Waterfowl Landscape Prioritization Decision Support Tool for Nebraska

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WEST

Western EcoSystems Technology, Inc.
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Western Ecosystems Technology, Inc.

- **Provides environmental and statistical consulting services and contract research nationally and internationally for industry, government, and private organizations.**
- **WEST Research Initiative**
  - Internal source of funding for employees of WEST to pursue reaserch interests and ideas.

Rainwater Basin Joint Venture Waterfowl Plan

A regional contribution to the

North American Waterfowl Management Plan

and the

Rainwater Basin Joint Venture Implementation Plan

By the Rainwater Basin Joint Venture

RAINWATER   BASIN

JOINT   VENTURE

ESTABLISHED 1992

If NAWMP population goals are met, at least 8.6 million waterfowl pass through the RWB during spring migration.

How much habitat is needed to support them?

- **Estimated need = 62,500 acres**
- **Actual availability = 2,000 – 22,000 acres**

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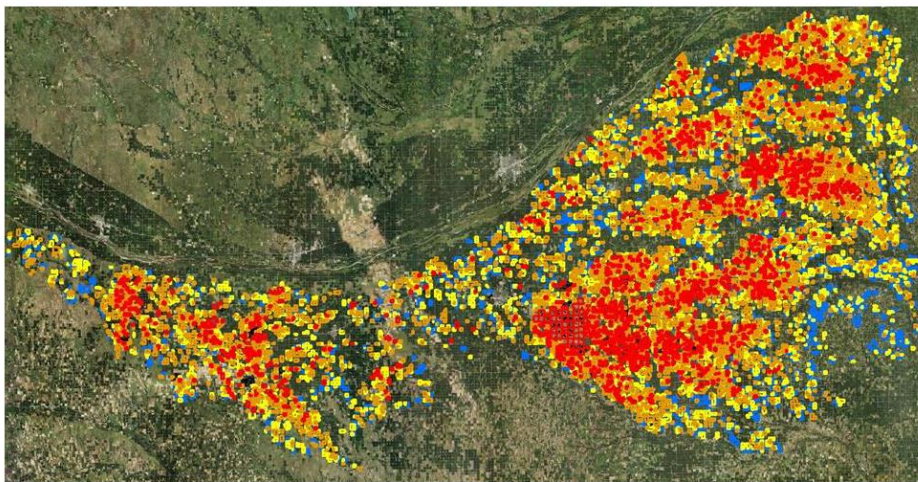# Existing RWBJV Prioritization Models

Figure I. Overview of the RWB Easement Model. Tracts are outlined in red, orange, yellow, and blue from high to low priority respectively.

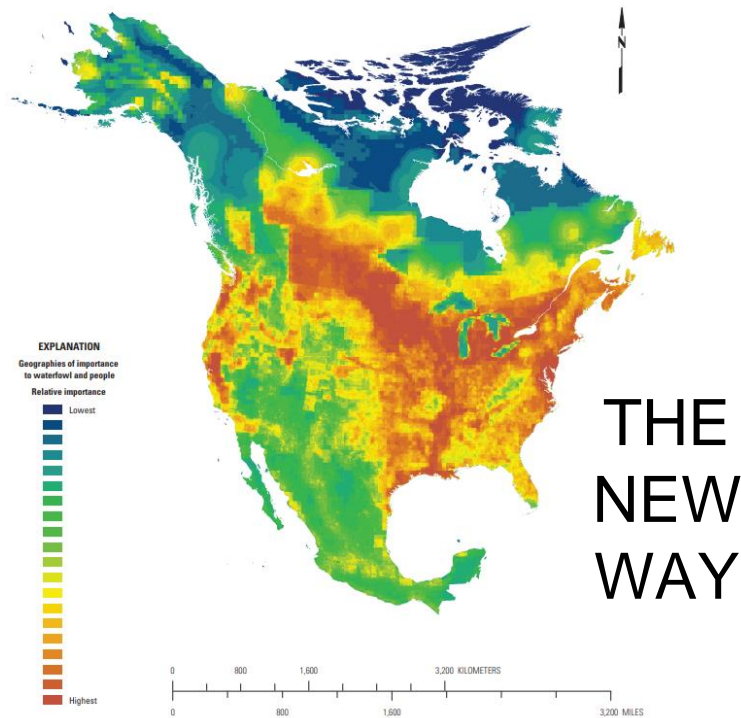| Ranking Criteria	Score
Number of Functional Wetland Acres in Tract	40
Number of Nonfunctional Wetland Acres in Tract	20
Percent of Functional Wetland within Tract	20
Proximity to Existing Conservation Lands	40
Number of Owners of the Hydric Footprint	20
Percent of Hydric Soil Footprint Under Ownership	20
Number of Functional Wetlands within 5km	40
Acres of Hydric Soils >75m from Disturbance Features	15
Percent of Hydric Soils >75m from Disturbance Features	15
Percent of Upland Buffer within the Tract	20
Wetland Modifications within the Tract	10
Irrigation Well within the Tract	10
Transmission Lines <75m from Tract	10

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Why make a new one?

