

# SPATIAL TRENDS IN VEGETATION COMMUNITIES Ash Meadows National Wildlife Refuge

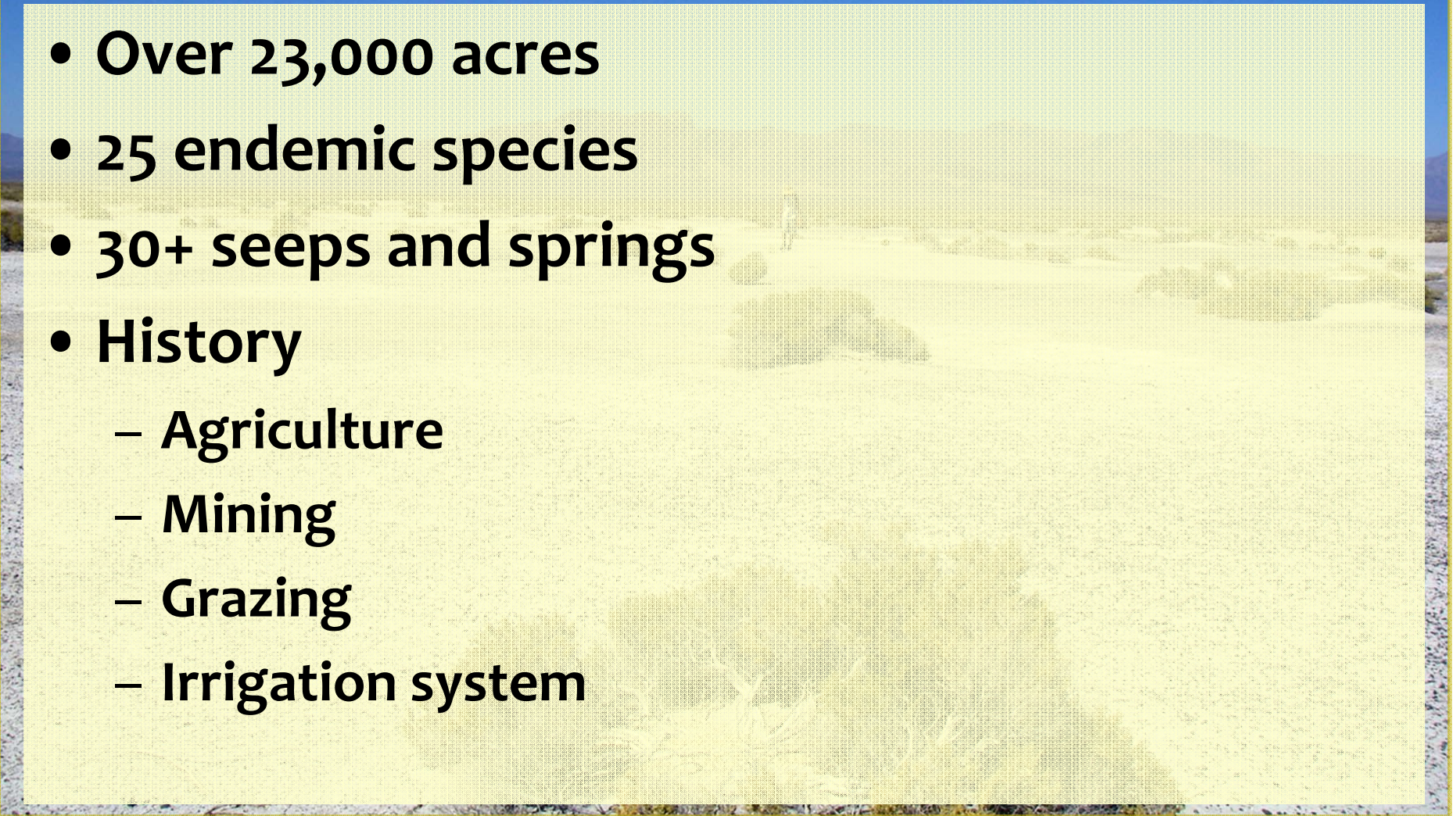


**Presented by Kari Coy, Botany Technician, BIO-WEST, Inc.**



# Background

- Over 23,000 acres
- 25 endemic species
- 30+ seeps and springs
- History
  - Agriculture
  - Mining
  - Grazing
  - Irrigation system





# Objectives and Applications

- **Baseline inventory an assessment**
- **Restoration site selection**
- **Seed and stock harvesting**
- **Development of habitat management plan**
- **Predictive habitat models**
- **Non-native species control**

