

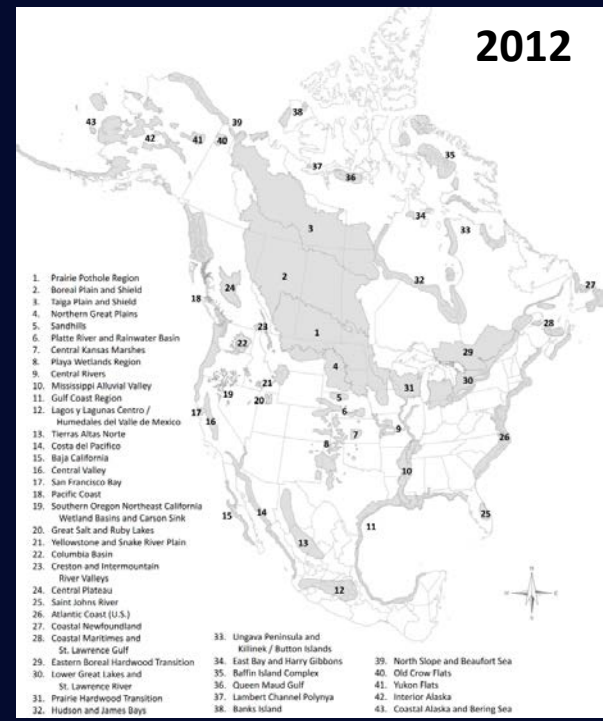
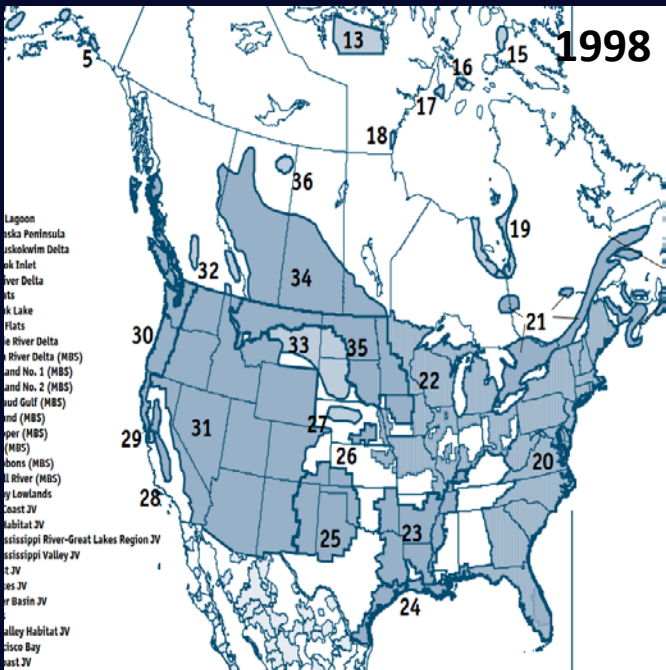
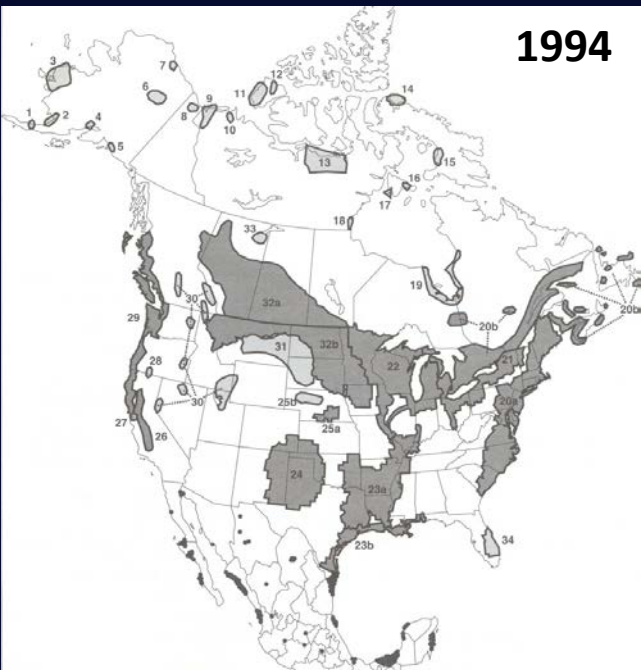
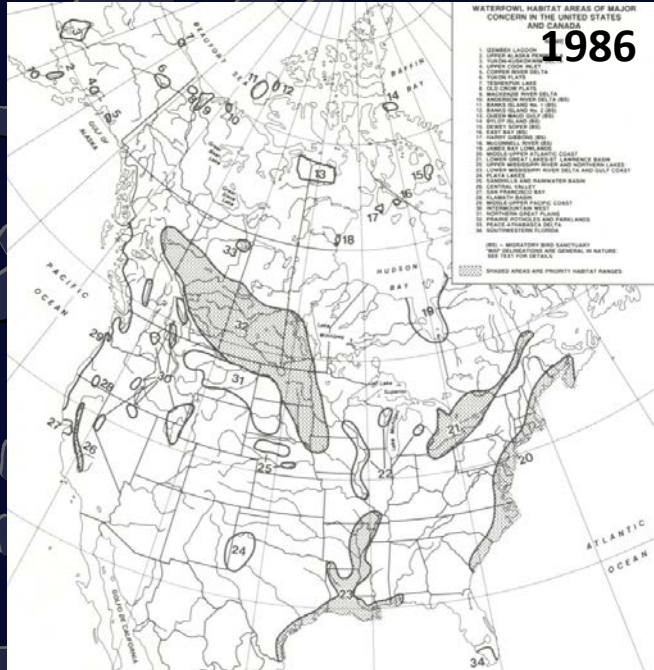


Resource Allocation to Important Landscapes: Integrating Biological and Social Objectives

September 27th, 2017

Presenter: Anastasia Krainyk, PhD

Priority Landscapes Committee: James Lyons, Michael Brasher, Greg Soulliere, Josh Vest, Mark Petrie, Stuart Slattery, Patrick Devers, Kevin Kraai, Kathy Fleming, Sean Fields, Dale Humburg, David Howerter, Blair Stringham, Joe Fuller, John Coluccy, Luke Naylor, and Mindy Rice

