were then consolidated and 10 issues of widespread interest were identified. From these, the six issues of most widespread importance, as judged by representatives at the meeting, were selected and short-term monitoring programs to help address the issues were discussed (Table 1).

Table 1. Management issues selected for initial short-term monitoring programs

Management Issue	NJ	DE	MD	NY	CT	VA	PA	Selected?
Forest health	X	X		X	X	X	X	Yes
Early successional habitat	X		X	X	X		X	Yes
Freshwater wetlands	X	X	X	X		X	X	Yes
Migration stopover habitat	X	X	X	X	X		X	Yes
Tidal marsh and flats		X	X	X	X	X	X	Yes
Wind power development		X	X	X			X	Yes
Human disturbance	X	X			X			No
Contaminants	X	X					X	No
Endangered species	X		X	X		X		No
Invasive species	X	X			X		X	No

A break out group began the process of developing a monitoring program to address each management issue. A standard outline was followed (Table 2), and participants filled in parts of the outline that they could during the meeting. The descriptions still need major additions and revisions. This work will be carried out during the coming months. Participants agreed to meet again in late summer of 2004 to review the completed descriptions and agree to plans for implementing the programs. The six issues, and parts of the monitoring plan for each that the participants agreed to, are described in the rest of this report.

At the conclusion of the workshop biologists discussed the creation of long-term continental monitoring through CBM. They supported the effort to develop continental monitoring

programs and agree to participate in this effort. They urged that initial recommendations be provided as soon as possible to allow incorporation into state funding proposals and State Comprehensive Wildlife Plans. They also urged the USFWS and USGS develop a standardized monitoring database that could be used by state agencies to enter, summarize and analyze data while allowing all data to be combined into one national repository.

Participants :

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Table 2. Format used to develop the regional, short-term monitoring programs

Topic

Goals

Management issues or decisions to be addressed

Objectives

Species

Information needed (parameters to be estimated)

Accuracy target (power or precision)

Methods

Usually one of four approaches:

1. Site evaluation: field surveys to obtain the needed information at existing sites.
2. Project evaluation. surveys before, during, and after a project.
3. Site-specific models: development of a model for use at specific sites; includes variables measured at the site.
4. Regional model: development of a model for use at the regionwide level which thus uses only variables available in region-wide GIS layers.

Topics considered include:

1. Identification of dependent and independent variables (for models)
2. Sampling plans
3. Field methods
4. Sample size estimation
5. Initial evaluation and refinement of procedures
6. Plans for data management
7. Plans for analysis and reporting.

Roles and responsibilities

Major roles

1. Participating organizations:
2. Statistical consultant:

Responsibilities for:

1. Design:
 2. Field work:
 3. Analysis:
 4. Evaluation:
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Topic: Forest health

Management Issues or Decisions

1. Identification of forested areas to protect.
2. Selection of forest management practices.

Objectives

Species: Species that use forested environments at any time of year.

Parameter: Abundance of breeding birds; average number present during non-breeding periods)

Productivity for selected species (based on abundance and level of concern)

Accuracy Target: High probability of discriminating between sites that vary at least two-fold in abundance or 50% in nesting success.

Methods

Develop models that predict abundance and productivity as a function of patch size, forest type, structural variables affected by management, and other factors.

1. Identify the independent variables to be evaluated for possible inclusion in the model.
2. Design a sampling plan (e.g., involving stratification) to insure that variation in each independent variable is similar to the variation that occurs in the population of interest (i.e., naturally occurring sites, managed sites).
3. Select methods to measure abundance and nesting success on the sample plots.
4. Conduct the field surveys.
5. Develop the initial models including sample size estimation needed to complete model development and testing.
6. Gather additional field data as needed for model development and testing.

Roles and responsibilities

Statistical consultant: TBD

Participating organizations: NJ, DE, NY, CT, VA, PA

Design: TBD

Field work: TBD

Analysis: TBD

Evaluation: TBD

Topic: Early Successional Habitat

Management Issues or Decisions

1. Determine the best management practices available to create appropriate habitat in rights-of-way for the suite of early successional bird species
2. Identify key non-ROW early successional areas in need of protection or management

Objectives

Species: Species that use early successional habitats at any time of year.