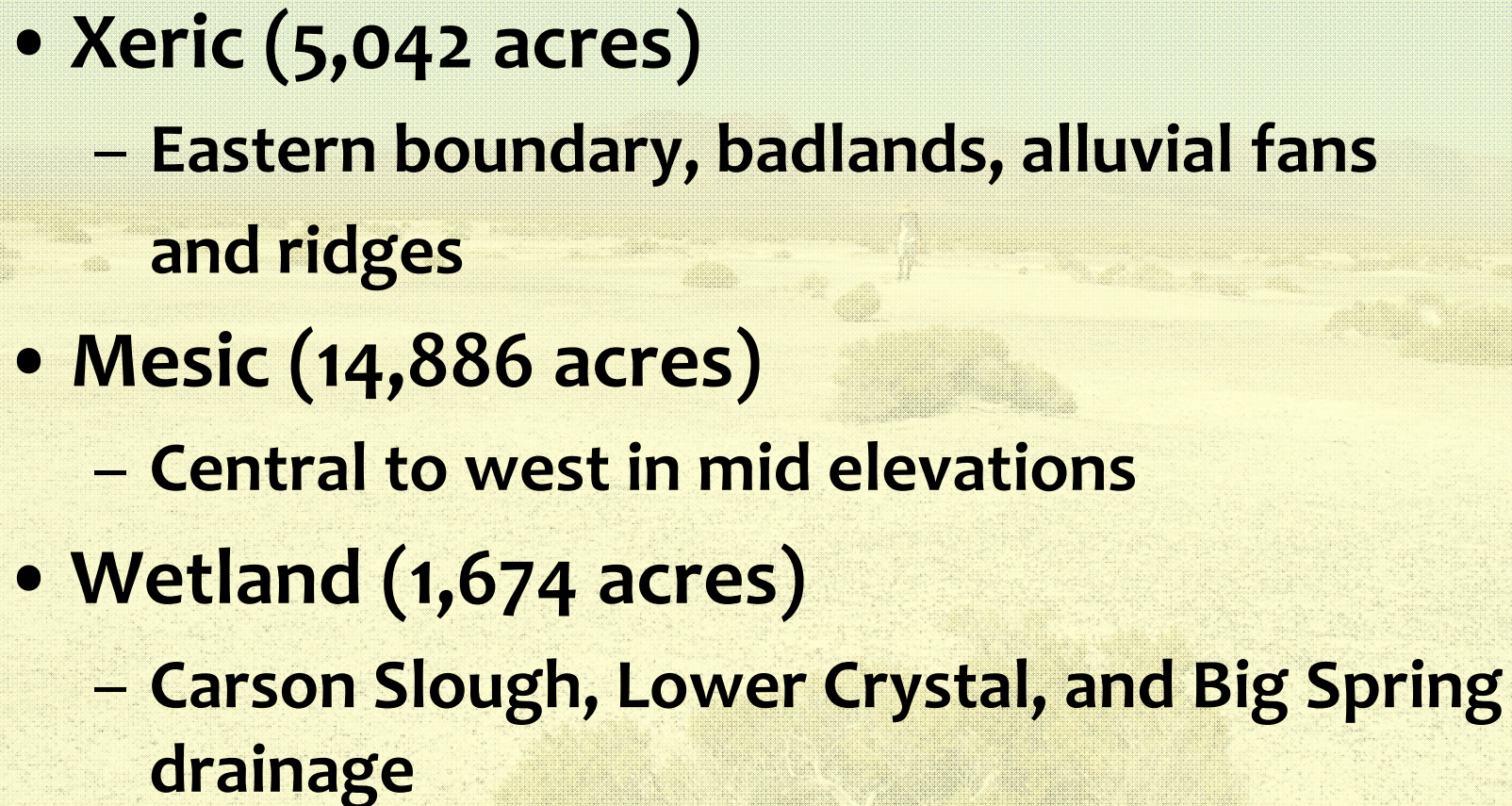


# Field Data

- 2007–2009 field seasons
- Over 6,500 polygons
- Communities classified to Alliance and Association levels
- Data collected:
  - Species composition and aerial percent coverage
  - Hydrology
  - Topography
  - Canopy height



# Overview of Moisture Classes

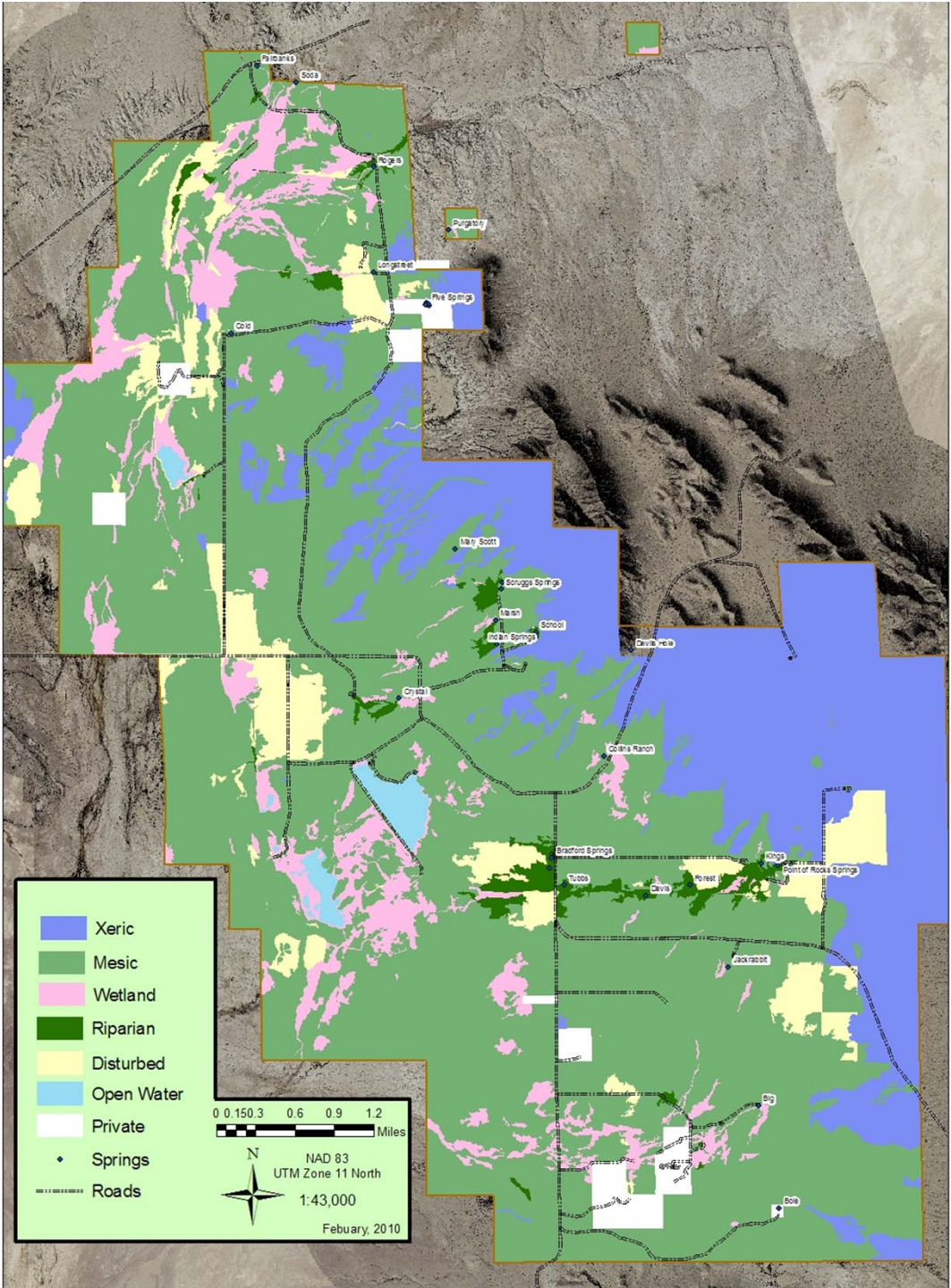
- **Xeric (5,042 acres)**
    - Eastern boundary, badlands, alluvial fans and ridges
  - **Mesic (14,886 acres)**
    - Central to west in mid elevations
  - **Wetland (1,674 acres)**
    - Carson Slough, Lower Crystal, and Big Spring drainage
- 