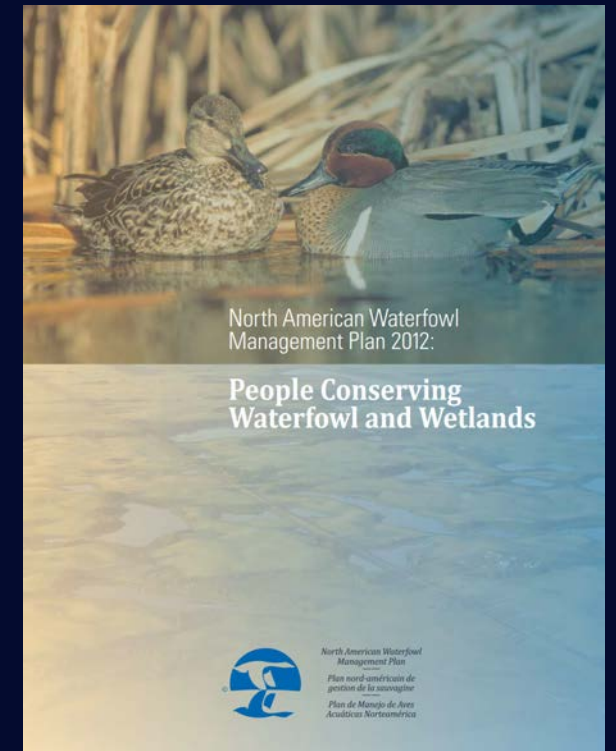


› The Evolution of Landscapes of Importance Map

- “Not able to develop universal criteria for area inclusion on the NAWMP Map.”
- “Quality and reliability of available waterfowl population data varied considerably among regions.”
- “Given the subjectivity in its development and refinement, the NAWMP map has limited ability to inform conservation decisions and investments.”

- Soulliere et al. 2012

Recommendation (from 2012 NAWMP Revision and 2012 NAWMP Action Plan): Focus resources on important landscapes that have the greatest influence on **waterfowl populations** and those **who hunt** and **view waterfowl**.



NAWMP – habitat delivery to support waterfowl population objectives and human dimension objectives

Advise the NAWMP Plan Committee on NAWMP Objectives revisions based on the INTERPRETATION of trade-offs and decision analysis from products provided by the Priority Landscapes Committee

Interim Integration Committee (IIC)

Charge the NSST with research objectives

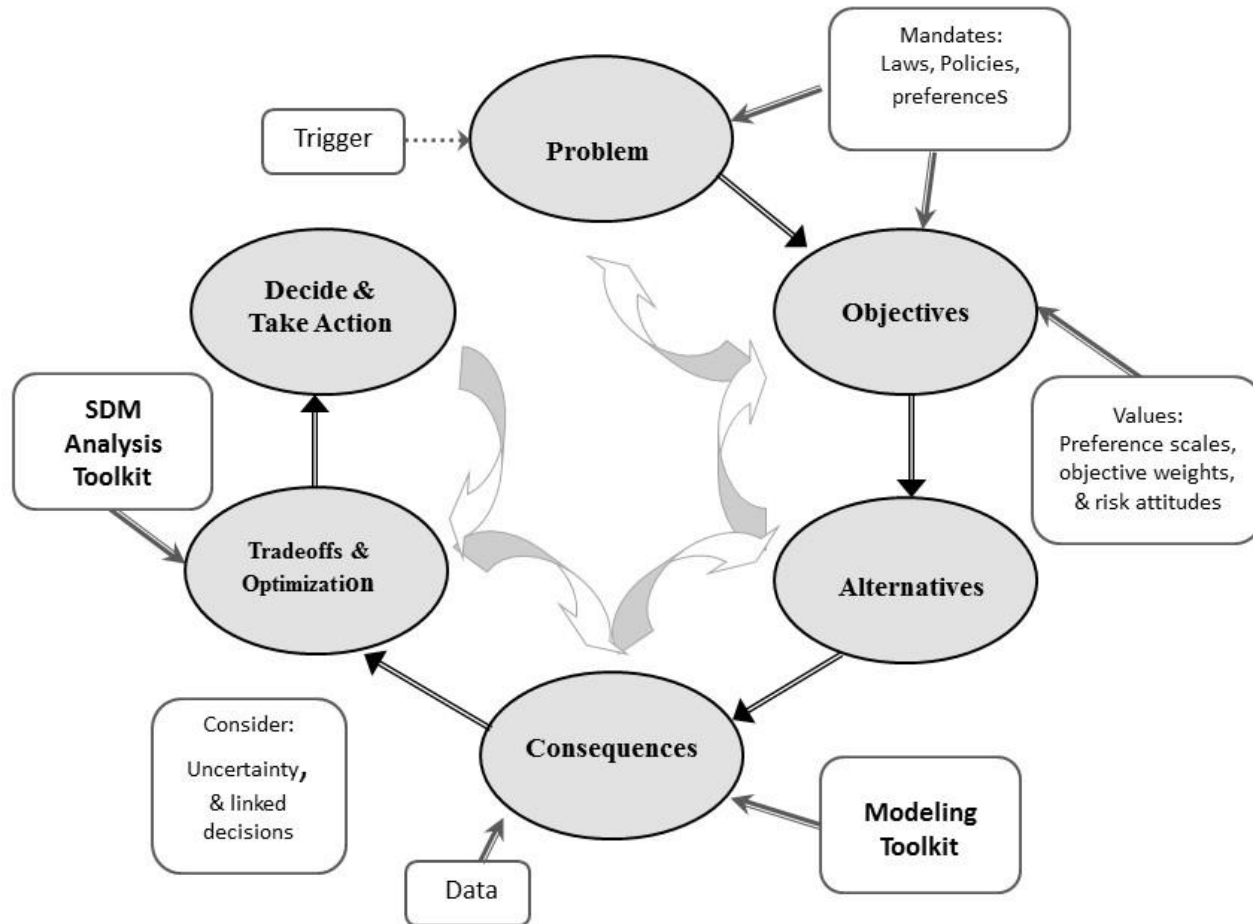
NSST – provide science based support to inform NAWMP

Provide OBJECTIVE, science-based, spatial data on waterfowl distribution and abundance and human dimensions

Charge the Priority Landscapes Committee with production of spatially explicit science to inform management

Priority Landscapes Committee– provide a ‘family’ of maps to guide spatially explicit HABITAT DELIVERY that supports waterfowl populations objectives and human dimensions objectives