- **The existing DST only considers the RWB**
- **NAWMP Committee has requested/suggested that future landscape prioritization efforts incorporate human-focused variables**
  - Funding entities may adjust their criteria/scoring to align with NAWMP?
- **This new tool allows partner organizations and agencies to create custom models that align with their priorities.**

Key Actions – Focus Resources on Important Landscapes

➤ Identify primary issues that must be considered when targeting waterfowl habitat conservation while achieving the three fundamental NAWMP goals.

➤ Develop scalable decision support tools for targeting management actions based on prioritization of conservation issues as determined by stakeholders.

➤ Identify the most important areas to deliver waterfowl habitat conservation at multiple spatial scales (continental, flyway, JV region).

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NAWMP Landscape Prioritization Models

THE OLD WAY

THE NEW WAY

1. Prairie Pothole Region
2. Boreal Plain and Shield
3. Taiga Plain and Shield
4. Northern Great Plains
5. Sandhills
6. Platte River and Rainwater Basin
7. Central Kansas Marshes
8. Playa Wetlands Region
9. Central Rivers
10. Mississippi Alluvial Valley
11. Gulf Coast Region
12. Lagos y Lagunas Centro / Humedales del Valle de Mexico
13. Tierras Altas Norte
14. Costa del Pacifico
15. Baja California
16. Central Valley
17. San Francisco Bay
18. Pacific Coast
19. Southern Oregon Northeast California Wetland Basins and Carson Sink
20. Great Salt and Ruby Lakes
21. Yellowstone and Snake River Plain
22. Columbia Basin
23. Creston and Intermountain River Valleys
24. Central Plateau
25. Saint Johns River
26. Atlantic Coast (U.S.)
27. Coastal Newfoundland
28. Coastal Maritimes and St. Lawrence Gulf
29. Eastern Boreal Hardwood Transition
30. Lower Great Lakes and St. Lawrence River
31. Prairie Hardwood Transition
32. Hudson and James Bays
33. Ungava Peninsula and Killinek / Button Islands
34. East Bay and Harry Gibbons
35. Baffin Island Complex
36. Queen Maud Gulf
37. Lambert Channel Polynya
38. Banks Island
39. North Slope and Beaufort Sea
40. Old Crow Flats
41. Yukon Flats
42. Interior Alaska
43. Coastal Alaska and Bering Sea

EXPLANATION
Geographies of importance to waterfowl and people
Relative importance
Lowest
Highest

