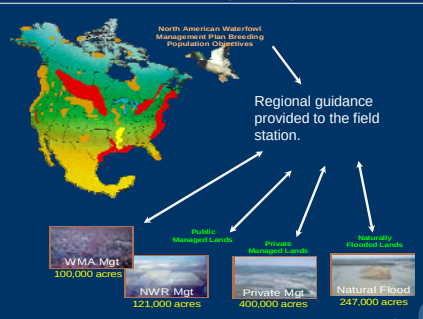
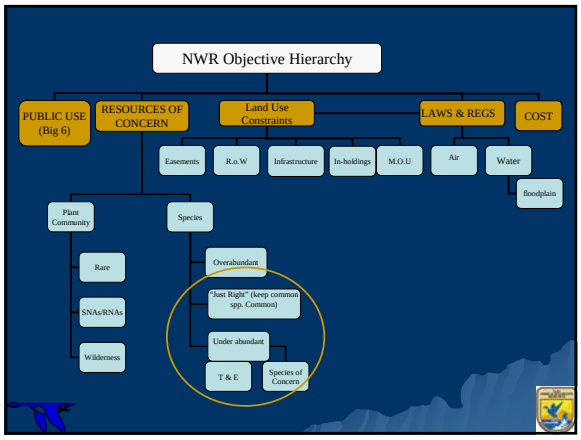
Habitat management for multiple wetland bird objectives on National Wildlife Refuges

Wetland Bird Habitat: Problem Statement

- THINK GLOBALLY, ACT LOCALLY!!
- Maximize refuge contribution to Regional and Flyway wetland bird populations.
- Decision: Determine optimal management actions in wetland habitats for wetland birds at the field stations.
- Decision Makers: Field station staff

Conservation Programs Connected Through Migration Pathways



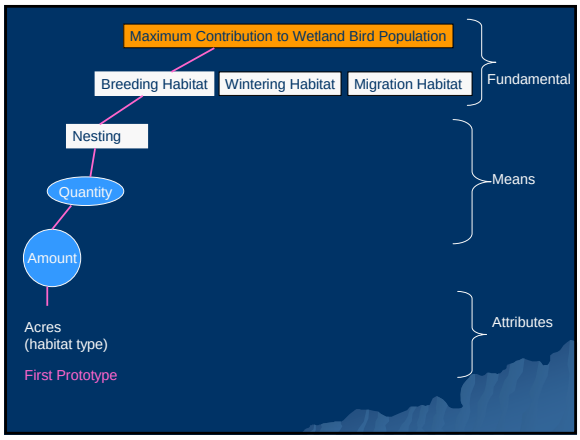


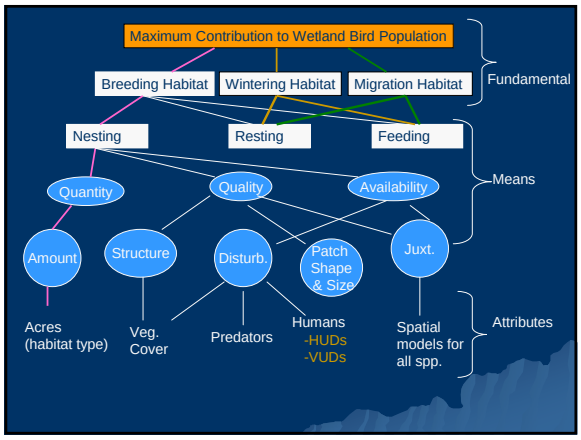
Alternatives for Portfolio

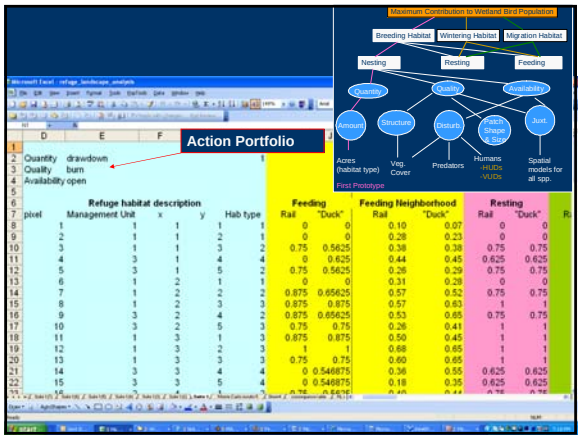
Potential Refuge Specific Management Actions Used in Wetlands:

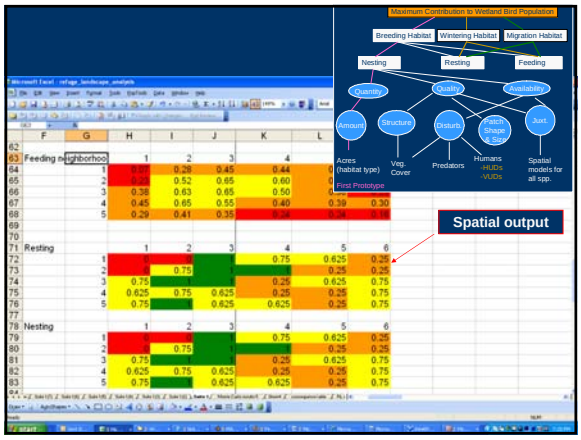
Drawdown
Flooding
Mowing
Herbicide treatment
Disking,
Predator control
Access control,
Combination of actions,
Etc.....