Priority Landscapes Committee

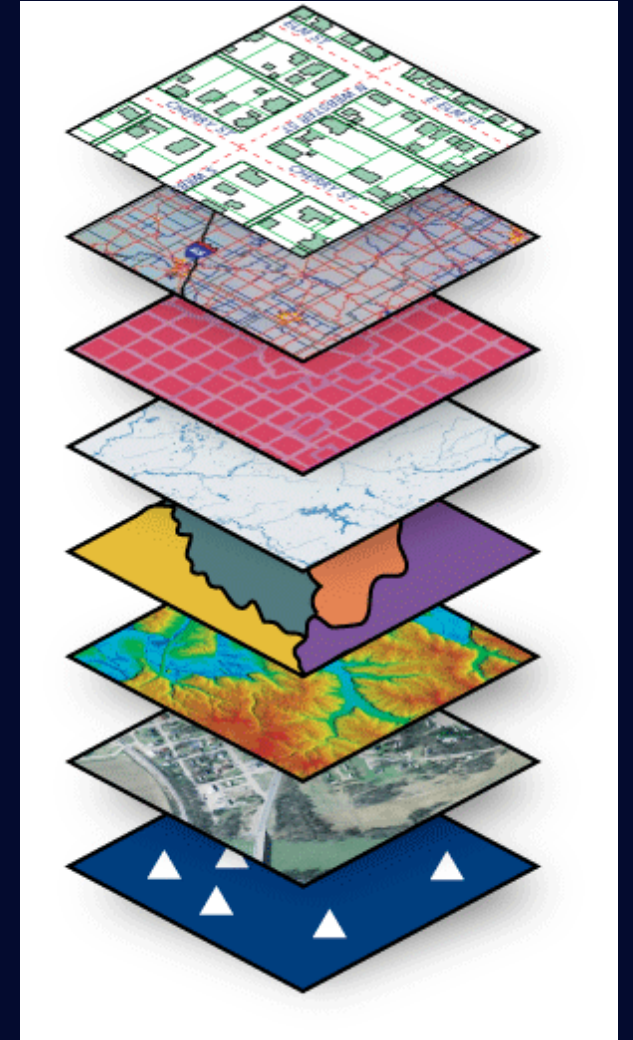


Source: Jean Fitts Cochrane

- › Challenged to simultaneously consider multiple objectives
- › We adopted the SDM (Structured Decision Making) Approach
 - Multi-Attribute Value Theory (MAVT) for spatial analysis

Process and Progress

- › Committee meetings
- › **Committee Goals**
 - › Identify Objectives (Biological and Social)
 - › Identify the appropriate performance measures for each Objective
 - › Develop a family of maps for each objective
 - › Develop one aggregated map for the next NAWMP revision



Waterfowl Population Objectives

Maintain Waterfowl Populations

Waterfowl
Abundance

Breeding
Range

Non-
Breeding
Range



© Ganesh Jayaraman

Waterfowl Species
Diversity



©Glenn Bartley

© Glenn Bartley

Species/Group	
American Black Duck	
Mallard	
Northern Pintail	
Wood Duck	
Scaup Spp.	
Dabbling Ground Nesters	
	American Wigeon
	Mottled Duck
	Northern Shoveler
	Gadwall
	Green-winged Teal
	Blue-winged Teal (Cinnamon Teal)
Diving Ground Nesters	
	Scoter Spp.
	Eider Spp.
	Long-tailed Duck
	Harlequin Duck
Diving Cavity Nesters	
	Bufflehead
	Goldeneye Spp.
	Merganser Spp.
Diving Overwater Nesters	
	Canvasback
	Redhead
	Ring-necked Duck
	Ruddy Duck

Human Dimensions Objectives

Increase Recruitment and Retention of Waterfowl Habitat Conservation Supporters

Increase # of Hunter Conservationists

Access

of Birds Seen

Crowding

Travel Distance

Increase # of Other Conservation Supporters

Increase # of Birders

Species Diversity

Natural Cover

Travel Distance

Increase # of General Public Supporters

EGS

H2O Quality

Flood Abatement

Drought Mtg/ C. Seq.