0   800   1,600   3,200 KILOMETERS
0   800   1,600   3,200 MILES

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TARGETING CONSERVATION FOR WATERFOWL AND PEOPLE IN THE UPPER MISSISSIPPI RIVER AND GREAT LAKES JOINT VENTURE REGION
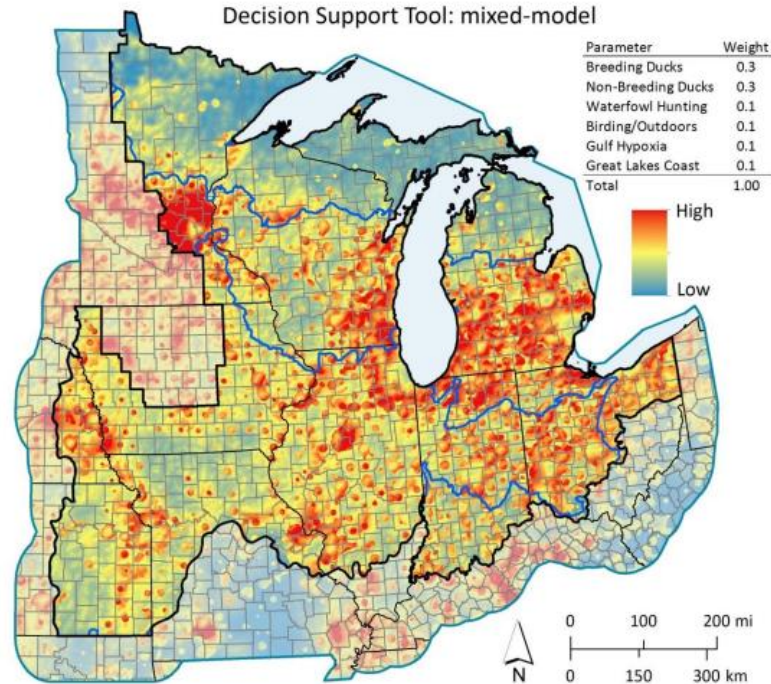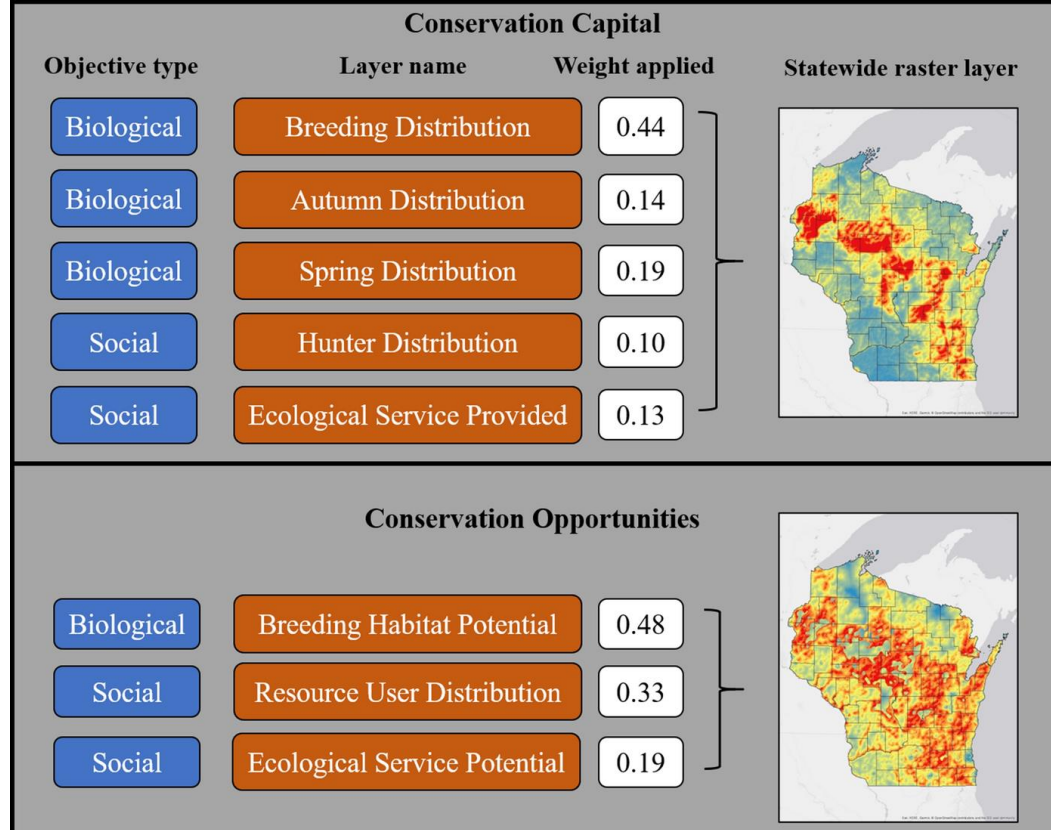

Figure 5. Decision support tool to target waterfowl habitat conservation in the Upper Mississippi River and Great Lakes Joint Venture region based on six biological and social objectives weighted for regional priority. State and BCR boundaries (black and blue lines) designate the State x BCR polygons linked to habitat retention and restoration objectives in the 2017 JV Waterfowl Habitat Conservation Strategy. Counties within the DST area (gray lines) and analysis results for buffer zone around JV region (light shading) provided for perspective.

Multi-scale waterfowl habitat conservation planning in Wisconsin, USA

Conservation Capital

Objective type	Layer name	Weight applied	Statewide raster layer
Biological	Breeding Distribution	0.44	
Biological	Autumn Distribution	0.14	
Biological	Spring Distribution	0.19	
Social	Hunter Distribution	0.10	
Social	Ecological Service Provided	0.13	

Conservation Opportunities

Objective type	Layer name	Weight applied	Statewide raster layer
Biological	Breeding Habitat Potential	0.48	
Social	Resource User Distribution	0.33	
Social	Ecological Service Potential	0.19	

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Geospatial Data to Include in Model

- **NAWMP GOALS**
  - Goal 1: Abundant and resilient waterfowl populations
  - Goal 2: Sufficient wetlands and related habitats
  - Goal 3: Growing numbers of waterfowl hunters and other supporters