# Overview of Moisture Classes

- **Riparian (321 acres)**
  - Concentrated at Point of Rocks Springs, Bradford Springs, and Scruggs Springs areas
- **Disturbed (1,508 acres)**
  - Transitioning agriculture areas, active restoration sites, and nonnative communities including *Tamarix* species.





	Xeric
	Mesic
	Wetland
	Riparian
	Disturbed
	Open Water
	Private
	Springs
	Roads

0 0.150.3 0.6 0.9 1.2 Miles  
 NAD 83  
 UTM Zone 11 North  
 1:43,000  
 February 2010



# Common Vegetation Communities

- *Larrea tridentata-ambrosia dumosa* Shrubland Alliance (creosote bush-white bursage)
- *Atriplex confertifolia* Shrubland Alliance (shadscale)
- *Sporobolus airoides* Herbaceous Alliance (alkali sacaton)

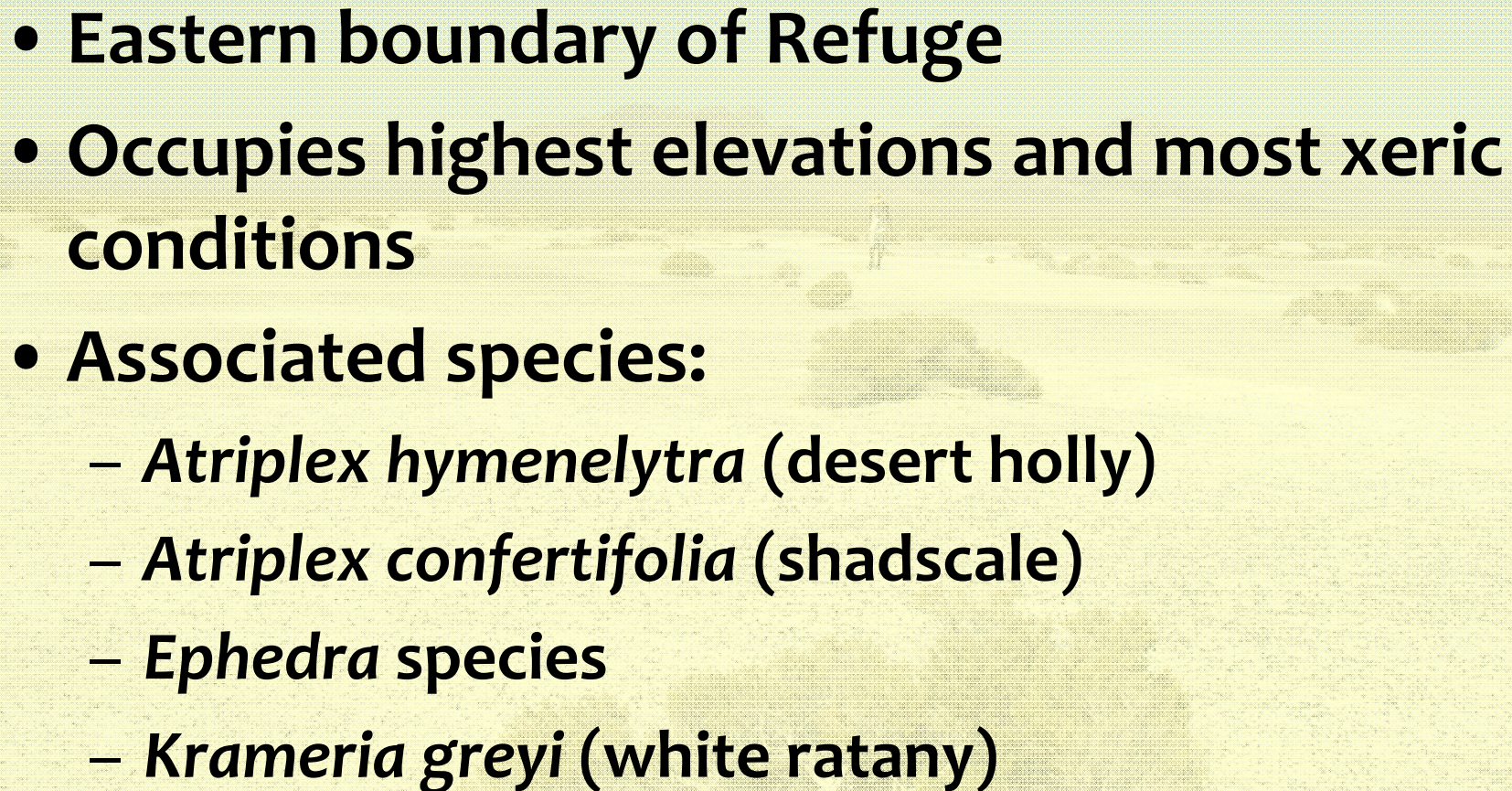


# Common Vegetation Communities

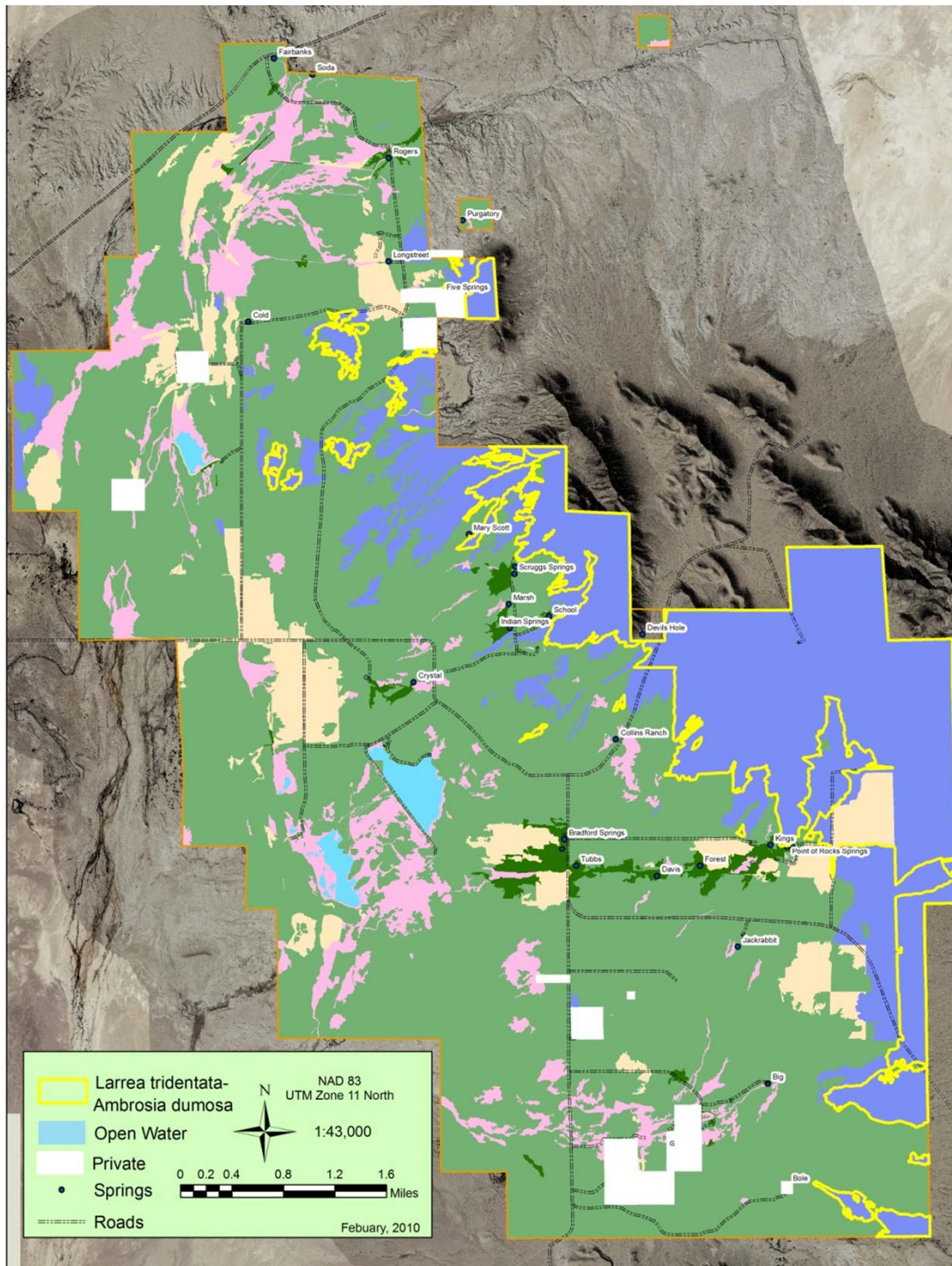
- ***Juncus arcticus* Herbaceous Alliance**  
(Arctic rush)
- ***Typha* species Herbaceous Alliance** (cattail)
- ***Prosopis pubesence* Woodland Alliance**  
(screw bean mesquite)
- ***Prosopis glandulosa* Shrubland Alliance**  
(honey mesquite)