Green Space/Rec

Partners

Objectives

Hunter Days Afield

Travel Distance

Access

number of waterfowl seen

Crowding

Species Diversity

Natural Cover

Partners

Impaired Watersheds

H2O Quality

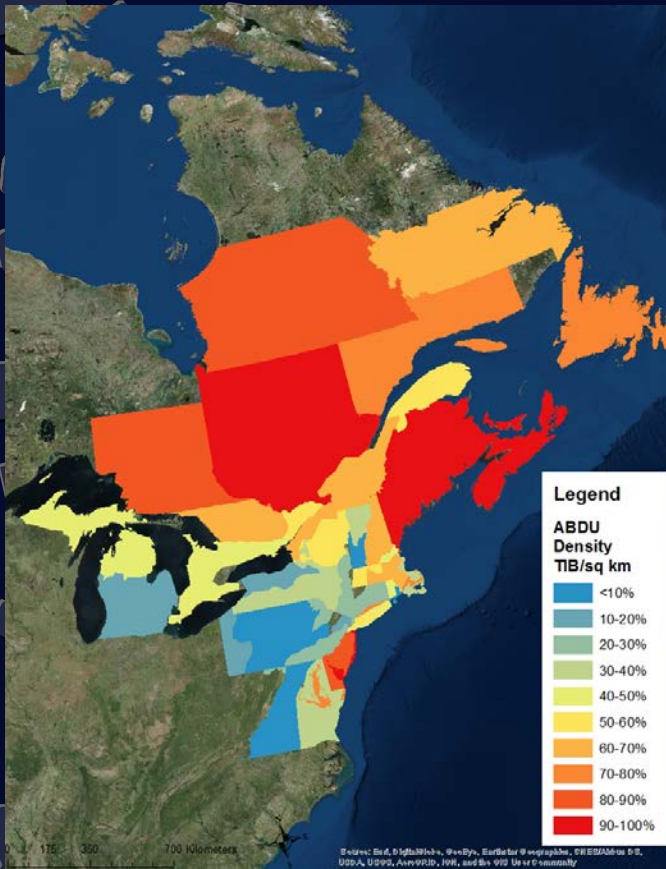
Flood Abatement

Drought Mitigation/C. Sequestration

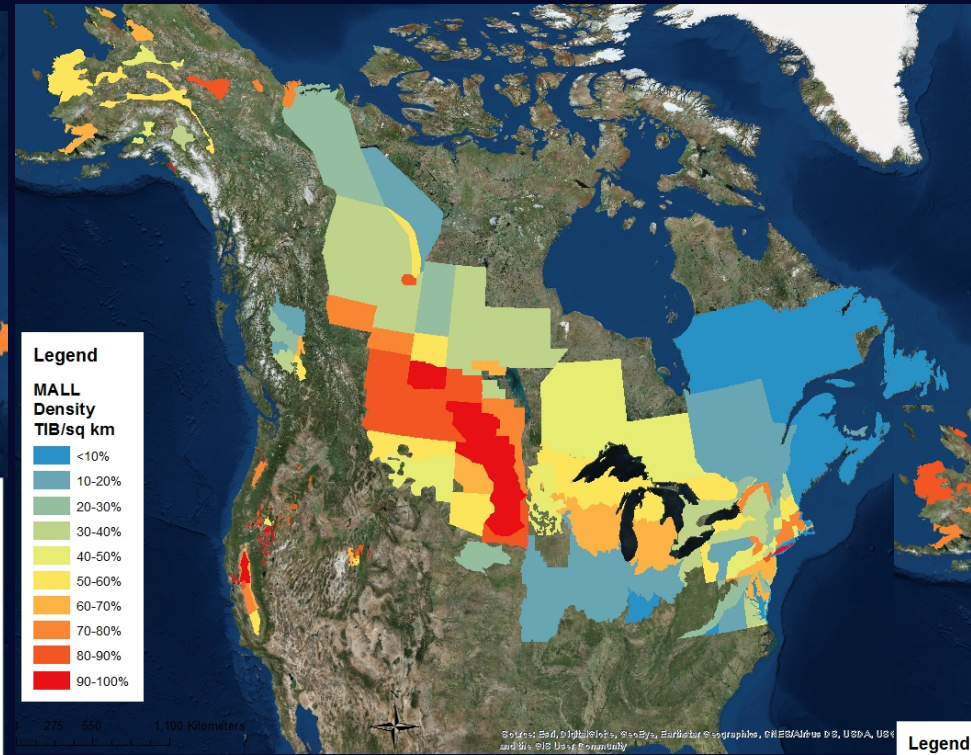
Green Space/Recreation



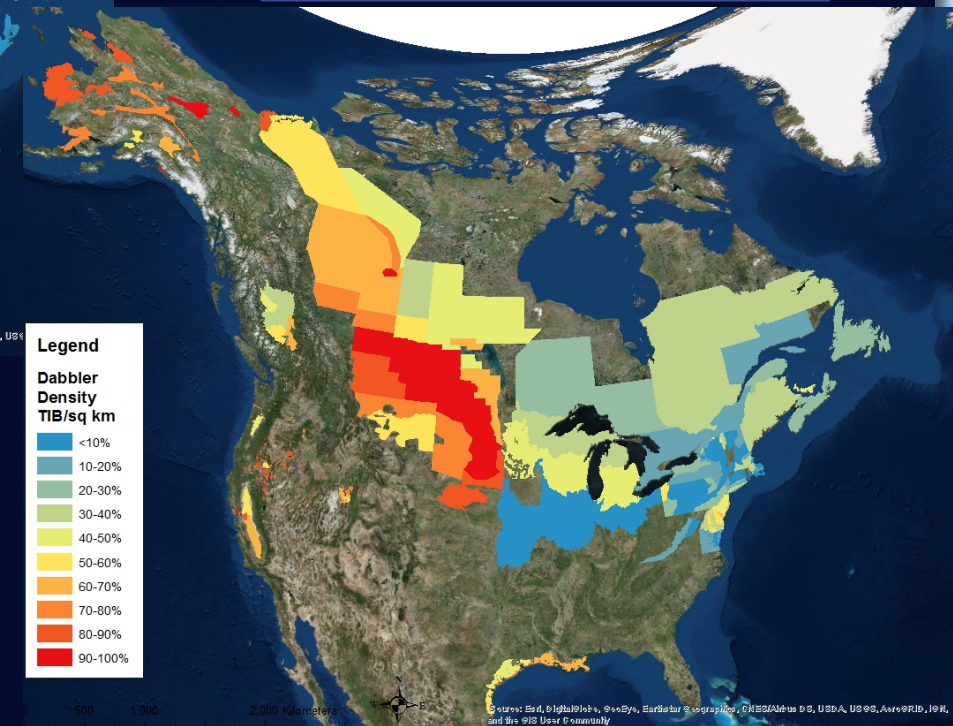
Waterfowl Population Objectives: Breeding Range



