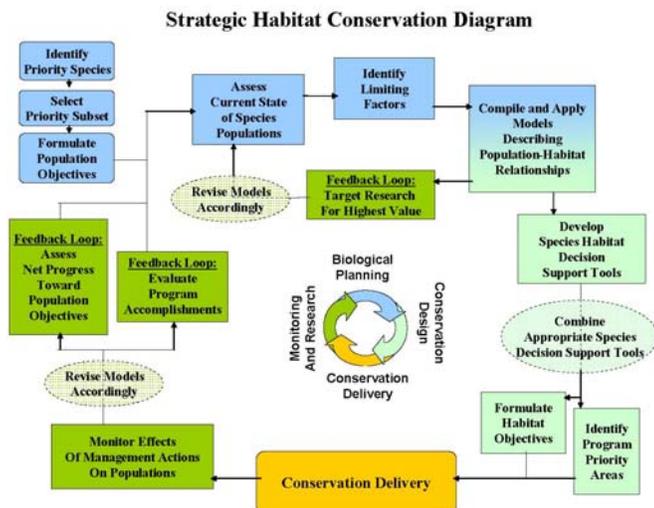


The U.S. Fish and Wildlife Service's Biological Monitoring Team (BMT) was charged in 2005 with developing a program to address biological monitoring and adaptive management needs within the National Wildlife Refuge System (NWRS). The pilot program is based in the Northeast and Great Lakes – Big Rivers regions and most staff are co-located with the U.S. Geological Survey's (USGS) Upper Midwest Environmental Sciences Center in La Crosse, WI.

This report summarizes how the current BMT projects are helping to implement Strategic Habitat Conservation (SHC) by pursuing the three goals established in the team's 2006 – 2010 strategic plan (see box). The BMT has focused primarily on identifying refuge information needs, developing monitoring protocols and databases based on those needs, and learning to implement adaptive management through case studies. The NWRS is leading by example and creating useful tools.



*The BMT helps to implement Strategic Habitat Conservation through evaluation of Conservation Delivery by facilitating defensible monitoring programs across numerous stations and Partners, facilitation of adaptive management to address refuge management needs, and working with numerous stations and researchers to perform management based research.*

### Biological Monitoring and Evaluation

#### National policy & technical work groups

The BMT leader co-leads a national team that is revising the Service's Policy on Inventory and Monitoring. We participate on the National Technical Advisory Team engaged in guiding implementation of SHC and on the Service's National GIS Steering Committee.

#### Online seminars for refuge staff

We are initiating online Biological Seminars in an effort to help refuge biologists and managers stay current on timely land management issues. The seminars will feature experts on specific biological topics and will bring information to field stations without the time and cost of travel.

### Biological Monitoring Team Goals & Strategic Habitat Conservation

#### Conservation Delivery

#### Monitoring & Research

**Goal 1: Biological Monitoring and Evaluation** – National Wildlife Refuges, Wetland Management Districts & Partners Programs (stations) will evaluate achievement of their wildlife and habitat goals and track the management and conservation of their natural resources over time and space through systematic collection, storage, and reporting of biological data addressing specific management information needs.

**Goal 2: Adaptive Management** – Stations will initiate management-focused research and develop new tools and techniques to fill information gaps. Adaptive management research will be used to clarify the outcomes of specific management actions and guide future management programs.

#### Biological Planning

**Goal 3: Partnerships to Coordinate Monitoring** – Stations will contribute to regional, national, and continental conservation of trust resources as partners with other Service programs and states by collaborating with other agencies performing similar monitoring efforts to ensure that data can be easily exchanged for analyses at multiple landscape scales.

#### Marsh bird monitoring

The national marsh bird monitoring protocol is under revision and a national database has been established with the USGS. A National Marsh Bird Inventory and Monitoring Plan is under development that includes sampling designs and a continental sampling framework that will benefit more than 90 stations in six Regions that are monitoring secretive marsh birds.

#### Land bird monitoring

A land bird monitoring protocol is in the final stages of revision. We continue to work with USGS to improve the National Bird Point Count Database. Trainings are planned on how to use the protocol & database. Customized GIS and statistical tools are currently being developed to assist stations with data analysis.

#### Water level database

We completed the NWRS database to track water level data within refuge management units; online trainings on how to use the database were held and more are planned.

#### Adaptive Management

#### Water bird response to impoundment management

A three-year study at 23 stations to evaluate the seasonal timing of impoundment draw-downs on migratory water birds is drawing to a close. We anticipate a final report on the project in 2008. Cooperative study with US Fish & Wildlife

Service (FWS) Region 3 (R3), R5, & USGS Patuxent Wildlife Research Center.