# *Larrea tridentata*-*Ambrosia dumosa* Shrubland Alliance (creosote bush-white bursage)

- Eastern boundary of Refuge
  - Occupies highest elevations and most xeric conditions
  - Associated species:
    - *Atriplex hymenelytra* (desert holly)
    - *Atriplex confertifolia* (shadscale)
    - *Ephedra* species
    - *Krameria greyi* (white ratany)
- 







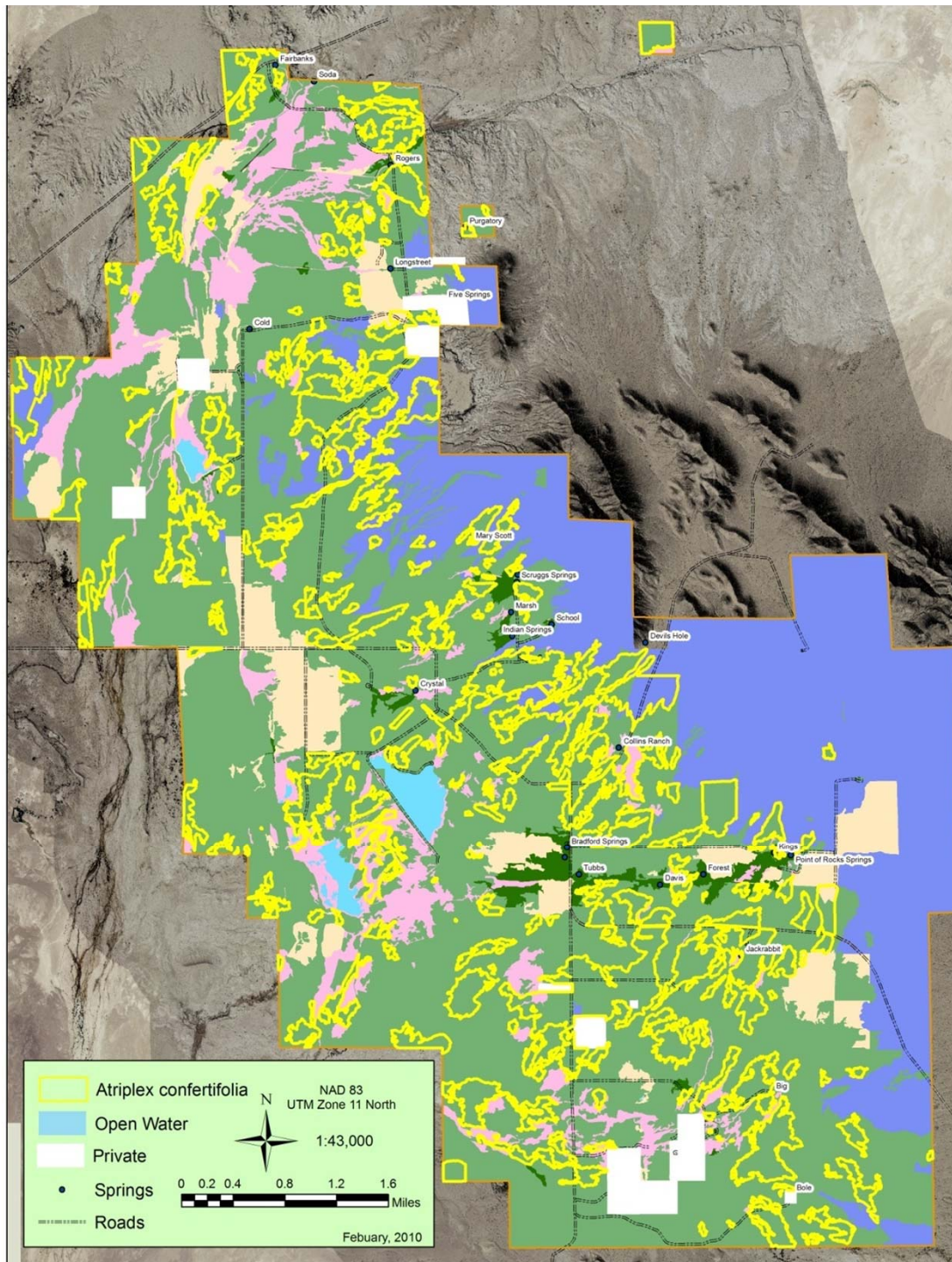




# *Atriplex confertifolia* Shrubland Alliance (shadscale)

- Widely distributed throughout mid and low elevations
- Most common species on Refuge
- Associated species:
  - *Isocoma acradenia* (alkali goldenbush)
  - *Ericameria nauseosus* (rubber rabbitbrush)
  - *Suaeda moquinii* (Mojave seablite)
  - *Sporobolus airoides* (alkali sacaton)
  - *Ambrosia dumosa* (white bursage)