American Black Duck

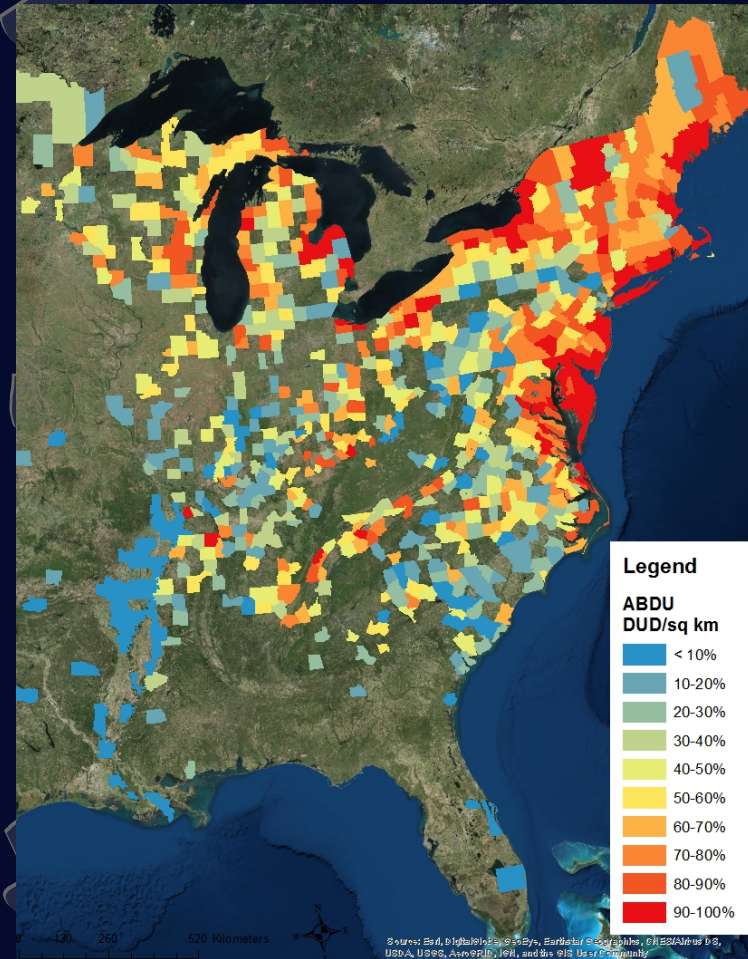


Mallard

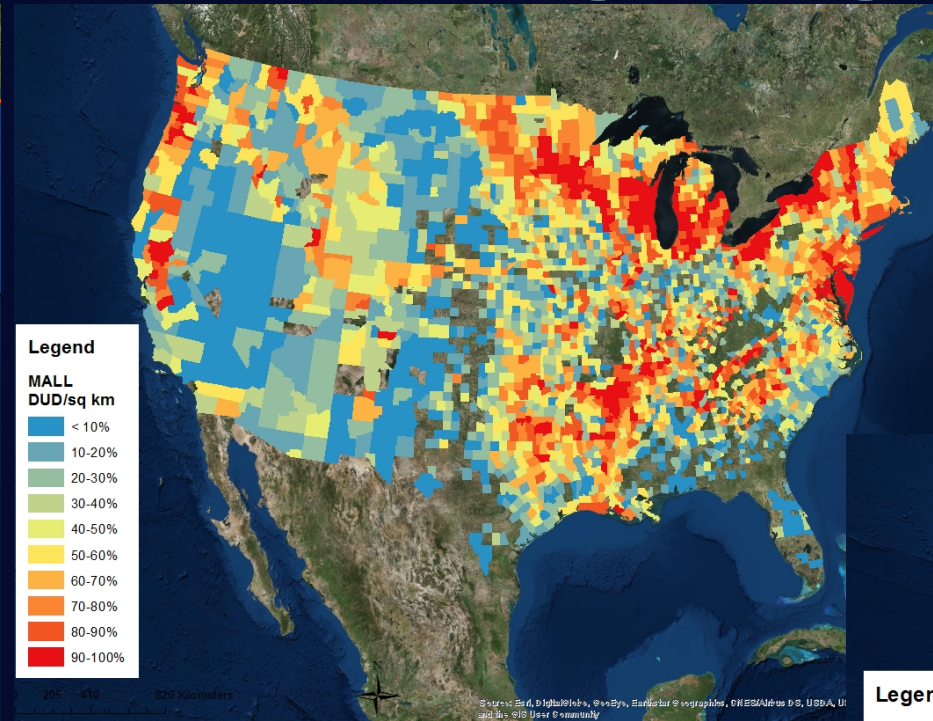


Other Dabbling Ducks

Waterfowl Population Objectives: Non-Breeding Range

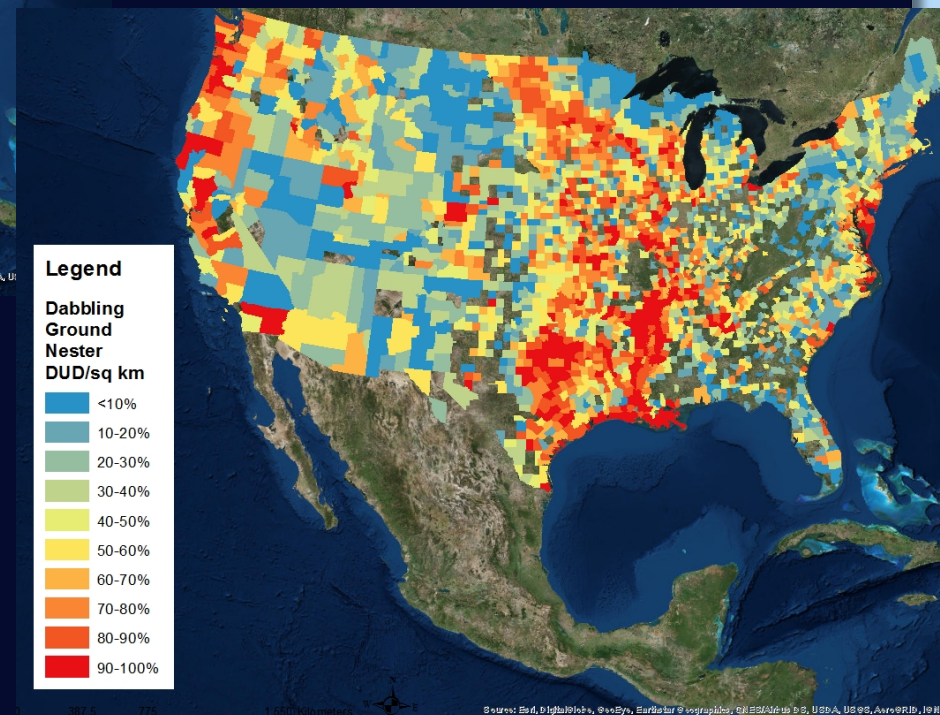


American Black Duck

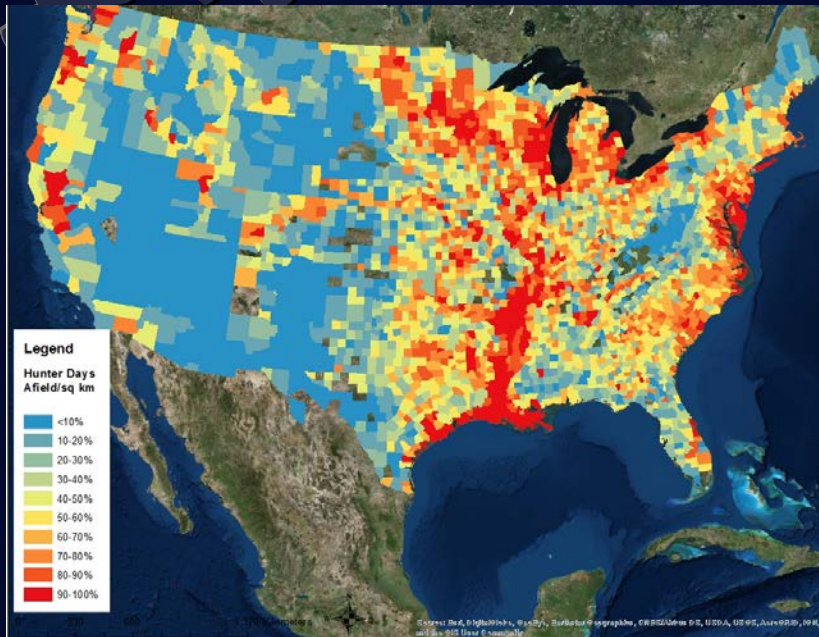


Mallard

Other Dabbling Ducks

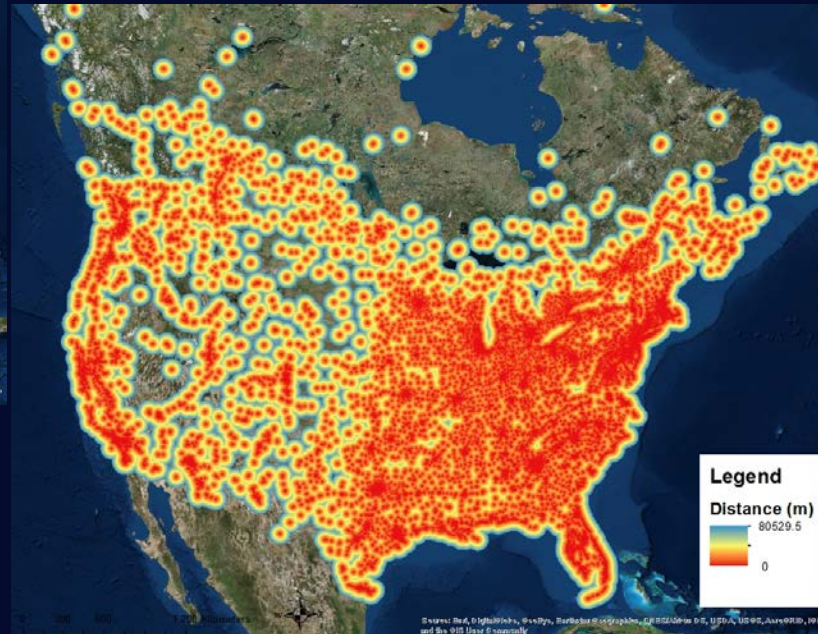


Human Dimensions Objectives

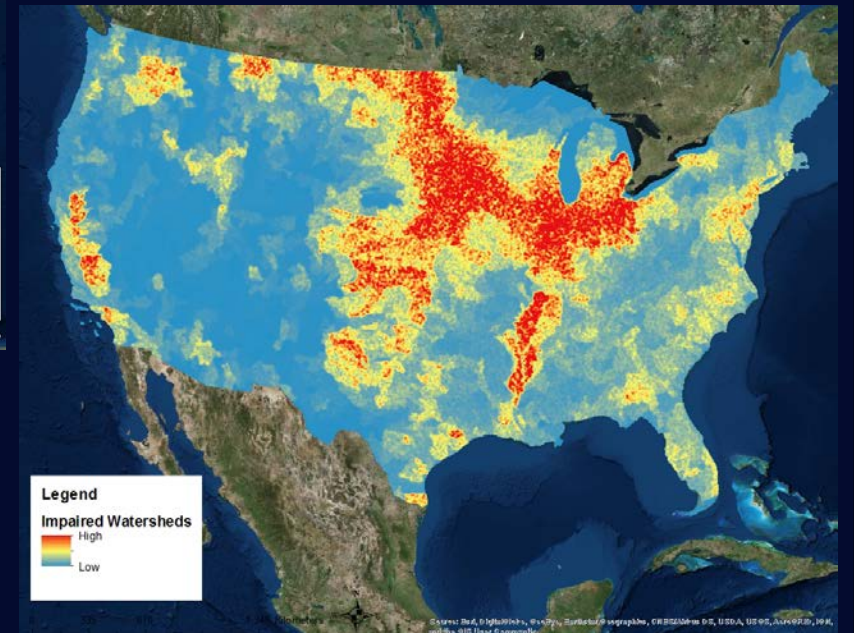


Hunter Days Afield

Distance to Urban Centers



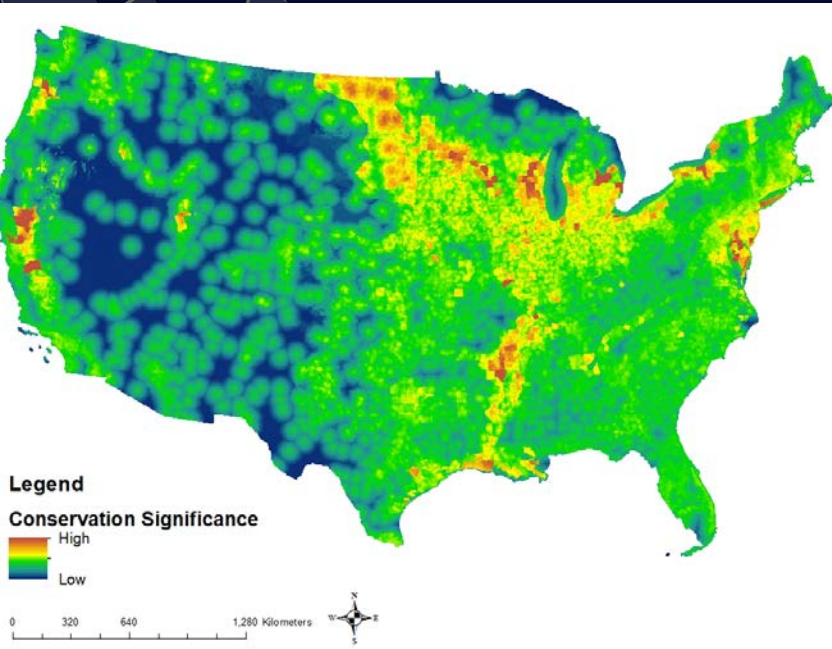
