Where We Go From Here

Partners in Flight
Conservation Design Workshop

Charles K. Baxter
U.S. Fish and Wildlife Service
April 13, 2006
What Should We be Moving Toward

*Toward a Collaborative Response from the Bird Conservation Community to the Changing Nature of Conservation*

Partners in Flight
Conservation Design Workshop

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Three Topics…

- The Changing Nature of Conservation
- Implications to the Bird Conservation Community
- Where We Go from Here
The Changing Nature of Conservation

The Catalysts of Change

• Advancements in Conservation Theory
As a discipline that has always sought its roots in the scientific method, the most fundamental constraint facing conservation has been the issue of scale.

- Conservation occurs at the site scale
- Ecological processes operate at multiple spatial and temporal scales
- Conservation goals/objectives are stated at higher scales.
The common denominator of landscape ecology, ecosystem management, and conservation biology...

is an attempt to treat conservation as a multi-scale endeavor...

to reconcile site-scale actions with landscape scale processes and functions and to articulate goals and objectives that speak thereto.
The Changing Nature of Conservation

The Catalysts of Change

• Advancements in Conservation Theory

• Advancements in Information Management Technology

We are being challenged by theory and technology – S. Williams
The Changing Nature of Conservation

The Catalysts of Change

• Advancements in Conservation Theory

• Advancements in Information Management Technology

• An Increasing Emphasis on Accountability
To the extent our approaches are well defined, our methods well documented, and our assumptions explicitly stated, a model-based approach to conservation is intrinsically transparent.
The Changing Nature of Conservation

Conservation as a Discipline

- The Target is Changing

**Target:** Landscapes capable of sustaining populations of priority species range-wide at prescribed levels.
The Changing Nature of Conservation

Conservation as a Discipline

- The Target is Changing
- Expectations are Becoming Outcome-oriented

<table>
<thead>
<tr>
<th>Species</th>
<th>US/Canada Population</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cerulean Warbler</td>
<td>560,000</td>
<td>Increase 100%</td>
</tr>
<tr>
<td>Prothonotary Warbler</td>
<td>1,800,000</td>
<td>Increase 50%</td>
</tr>
<tr>
<td>Kentucky Warbler</td>
<td>1,100,000</td>
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The Changing Nature of Conservation

Conservation as a Discipline

- The Target is Changing
- Expectations are Becoming Outcome-oriented
- Methods and Approaches are Increasingly Model-based and Spatially Explicit

Forest Breeding Bird Source Population Areas
Cache/Lower White and Vicinity
The Changing Nature of Conservation

Conservation as a Discipline

- The Target is Changing

- Expectations are Becoming Outcome-oriented

- Methods and Approaches are Increasingly Model-based and Spatially Explicit

- Science/Management relationship is becoming increasingly complex.
A Strategic Direction for NWRC
Science for a Changing Conservation World

- Population/Habitat Modeling
- Landscape Characterization & Assessment
- Decision Support for Conservation Delivery
- Decision-Based Population & Habitat Monitoring
- Assumption-Driven Research
The Changing Nature of Conservation

Conservation as an Enterprise

- Planning
- Implementation
- Monitoring
- Evaluation
- Research
The Changing Nature of Conservation

Conservation as an Enterprise

• Planning – population-based and multi-scaled
• Implementation
• Monitoring
• Evaluation
• Research
The Changing Nature of Conservation

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- Planning – population-based and multi-scaled
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• Planning – population-based and multi-scaled
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The Changing Nature of Conservation

Conservation as an Enterprise

- **Planning** – population-based and multi-scaled
- **Implementation** – targeted and synergistic
- **Monitoring** – collaborative and decision-based
- **Evaluation** – outcome-focused
- **Research** – assumption-driven
The conservation paradigm is shifting from “resource management” and toward “system viability/sustainability.”
## Conservation Estate

<table>
<thead>
<tr>
<th>Program</th>
<th>Acres</th>
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<tbody>
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<tr>
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Mississippi Alluvial Valley

**Conservation Estate**

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**TOTAL** - 2,908,286

**Target:** Landscapes capable of sustaining populations of Trust species range-wide at prescribed levels.

**Where**

**How Much**

**How Much More**
On a philosophical level, landscape ecology, ecosystem management, and conservation biology represent a rejection of the resource management paradigm as being unable to halt or deal with the degradation of ecological processes, functions, and services.
Three Topics...

• The Changing Nature of Conservation

• Implications to the Bird Conservation Community

• Where We Go from Here
Five-Elements Process

- Landscape Characterization and Assessment
- Bird Population Response Modeling
- Conservation Opportunities Assessment
- Optimal landscape design
- Monitoring and Evaluation
Three Topics...

• The Changing Nature of Conservation
• Implications to the Bird Conservation Community
• Where We Go from Here
Where we go from here is largely a function of how we define our needs and perceive our challenges.
A pressing need of Joint Ventures is for a strong conceptual and methodological framework for conducting bird conservation at BCR scales.