- **Also... practical and logistical considerations**

Waterfowl Populations

- **Relative abundance of...**
  - Spring diving ducks
  - Spring dabbling ducks
  - Breeding dabbling ducks
  - Breeding trumpeter swans
  - Fall dabbling ducks
  - Fall Canada geese
  - Winter dabbling ducks
- **This type of data is derived from seasonal eBird relative abundance models**
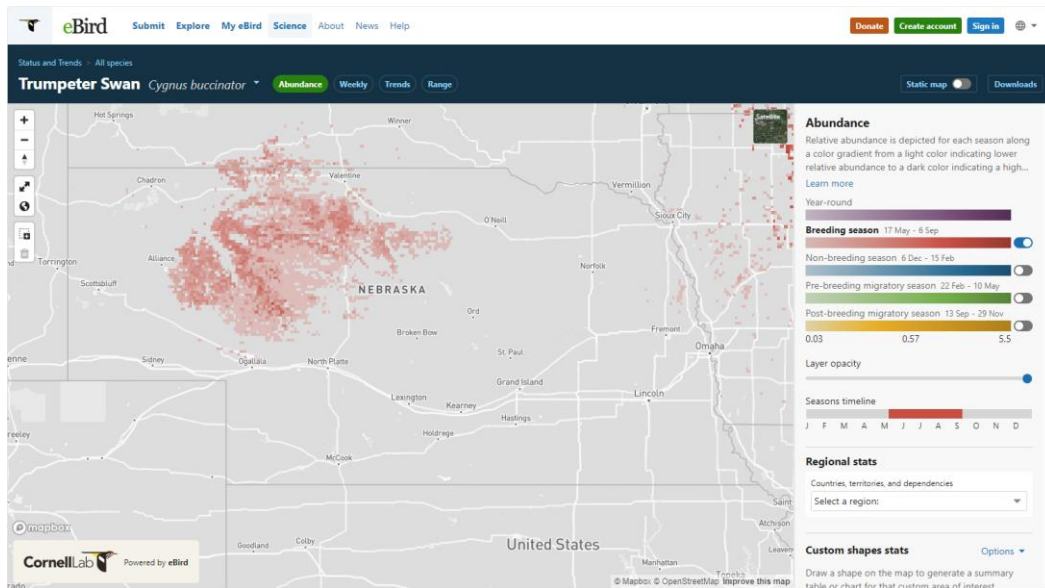
Waterfowl Populations

- **Creating layers to include multiple species**
- **Example: Fall Dabbling Ducks**
  - We used percent of total harvest to select three species
    - Mallard (46%)
    - Blue-winged teal (20%)
    - Green-winged teal (13%)