### **Cattail control using prescribed fire**

A study at five stations to investigate prescribed fire as a strategy for controlling cattail dominance in wetlands within the NWRS is continuing. Cooperative study with FWS R3, R5, & USGS Northern Prairie Wildlife Research Center.

### **Techniques to manage invasive reed canary grass**

The first full field season is beginning for an adaptive management project that seeks to identify the best ways to control reed canary grass, a highly invasive grass of wetland habitats. Cooperative study with FWS R3, R6, & USGS Florida Cooperative Research Unit.

### **Management of native grasslands**

Minnesota stations are involved in a new three-year study to adaptively managed native grasslands to discourage invasive species and support grassland-associated wildlife. Cooperative study with FWS R3, R6 & USGS Northern Prairie Wildlife Research Center.

### **An ecological integrity index for coastal salt marshes**

Seven stations in FWS R5 will collect pilot data this year under a new project focused on developing an ecological integrity index for coastal salt marshes. The index will be used to evaluate the environmental quality of refuge salt marshes and track changes as a result of refuge restoration activities or climate change. Cooperative study with FWS R1, R2 & USGS Patuxent Wildlife Research Center.

### **Adaptive management consultancy**

We tested ways to simplify the adaptive management process to make it useful for routine management problems that lack a large research budget. This is a cooperative study with FWS R3, R5, & USGS Patuxent Wildlife Research Center.

Workshops were held to initiate adaptive management projects on the following topics; the projects are ongoing:

**Fire & salt marsh management.** Salt marshes at Blackwater NWR have been managed with fire for decades; we planned an adaptive management project to evaluate the effects of different burn frequencies on vegetation, birds, and changes in open water and elevation.

**Native grassland management.** Native grasslands in the Midwest are becoming invaded with non-native grasses such as brome. An adaptive management project will help evaluate alternative management practices designed to maintain or restore high quality native grasslands.

**Managing islands for nesting seabirds.** We explored ways to improve habitat structure on intensively managed islands at Maine Coastal Islands NWR and apply what we learn to islands that are not currently under management. This is a difficult problem because of the logistics of employing

different management techniques on coastal islands.

**Shrubland management.** Restoring & maintaining native shrub communities is complicated by invasive shrubs, leading to costly, intensive management. We designed an adaptive management study to compare low cost vs. high cost management strategies at four stations in R5.

**The role of sediment excavation in small wetland restorations.** The practice of removing sediment from the basin during the wetland restoration process is costly, but preliminary evidence indicates that it could greatly improve quality. We designed an adaptive management project to evaluate this practice on FWS stations and private lands in R3 to see if the improvement in wetland quality is worth the cost.

**Management of temporary wetlands.** Temporary wetlands lose their habitat value for waterfowl if they become choked with vegetation, usually non-native grasses & forbs. We designed an adaptive management project to evaluate several low-cost management practices designed to alter the habitat structure to attract waterfowl at FWS stations in R3.



*Workshops bring together biologists, managers, and scientists to solve difficult management problems.*

### **Partnerships to Coordinate Monitoring Waterbirds – Setting objectives, modeling, & coordinating monitoring**

We are working to implement all aspects of SHC in a waterbird initiative involving FWS R3, R4, R5, Joint Ventures, USGS, & Manomet Bird Observatory. Several work groups are addressing different phases of the SHC process. A workshop was held to identify key waterbird management decisions and the information needed to support those decisions at three landscape scales: Refuge, Region, and Flyway. Another team is modeling waterfowl movement to support management of migration habitat along the Mississippi & East Coast flyways. Monitoring & research needs will also be identified. This project is ongoing.

### **Improving decision making – building capacity**

BMT & refuge staff are being trained in the principles of structured decision making (SDM) and, in cooperation with NCTC & USGS, are building their skills as SDM facilitators and learning to incorporate modeling into decision making.

### **For further information**

Hal Laskowski, BMT Leader  
Prime Hook NWR  
11978 Turkle Pond Rd.  
Milton, DE 19968  
302.684.4028 phone  
302.684.8504 FAX

[Harold\\_laskowski@fws.gov](mailto:Harold_laskowski@fws.gov)

Melinda Knutson, Wildlife Biologist  
Biological Monitoring Team  
2630 Fanta Reed Road  
La Crosse, WI 54603  
608.781.6339 phone  
608.783.6066 FAX  
[Melinda\\_knutson@fws.gov](mailto:Melinda_knutson@fws.gov)