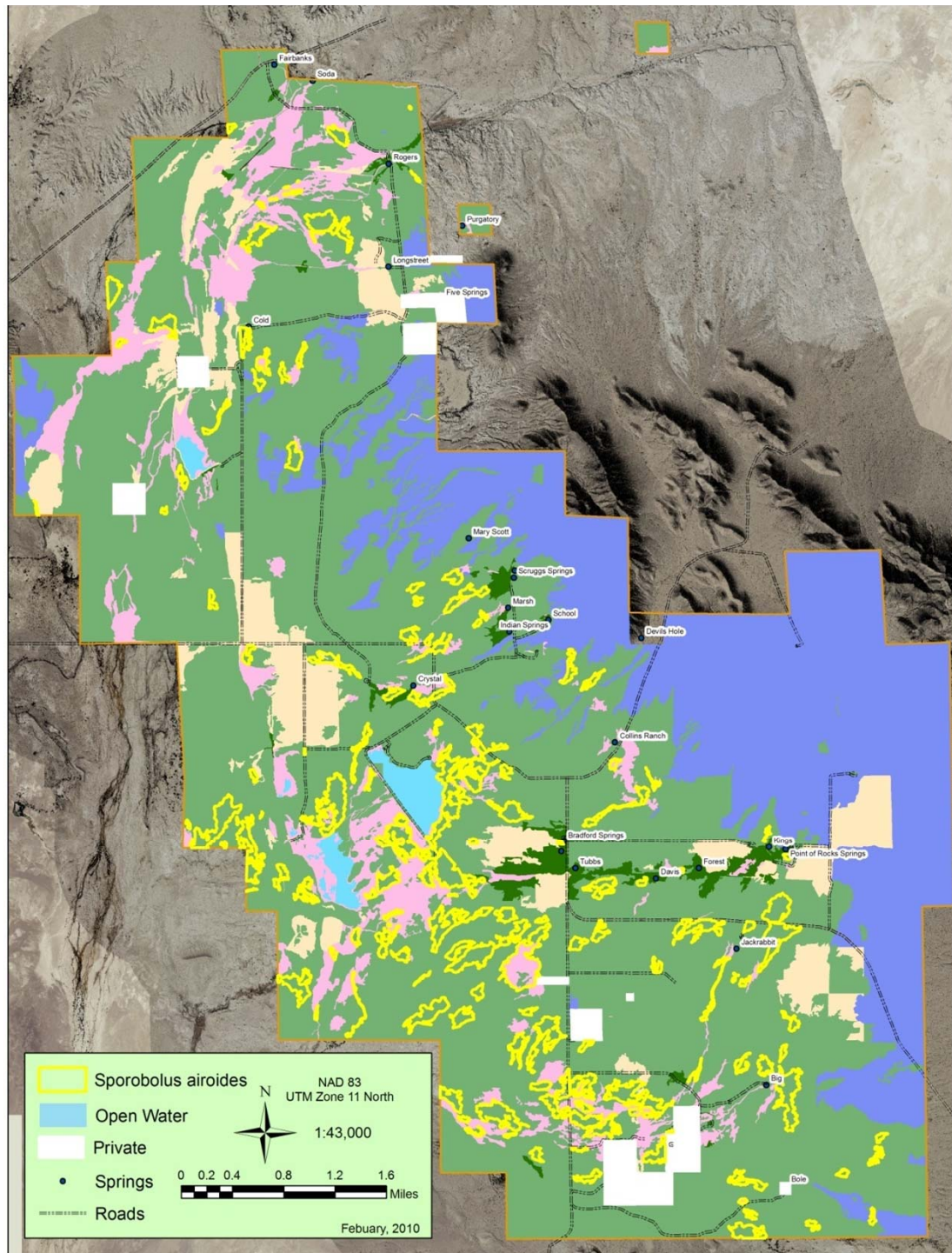




# *Sporobolus airoides* Herbaceous Alliance (alkali sacaton)

- Concentration in Crystal Reservoir and marsh areas
- Often bordering wetland in low elevations
- Associated species:
  - *Distichlis spicata* (saltgrass)
  - *Atriplex confertifolia* (shadscale)
  - *Juncus arcticus* (Arctic rush)
  - *Isocoma acradenia* (alkali goldenbush)