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Fall Dabbling Ducks
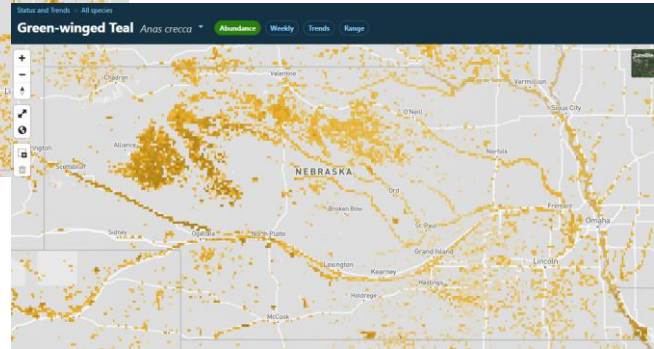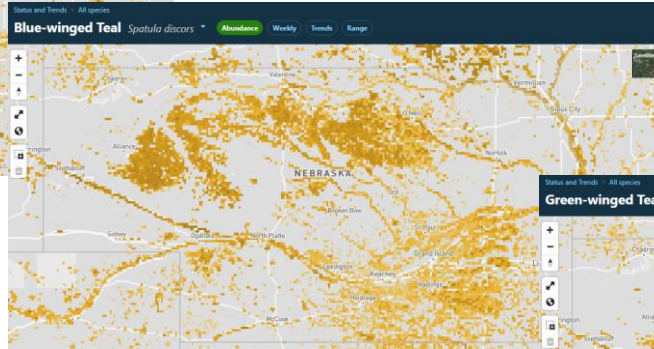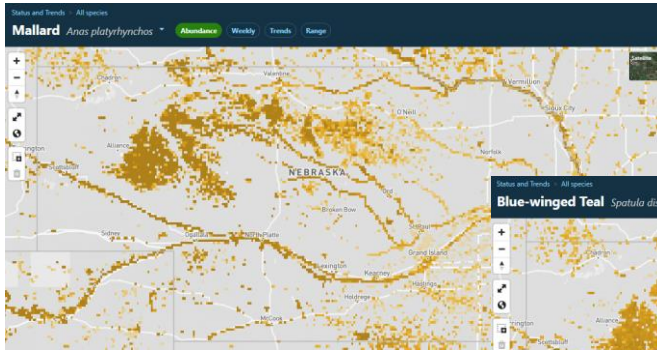
Fall Dabbling Ducks
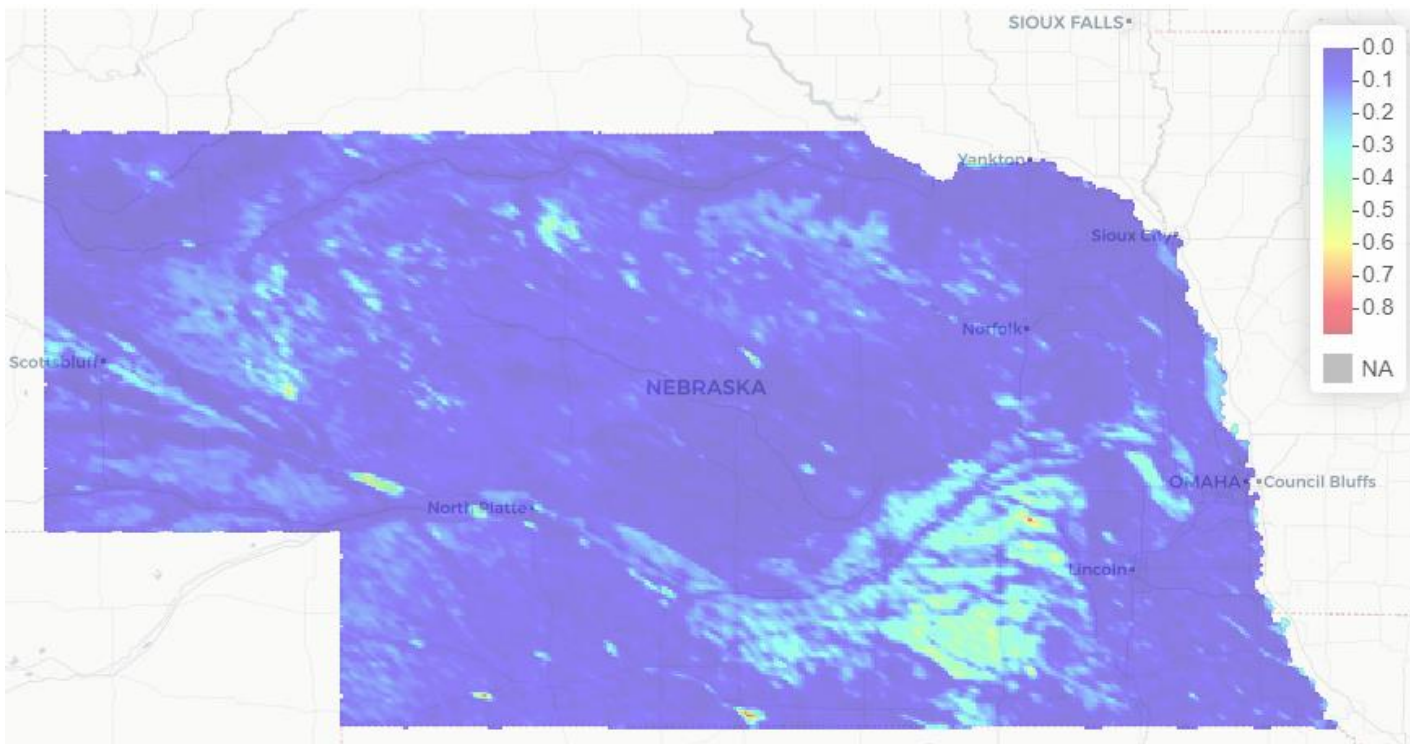
Habitats

- **Spring: all palustrine wetlands with less than 80% agricultural landcover in the footprint (excluding unconsolidated shore or unconsolidated bottom because they are less than 30% vegetated)**
- **Breeding: select wetland types >0.5 ha with grassland habitat within 1 km**
- **Fall: all riverine, lacustrine, and permanent and semi-permanent palustrine wetlands**
- **Winter: all lacustrine and permanent riverine wetlands and all agricultural landcover within 4.4 km**

People

- **Water Conservation**
  - Groundwater Loss from 1950 to 2015
  - NRD Water Quality Phases (nitrates)
  - NDEE Wellhead Protection Areas (public water supply)
- **Proximity to human populations**
- **Birdwatching Opportunities**
  - Species Richness
- **Waterfowl Hunting Opportunities**
  - County Take
  - Proximity to Land Open to Hunting
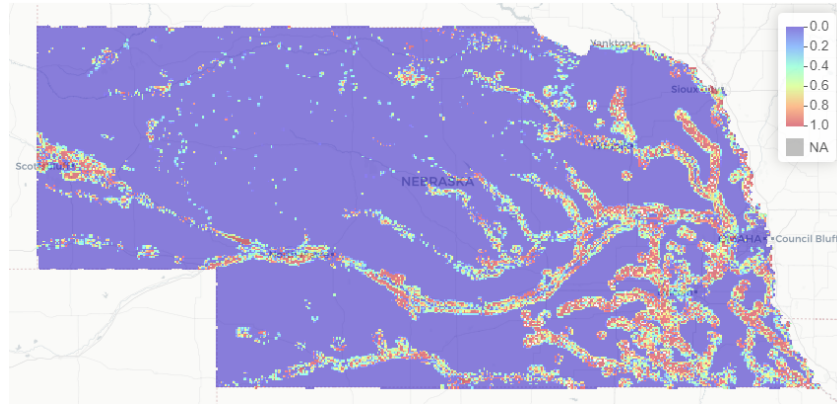
Practical or Logistical Factors