Specifically, approaches and methods for…

- Characterizing and assessing habitat conditions at landscape and ecoregional scales.
- Translating continental and range-wide population goals into habitat objectives at ecoregional-, landscape-, and site-scales.
- Providing spatially explicit decision support for conservation delivery.
- Monitoring habitat change and population response at ecoregional scales.
Our challenges fall in four broad categories:

- Conceptual
- Methodological
- Technological
- Institutional
1. Development of spatial and ecological data
2. Database models
3. GIS-based HSI models
4. Statistical models

- Efforts have focused on tools and less so on decision support and optimization
- We need to place the whole process of conservation design within an adaptive planning and monitoring model.
Lower Mississippi Valley Joint Venture
Conservation Framework

- Population/Habitat Modeling
- Landscape Characterization & Assessment
- Conservation Design & Implementation
- Decision-Based Population & Habitat Monitoring
- Assumption-Driven Research
Lower Mississippi Valley Joint Venture
Conservation Framework

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Major Themes for Panel Discussion 2

• How do we validate our models?
• When is it appropriate to use abundance-based vs. demographic metrics?
• How necessary is it for us to standardize our approach across regions?
We don’t need one standardized approach, but... we need our various approaches more standardized.

“There are a lot of neat things going on.”
Methods for Generating Patch and Landscape Metrics

Ed Laurent, Ph.D.
Biodiversity and Spatial Information Center
North Carolina State University
Raleigh, NC
Ed_Laurent@ncsu.edu

Conservation Design Workshop
St. Louis, MO  April 11, 2006
APPLICATION OF LANDSCAPE-SCALE HABITAT SUITABILITY MODELS TO BIRD CONSERVATION PLANNING

Frank R. Thompson III,
USDA Forest Service North Central Research Station, Columbia, MO
Ecosystem Modeling, Historic Vegetation Modeling, and Some Applications to Management

David Diamond
diamonddd@missouri.edu
Application of FIA data to spatial modeling of landscape change and bird habitat suitability

D. Todd Farrand, John Tirpak, Frank Thompson, Dan Twedt, and Bill Uihlein
April 12, 2006
PIF Technical Series No. x – Methods for Generating Avicentric Landcover Data

PIF Technical Series No. x – Methods for Applying Landscape-scale Habitat Viability Models to Bird Conservation Planning

PIF Technical Series No. x – Methods for Applying FIA Data in Characterizing and Monitoring Habitat Suitability

PIF Technical Series No. x – Methods for Integrating Spatially Explicit Decision Support into Conservation Delivery
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We need IT tools that support leveraged, collaborative approaches to amassing and compiling information and translating that information into knowledge.
Our challenges fall in four broad categories:

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- Methodological
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Conservation Cartel?

What we need much more than a conservation cartel is...

for our conservation organizations, individually and collectively, to operate under a new conservation business model.
The Business Model Concept...

The vehicle for defining the underlying, otherwise unstated, assumptions and core beliefs that when articulated explain to audiences both internal and external:

• Why a business exists;
• The value-added services and products it seeks to provide;
• How it seeks to position itself in the external marketplace; and
• The operational principles and framework upon which its human and capital resources are arrayed and allocated.
The Business Model Concept...

If effective, a business model will respond to one of the principle tenets of management theory...

Many businesses fail or decline because the assumptions that underlie their decisions (about society, markets, customers, products, technology, and mission) are made obsolete, invalid, or irrelevant by a constantly changing business environment.
A rethinking and subsequent realignment of the processes and procedures associated with a business’ core functions, taken with the aim of maintaining competitiveness in a rapidly changing business environment.

Business community drivers…
- The “global economy”
- IT “revolution”

Conservation community drivers…
- Shifting conservation paradigm
- IT “revolution”
Conservation Process Reengineering

- Goals and Objectives
- Nature of Planning
- Management and Research
- Monitoring and Evaluation
- Technology
Conservation Process Reengineering

- Goals and Objectives
- Nature of Planning
- Management and Research
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Goals/objectives established in the context of population viability or system sustainability; derived from testable assumptions or predictions of biological response.
Reestablish and maintain three viable sub-populations of LA Black Bear in the Tensas Basin, Red River Backwater, and Atchafalaya Basin of Louisiana.

Whereas traditionally...

Goals and objectives tend to be programmatically derived, activity focused, and opportunity based.
Reestablish and maintain three viable sub-populations of LA Black Bear in the Tensas Basin, Red River Backwater, and Atchafalaya Basin of Louisiana.

Whereas traditionally...

Protect and restore 200,000 acres of bottomland hardwoods in the Mississippi Alluvial Valley.

• Goals and Objectives
• Nature of Planning
• Management and Research
• Monitoring and Evaluation
• Technology
Planning becomes biologically focused and model-driven; directed at landscape-scale population/habitat relationships; focused less on temporally static decisions and more on supporting decisions over time. Planning is iterative and cyclic.

Whereas traditionally…

Planning is akin to cataloguing and prioritizing program-specific opportunities; tending to be sporadic and focused on temporally static decisions; responding to administrative edict.
Conservation Process Reengineering

M & R linked by explicitly stated, testable assumptions as to how populations are responding to changing landscapes and management prescriptions.

Whereas traditionally...

Management operates on the basis of intuitive, implicit assumptions and research focuses on academic interest.
Monitoring programs designed to test assumptions, evaluate uncertainty, and assess landscape change and biological response.

Whereas traditionally...

Monitoring tends to be viewed as an element of “research” with management being content to track accomplishments as administratively required.
Conservation methods will be highly demanding of spatial and relational database technologies, requiring core competencies and skills not traditionally associated with the conservation workforce.

Whereas traditionally...

The technology focus of conservation organizations has been on administrative applications of the business community at large, e.g. e-mail, web-sites, financial management, teleconferencing, etc.
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‘A conclusion is the place where you got tired of thinking.’ – Steven Wright
Gil Eckrich
New Challenges...fundamentally

Target: Landscapes capable of sustaining populations range-wide at prescribed levels.

Approach: Means and methods of developing population-based goals and objectives expressed and linked across multiple spatial scales.
To you young people...

Remember Steve Moran’s words.
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