

## Habitat management for multiple wetland bird objectives on National Wildlife Refuges



## Wetland Bird Habitat: Background

- ◆ Many National Wildlife Refuges and Wetland Management Districts (WMDs) manage wetland habitats for migratory bird species.
- ◆ Many Opportunities to manage habitats for other wetland birds, such as secretive marsh birds, shorebirds, and wading birds.
- ◆ Managers make decisions about the hydrological and vegetation manipulations that will occur in their wetlands, and on the life history requirements of the bird species that use the wetlands.

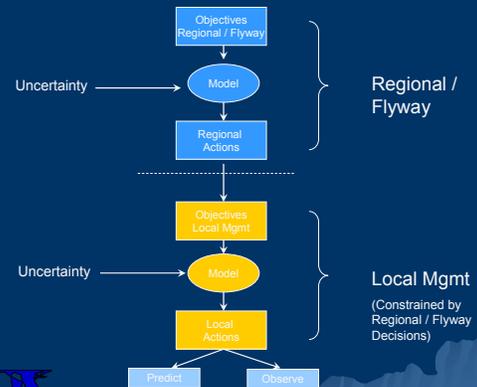
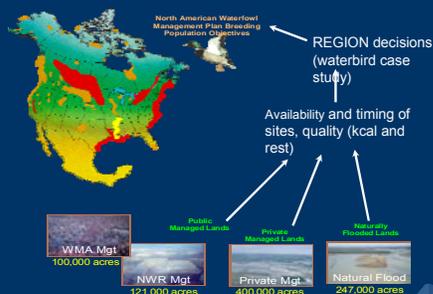
## Wetland Bird Habitat: Problem Statement

- ◆ Optimize management of wetland habitats for wetland birds given multiple objectives, constraints, and uncertainties on their field station?

## Wetland Bird Habitat: Goals

- ◆ A formal decision analysis will help us to develop and consider alternatives for multiple objectives (either within one wetland unit or among several wetland units within a complex).
- ◆ Clarify objectives wetland habitat management on NWRs.
- ◆ Identify and clarify uncertainties
- ◆ Identify information needs to implement alternative actions to meet objectives.

## Conservation Programs Connected Through Migration Pathways



### Flyway-Wide Waterbird Decisions:

- ◆ Prioritize species.
- ◆ Identify population targets.
  - Determine quantity/quality of habitat to meet population targets.
- ◆ Determine distribution of habitat to meet energetic needs of waterbirds.



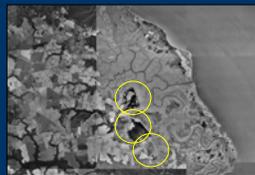
### Regional: Decision Statement

- ◆ Identify and prioritize significant regional waterbird contributions.
- ◆ Distribute staff and funds to maximize priority waterbird contributions.



### Local (refuge): Decision Statement:

- ◆ Prioritize which habitat patches to restore, maintain, manipulate given staff and fund limitations.
- ◆ Determine type and timing of manipulations for waterbirds.



### FRAMING THE PROBLEM

#### Decision Makers:

- Land Managers (USFWS lands)

#### Legal and Regulatory Context:

- Organic Act (Refuge Improvement Act 1997)
- CCP and Step-down plans.
- ESAs

#### Essential elements of the decision:

- Scope and scale (FWS lands, i.e. refuges, WMDs)
  - Refuges in the context of the region and flyway
- Time and frequency
  - Variable (annual, biannual, periodic rotations, once-in-life time, infrastructure, etc.)

#### Linked decisions: (spatial and temporally linke).

- Management actions that affect subsequent decisions (EX. Removing dike in freshwater impoundment in salt marsh habitat – no going back and suite of species use will be different and subsequent management actions and decisions will be different.
- The higher the magnitude of the decision the higher the amount of linkage to other decisions.

#### Problem Class:

- Multiple objectives
- Uncertainties.