- **Cultural Will**
  - Percentage of landowners within 5 miles that have participated in a conservation program between 2017 and 2022
- **Land Cost Estimate**
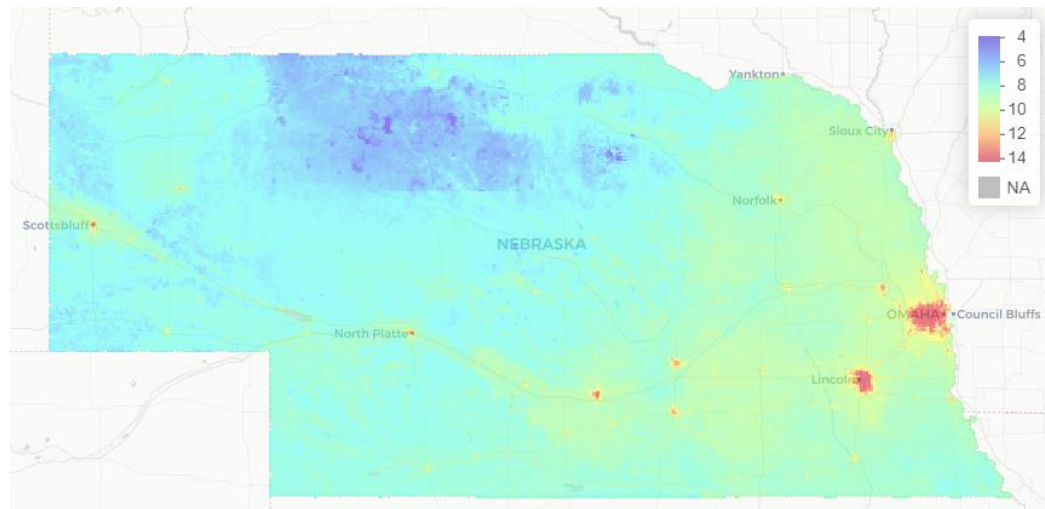