- Identified Objectives
- Identified Actions
- Use a Model to Link them







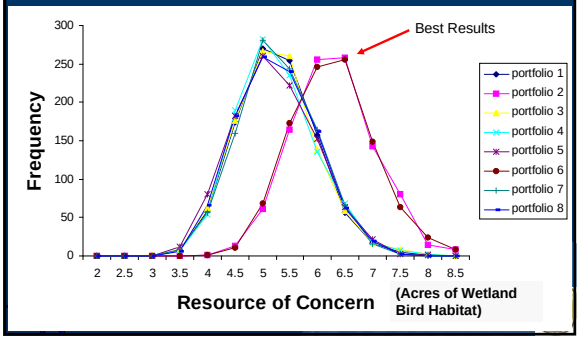


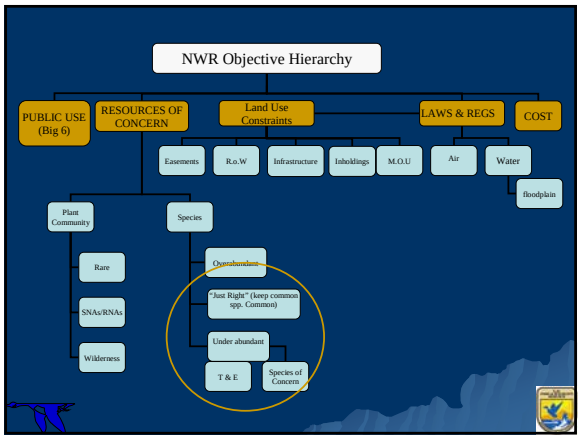
Uncertainty

- -Environmental Stochasticity
- -Partial Controllability
- -Partial Observability
- -Lack of Knowledge of Biological System

Uncertainties are specific for each individual station.

Biological results from actions





Consequences Table

	Port 1	Port 2	Port 3	Port 4	Port 5	Port 6	Port 7	Port 8
Quantity Quality Availability	drawdown burn open	maintain burn open	drawdown herbicide open	maintain herbicide open	drawdown burn close	maintain burn close	drawdown herbicide close	maintain herbicide close
Cost Public Use R.o.C. Laws & Regs								

Prototype Consequence Table

Consequences of Action Portfolios for the Fundamental Objectives

	Port 1	Port 2	Port 3	Port 4	Port 5	Port 6	Port 7	Port 8
Quantity Quality Availability	drawdown burn open	maintain burn open	drawdown herbicide open	maintain herbicide open	drawdown burn close	maintain burn close	drawdown herbicide close	maintain herbicide close
Cost	600	500	300	200	600	500	300	200
Public Use	18	22	13	17	8	12	3	7
R.o.C.	5.01	6.03	5.00	5.00	4.97	6.02	5.03	5.00
Laws & Regs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Best Choice

Linked Decisions

-Decisions are linked:

season to season

year to year

decades

once/lifetime decisions

To be addressed in the Next Steps

NEXT STEPS

- Utilize existing databases where appropriate
- Presentation to the regional office (Chiefs, Supervisors and Planners) and mig birds.
- Develop a waterbird monitoring program and database to inform the decision framework – in progress, will participate in team
- Incorporate into the Biological Foundations Course

NEXT STEPS

- Determine costs associated with developing the model
- Fully develop working decision model
- Utilize existing databases where appropriate
- Test and revise the model
- Peer review of the model
- Presentation to the regional office (Chiefs, Supervisors and Planners) and mig birds.
- Presentation to the Refuge Managers and Biologists.
- Model available for Refuges to use.
- Incorporate model into CCPs, HMPs, etc
- Develop a waterbird monitoring program and database to inform the decision framework – in progress, will participate in team
- Explore tweeking the decision structure to be applied to other refuge management decision needs
- The Region must provide species goals and priorities to field stations.

Timeframe

Goal	Timeline	Who	How
1	Today	Team	
2	Within a month	Team	
3	6 months	A modeler (Eric)	Through contracts
4	6 months	Database and GIS developers	
5	Within 3 months after development before March 15th	Refuges in regions 3,4 and 5	
6	April – May	Selected Refuge managers, regional office, flyway – mig bird, JV, USGS	
7	Fall 2008	Team Members	Refuge Leadership Team RO Brown Bag Lunch
8,9	Fall 2009 R5 first week in March	Kevin H./Alex	Project Leader Meeting Biologists Workshop Refuge Academy New Biologist Training
10	2010	Whomever wants to use them	

Thank You….

Eric Lonsdorf – Coach

Mark Seamans - Apprentice

Refuge Managers: Louis Hinds
Maggie Anderson

Biologists: Candy Chambers
Diane Granfors
Kevin Holcomb
Alex Chmielewski

Maggie's lessons learned….

Lessons Learned

- **Value of SDM Process**
  - Transparent process -documents decisions made
  - Logical
  - Indentifies uncertainties
  - Prioritizes important points of the process
  - SDM process brought out the commonalities of how decisions are made
  - Defensible
  - Process is important for planning CCPs and step down plans
  - Documents historical knowledge of decisions
  - Provides basis of historical record (thought process)
  - Reinforces the NWRS connectivity
  - Clarifies objectives
  - Accomplished A LOT in one week!
  - Time efficient

More lessons learned….

- **Hurdles of SDM Process**
  - *"It's tough to teach old dogs new tricks"* (Lou Hinds, 2008)
  - Service commitment to SDM (longevity?)
  - Modeling experts are needed in development
  - Learning curve
  - Difference between understanding the process vs. accepting the process
  - Time commitment to implement