Impaired Watersheds



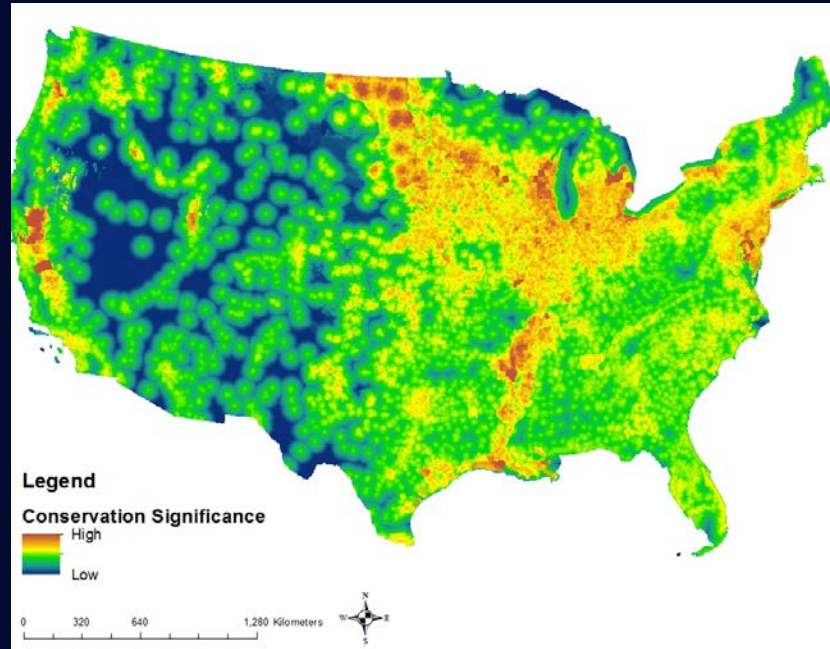
Objective Weights

Objective	Option 1 Weights	Option 2 Weights	Option 3 Weights	Survey	ratio
Mallard					
Breeding	21	11.55	12.6	9.94	0.7
Non-Breeding	9	4.95	5.4	4.26	0.3
American Black Duck					
Breeding	8.25	9.075	3.85	5.39	0.55
Non-Breeding	6.75	7.425	3.15	4.41	0.45
Dabbling Ground Nesters					
Breeding	15	9.9	9	11.88	0.6
Non-Breeding	10	6.6	6	8.92	0.4
Distance to Urban Areas	10	16.5	20	12.7	
Hunter Days Afield	10	16.5	20	22.6	
Impaired Watersheds	10	16.5	20	21.1	
	100	100	100	100	