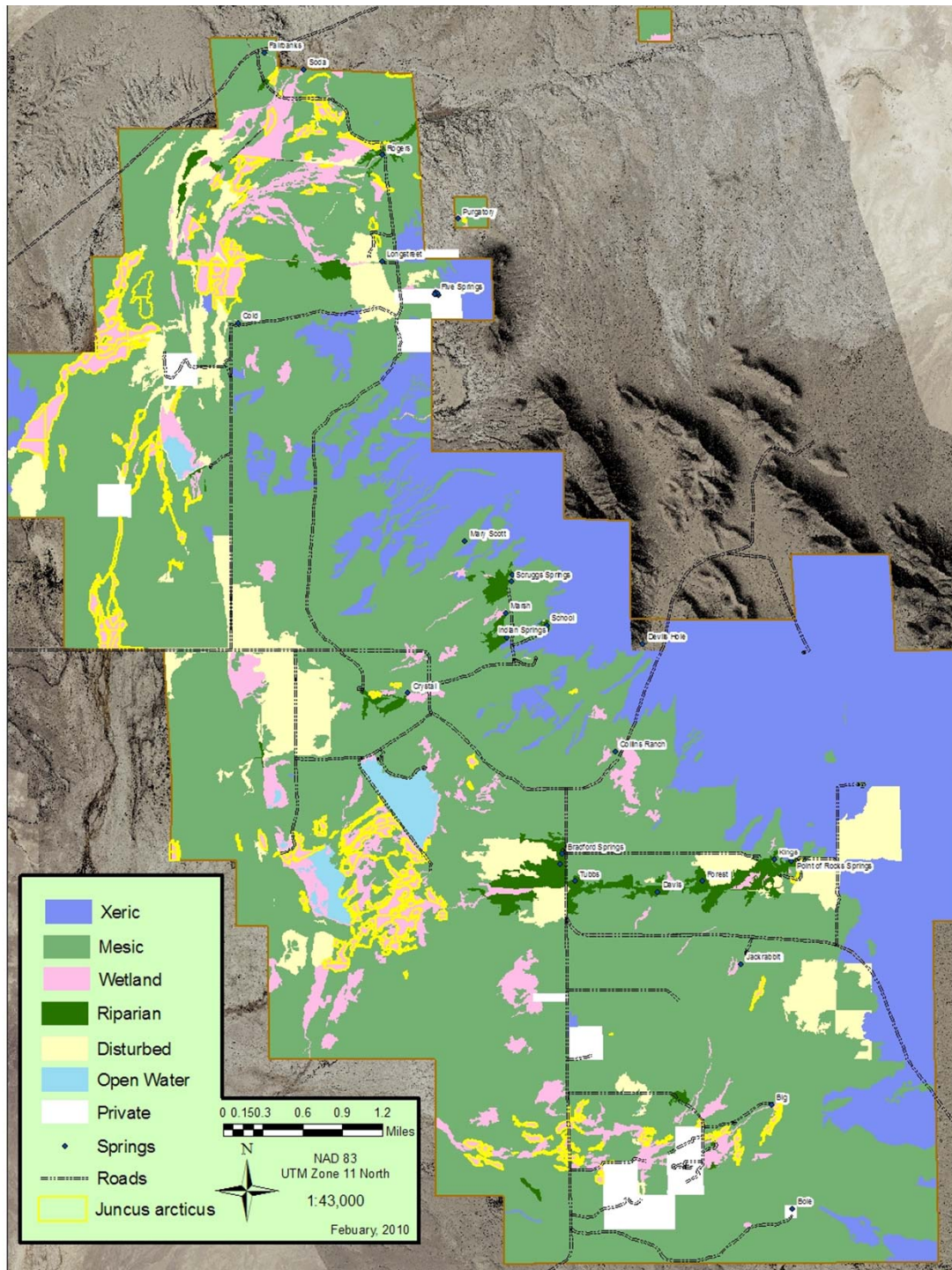




# *Juncus arcticus* Herbaceous Alliance (Arctic rush)

- Occupies west-central wetlands
- Often forming nearly monotypic meadows
- Associated species:
  - *Distichlis spicata* (saltgrass)
  - *Sporobolus airoides* (alkali sacaton)
  - *Carex pragracilis* (clustered field sedge)
  - *Typha* species (cattail)
  - *Juncus* species