Parameter: Abundance of breeding birds; average number present during non-breeding periods

Productivity for selected species (based on abundance and level of concern)

Accuracy Target:

For ROWs: Coefficient of Variations of 30% for regression coefficients of independent variables that are highly correlated with bird abundance or nest success.

For Non-ROWs: High probability of discriminating between sites that vary at least two-fold in abundance or 50% in nesting success.

Methods

For ROW Best Management Practices:

Conduct projection evaluations of ROWs to assess how management history, size and dimension of ROW, vegetational composition, and landscape context affect current abundance, diversity, and productivity of the early successional suite of bird species.

For Non-ROW:

Develop models that predict abundance and productivity as function of patch size, vegetative composition, landscape context, land use history, water level and quality (if applicable).

1. Identify the independent variables to be evaluated for possible inclusion in the model.
2. Design a sampling plan (e.g., involving stratification) to insure that variation in each independent variable is similar to the variation that occurs in the population of interest (i.e., naturally occurring sites, managed sites).
3. Select methods to measure abundance and nesting success on the sample plots.
4. Conduct the field surveys.
5. Develop the initial models including sample size estimation needed to complete model development and testing.
6. Gather additional field data as needed for model development and testing.

Roles and responsibilities

Statistical consultant: (USGS or USFWS personal – Randy Dettmers?)

Participating States:

New Jersey – Sharon Defalco

Connecticut – Jenny Dickson

New York – Tim Post/John Confer

Pennsylvania – Dan Brauning

Delaware – Karren Bennet

Maryland – Gwen Brewer

Virginia – Mike Wilson

Design: Statistical consultant; participating State representatives
Field work: Participating States
Analysis: Statistical consultant
Evaluation: Participating States

Topic: Freshwater wetlands

Management Issues or Decisions

1. Conservation status and distribution [abundance] of wetland birds.
2. Response to invasive vegetation
3. Water management avian response

Objectives

Species: Emergent marsh birds (e.g., rails, bitterns, grebes)

Parameters: Occurrence, distribution, and abundance of breeding birds

Accuracy target: 50% Coefficient of Variation

Auxiliary information: Size, vegetation composition, structure, management (y/n),

Methods

1. Identification and selection suitable habitat in participating states
2. Use of standardized playback techniques
3. Develop additional sampling techniques to detect other priority waterbirds
4. Evaluate new automated digital detection technologies
5. Develop sampling method to address each management issue, stratified by wetland acreage, vegetative composition, and management activities
6. Develop model to estimate population size
7. Select methods of evaluating vegetative composition (remote sensing, mapping)

Roles and responsibilities

Statistical consulting: To be identified

Participating states: NY, PA, VA, and others

Design: Statistical consultant

Field work: Participating states

Analysis:

Evaluation: Participating state

Topic: Migration Stopover Habitat

Management Issues or Decisions

1. Identification and protection of migration stopover habitat for passerines
2. Identification and protection of migration stopover habitat for shorebirds

Objectives (passerines)

Species: Landbirds. Numerous species of conservation concern are likely to be addressed by this effort

Parameter: Abundance of landbirds during spring and fall migration

Accuracy Target: High probability of discriminating between sites that vary at least two-four fold in abundance.

Objectives (shorebirds)

Species: Shorebirds. Necessary to address species suites that use mud flats or beaches. This may include focal species of concern such as Red Knot and Semipalmated Sandpiper.

Parameter: Abundance of shorebirds during spring and fall migration at low tide foraging sites and high tide roosting sites (provides indices of populations)

Accuracy Target: High probability of discriminating between sites that vary at least five fold in abundance.

Methods (passerines)

Develop models using NEXRAD data that predict abundance as a function of several habitat and landscape characteristics (e.g., land cover type, patch size, connectivity of suitable patches).