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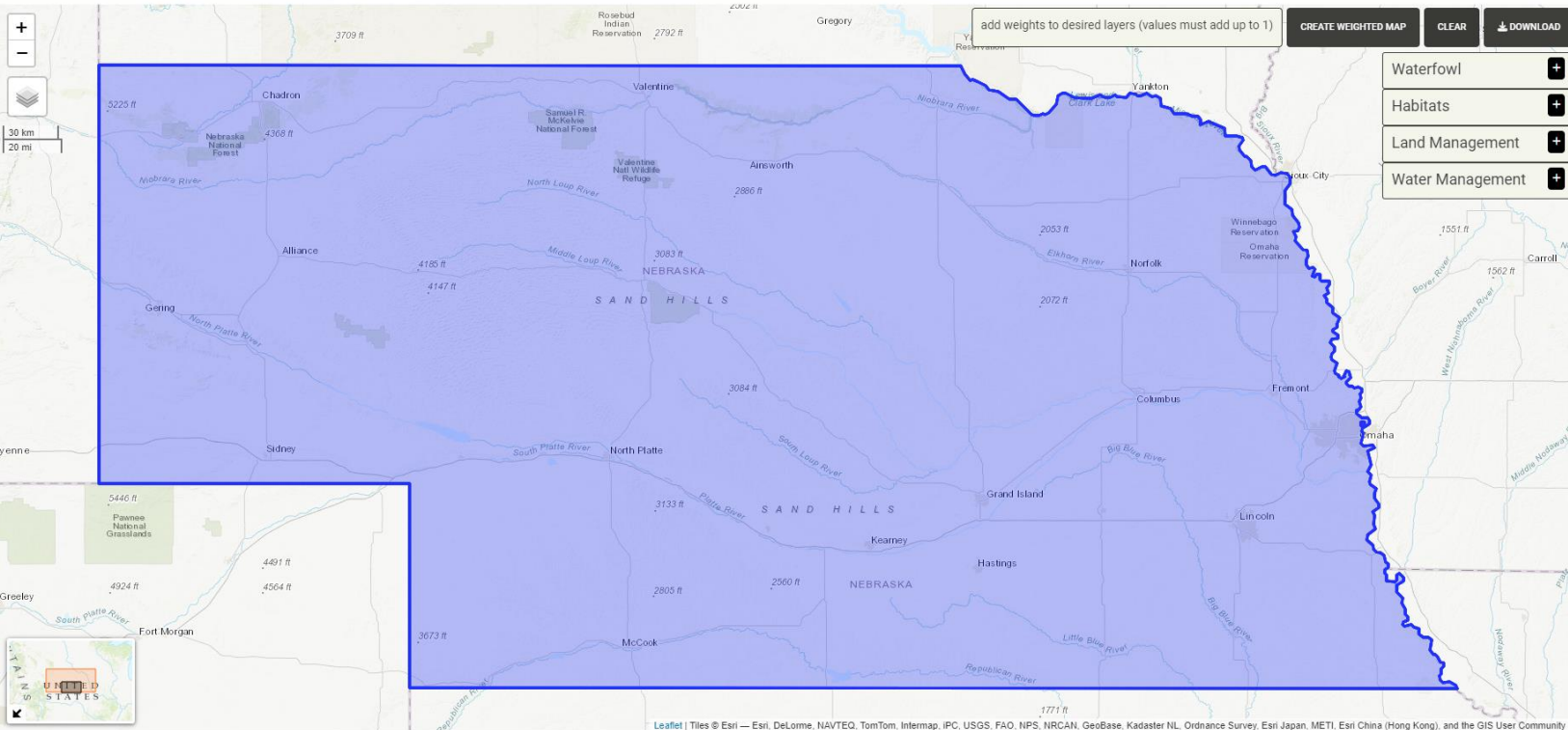
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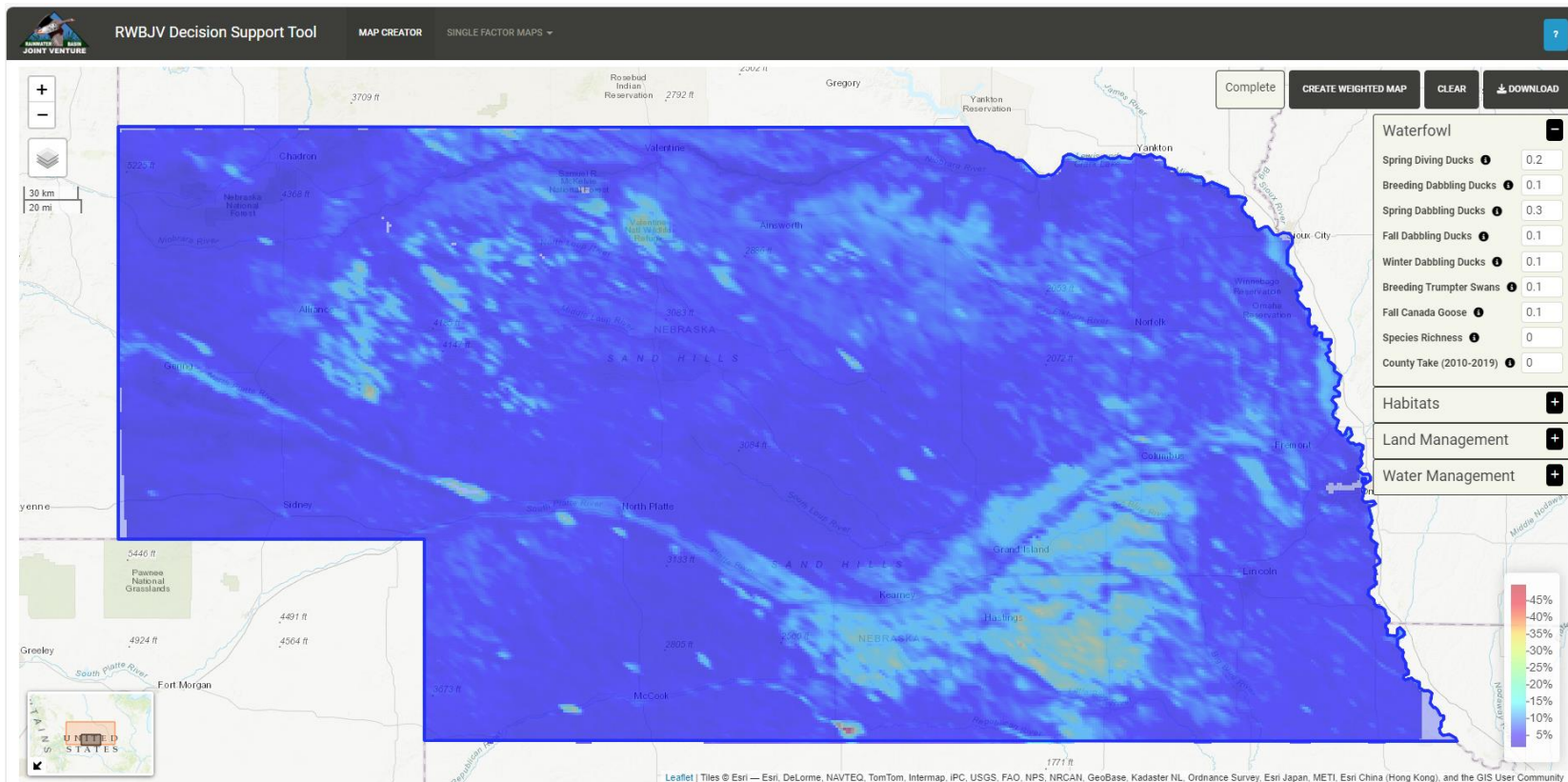