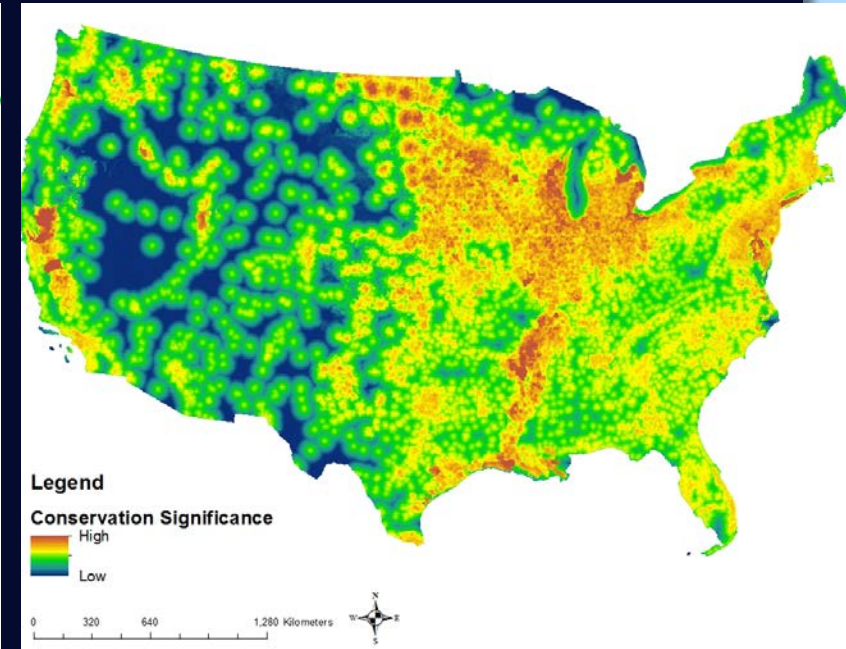
Geographies of Importance (*only 9 objectives)



Option 1: Biological
Objectives Favored

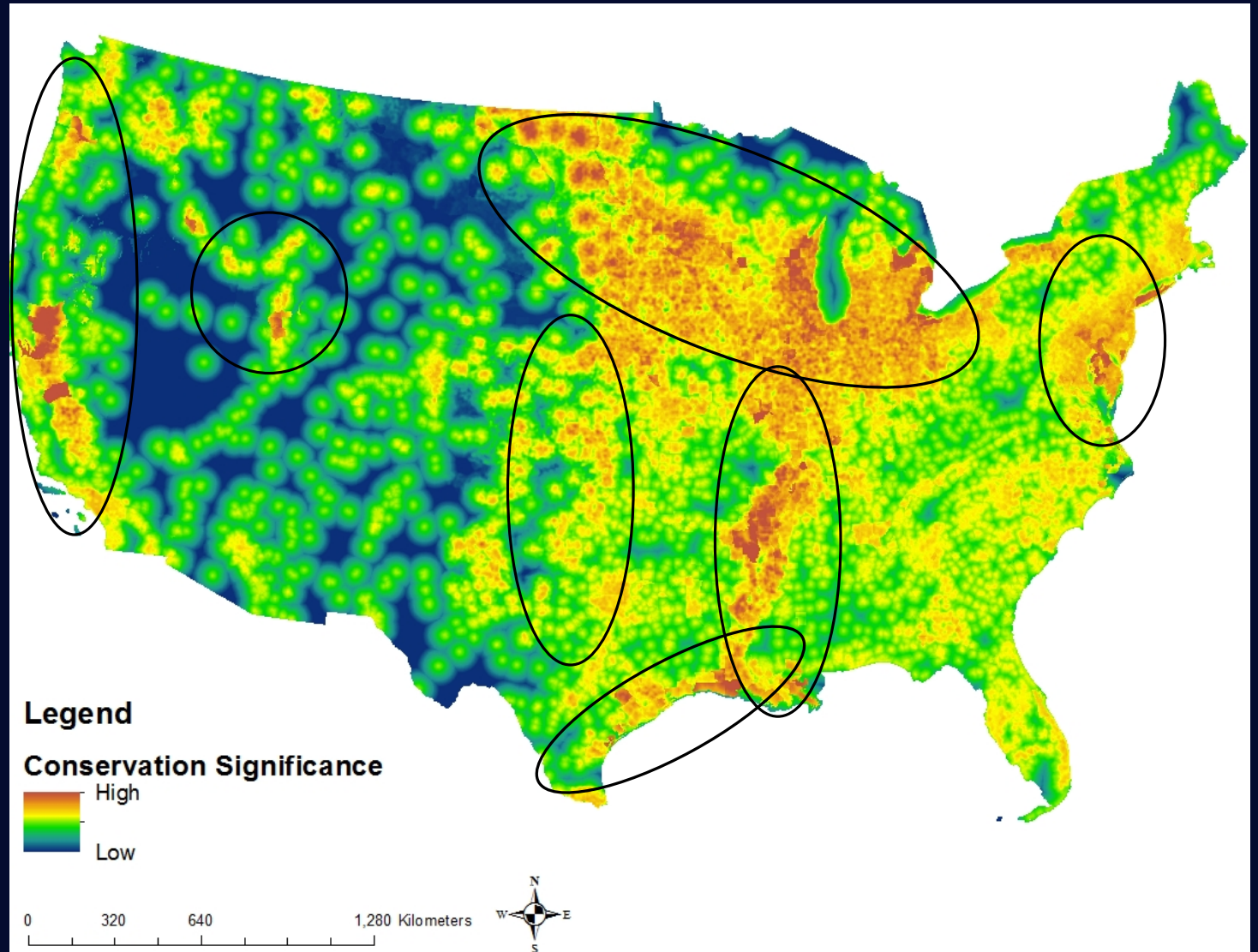
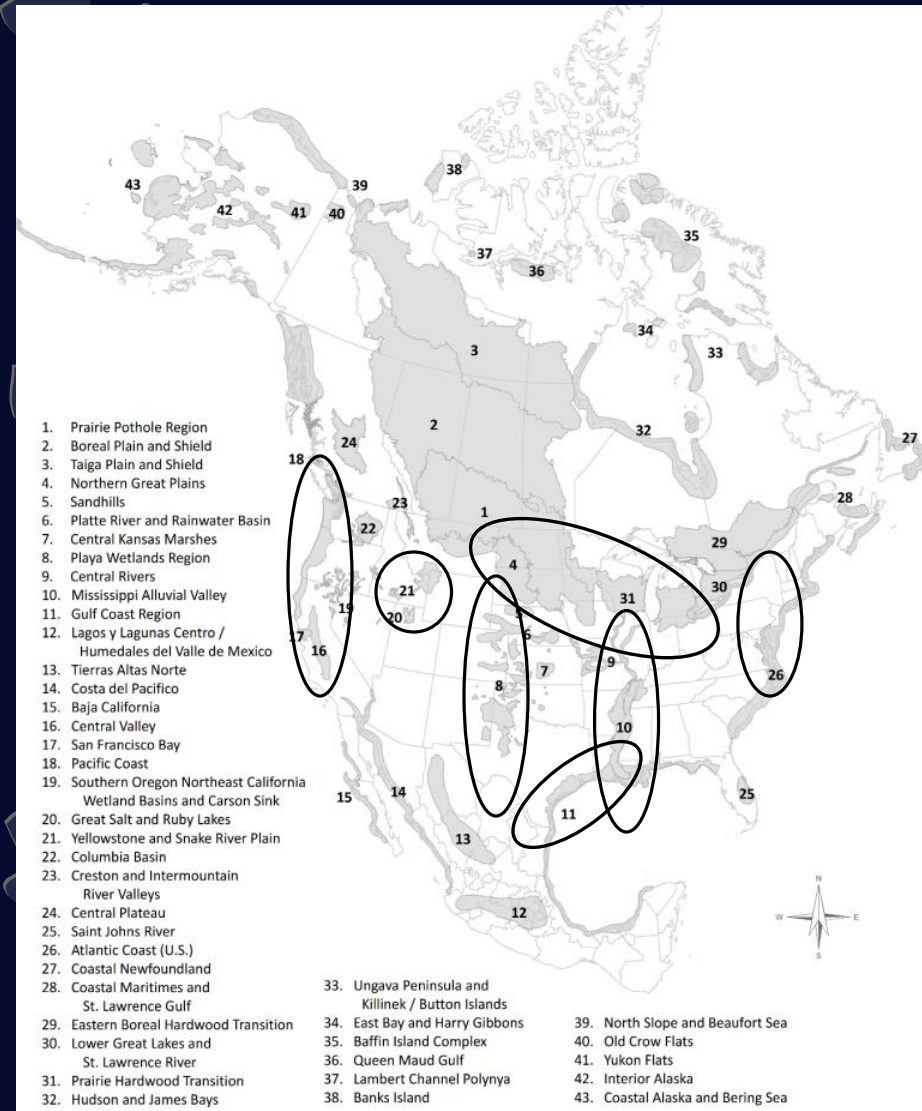