1. Representative coverage for mid-Atlantic region needs to be completed (CT, NY).
2. Ground truth the stopover occupancy models based on radar data in the area covered by specific radar station. This includes designing sampling plan (e.g., model areas versus non-model areas), selecting appropriate methods to measure abundance, and conducting the field surveys
3. Develop stopover occupancy models for region. This will allow identification of areas not covered by the radar.
4. Ground truth the regional stopover occupancy model. This includes designing sampling plan (e.g., model areas versus non-model areas), selecting appropriate methods to measure abundance, and conducting the field surveys

Methods (shorebirds)

1. Aerial surveys to develop a more comprehensive assessment of shorebird stopover site use. This involves development of a sampling protocol for marsh complexes too large to be sampled completely. A model will be developed to predict use in areas not surveyed.
2. Ground surveys to determine species composition, behavior patterns (e.g., foraging, roosting), habitat use. Collect habitat variables data.

3. A model will be developed to predict use in areas unable to be comprehensively surveyed using standard techniques.

Roles and responsibilities (both bird groups)

Statistical consultant: (identify the person or potential people)

Participating States: (list State and person)

Design: Statistical consultant; participating State representatives

Field work: Participating States

Analysis: Statistical consultant

Evaluation: Participating States

Topic: Tidal Marsh and Flats

Management Issues or Decisions

1. Identification of important tidal marsh areas
2. Effects of tidal marsh manipulation and fisheries

Objectives

Species: e.g., sharp-tailed sparrow, other passerines, herons, secretive marsh birds, osprey, terns

Parameter: Abundance of breeding birds during breeding and non-breeding periods

Productivity for selected species (based on management issues and level of concern)

Accuracy Target: CVs #25% within treatments

Methods

Develop models that predict abundance and productivity as a function of tidal marsh or tidal flat manipulations.

1. Identify the independent variables to be evaluated for possible inclusion in the model development: impoundment management, creation, and enhancement; grid ditching; tidal flow restrictions; burning; aquaculture; development; fisheries; chemical treatment; patch size.
2. Design a sampling plan (e.g., involving stratification, experimental design) to insure that variation in each independent variable is similar to the variation that occurs in the population of interest (i.e., manipulated or natural sites) and may vary across the region.
3. Select methods to measure abundance and nesting success on the sample plots.
4. Conduct the field surveys.
5. Develop the initial models including sample size estimation needed to complete model development and testing.
6. Gather additional field data as needed for model development and testing.

Roles and responsibilities

Statistical consultant: Bill Kendall, USGS

Participating States: VA, NJ, DE, MD, NY, CT, MA, RI, ME)

Design: FWS-R5, USGS, VA, NJ

Field work: Participating States

Analysis: FWS-R5, USGS

Evaluation: Participating States

Topic: Wind Power Development

Management Issues or Decisions

Importance of potential wind power development areas, inland and near-shore, as migration and/or movement corridors

Objectives

Species: Hawks, nocturnal migrants and seabirds (e.g., scoters and gannets) during spring and fall migration and during winter (seabirds)

Parameter: Abundance of migrating/moving birds; potential use of rate
Abundance of seabirds in foraging and roost sites

Accuracy Target:

To be determined after consultation with experts in radar ornithology and seabird surveys

High probability of discriminating between sites that vary at least two-fold in abundance

Methods

Develop regional models that predict abundance/rate of movement as a function of altitude, landscape features, weather conditions, ridge orientation, distance from roost or foraging sites, distance from shore and seasonal effects.

1. Identify the independent variables to be evaluated for possible inclusion in the model.
2. Design a sampling plan (e.g., involving stratification) to insure that variation in each independent variable is similar to the variation that occurs in the population of interest (i.e., naturally occurring sites, managed sites) using Wind Resource wind speed map.
3. Select methods to measure abundance/rates on the sample plots.
4. Conduct the field surveys.
5. Develop the initial models including sample size estimation needed to complete model development and testing.
6. Gather additional field data as needed for model development and testing.

Roles and responsibilities

Statistical consultant: (identify the person or potential people)

Participating States: (list State and person)

Design: Statistical consultant; participating State representatives; experts in the fields of radar ornithology and seabird surveys

Field work: Participating States

Analysis: Statistical consultant; experts in the fields of radar ornithology and seabird surveys

Evaluation: Participating States