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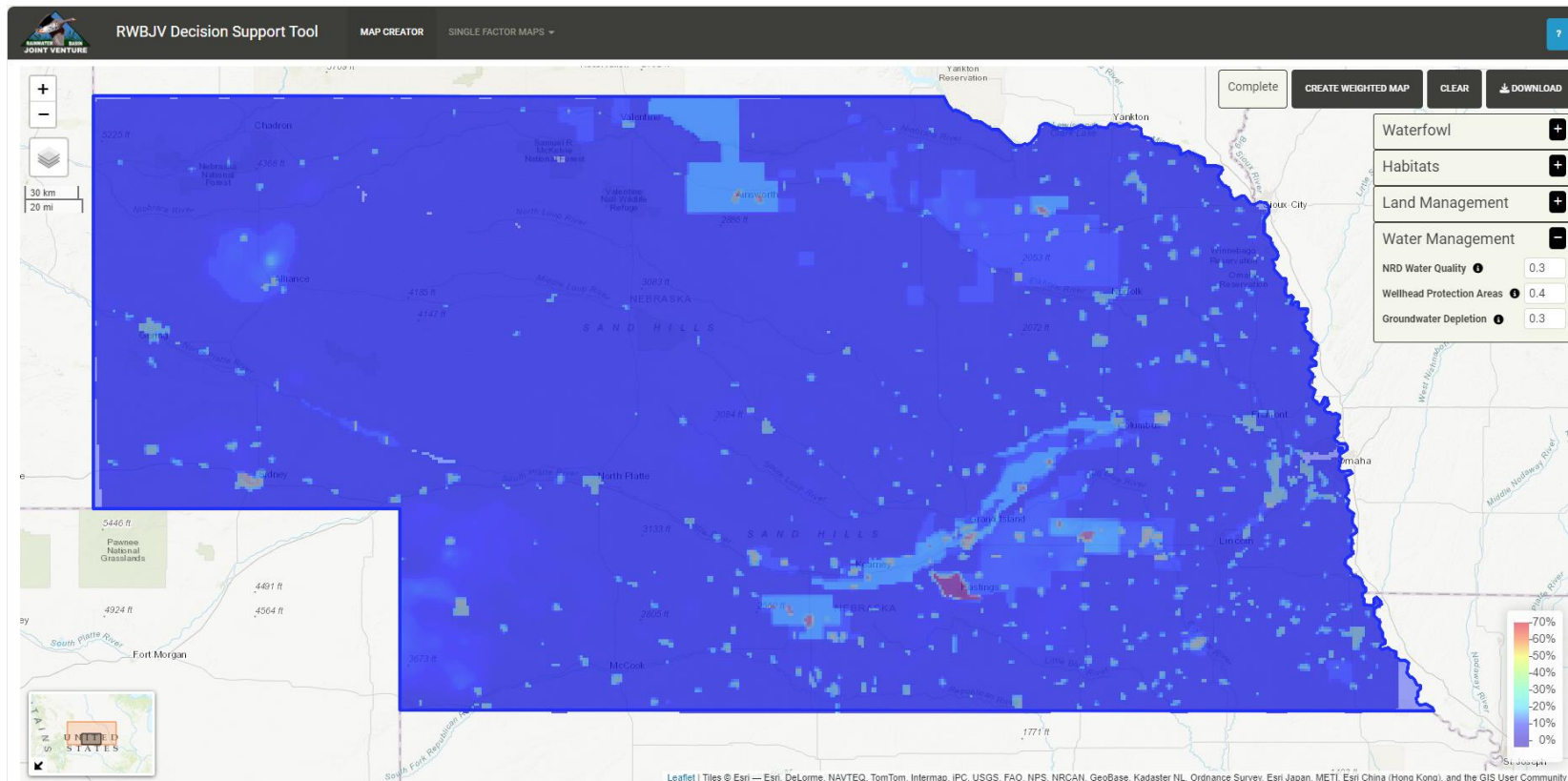
Thank You!

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