Option 2: Equal
Weights



Option 3: Human Dimensions
Objectives Favored

Initiating Discussion, Hypothesis Testing, and Informing Decisions





Final Thoughts

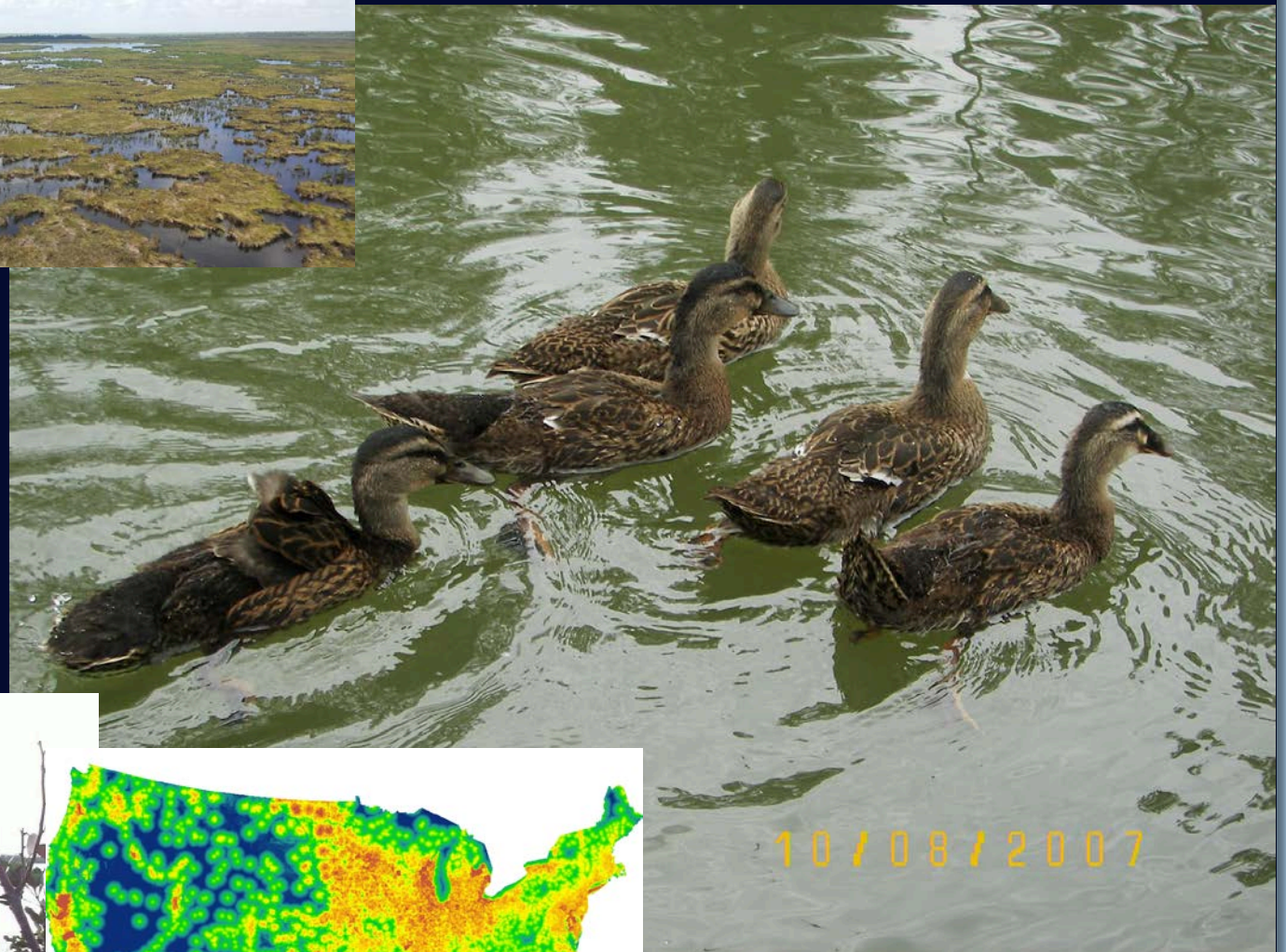
- › Approached our task from an investment standpoint...how do we inform investments in these biological and social goals?
- › Develop a tool for identifying landscapes that are most important to achieving the waterfowl population, habitat, and social goals of the NAWMP.
 - Need multiple maps that together inform investor objectives...single map can't do that.
 - Provide investors with the ability to “weight” objectives differently over time (and space/scale) as partners and priorities may change
- › Hypothesis generation, assumption testing and informing decisions



Next Steps...

- › Continue development of series of spatially explicit products for each Objective (i.e. family of maps)
- › Draft of development methodology and preliminary product to NAWMP Committee
- › Final product submitted to NAWMP Committee
- › Relevant publications of project results

Questions?



10/08/2007