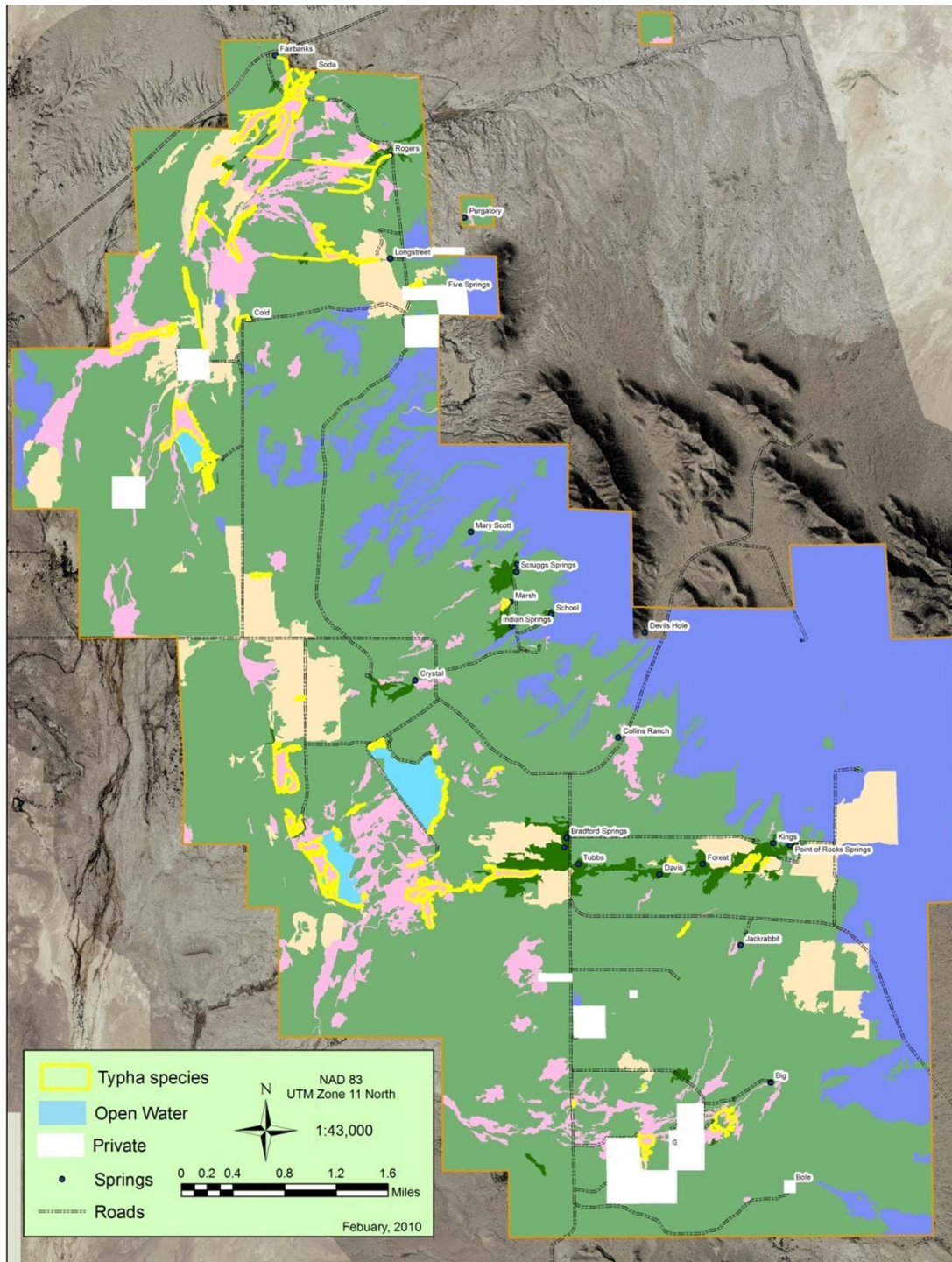




# *Typha* species Herbaceous Alliance (cattail)

- Occupies Carson Slough, Peterson Reservoir, and Crystal and Horseshoe Marshes
  - Year-round or near year-round access to watertable
  - Associated Species:
    - *Phragmites australis* (common reed)
    - *Juncus arcticus* (Arctic rush)
    - *Schoenoplectus americanus* (three-square bulrush)
    - *Baccharis emoryi* (Emory baccharis)
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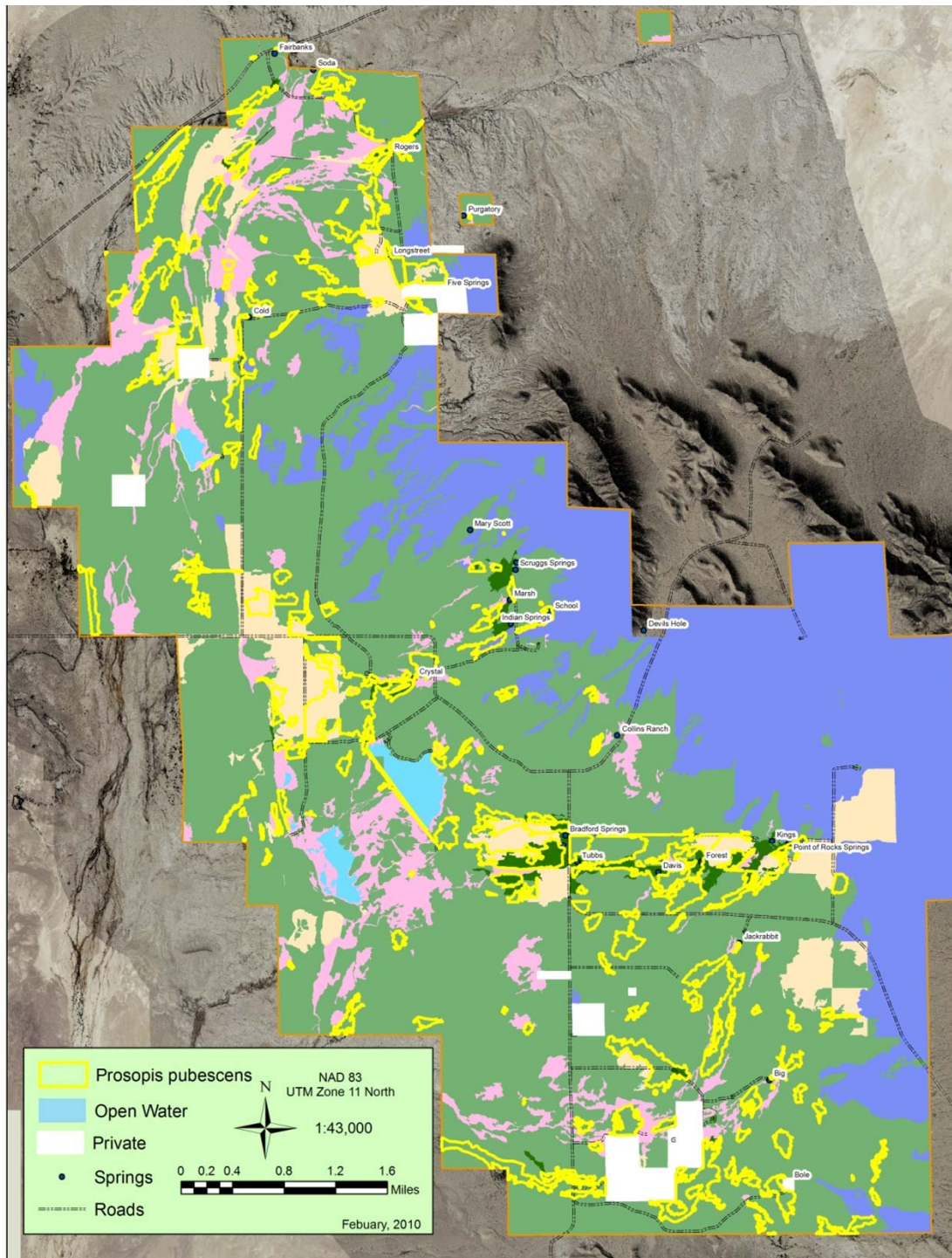




# *Prosopis Pubescens* Woodland Alliance (screw bean mesquite)

- Evenly distributed throughout mid elevations on the Refuge
- Occupies both riparian and nonriparian areas
- Associated species:
  - *Atriplex lentiformis* (quailbush)
  - *Baccharis emoryi* (Emory baccharis)
  - *Isocoma acradenia* (alkali goldenbush)
  - *Sporobolus airoides* (alkali sacaton)
  - *Distichlis spicata* (saltgrass)







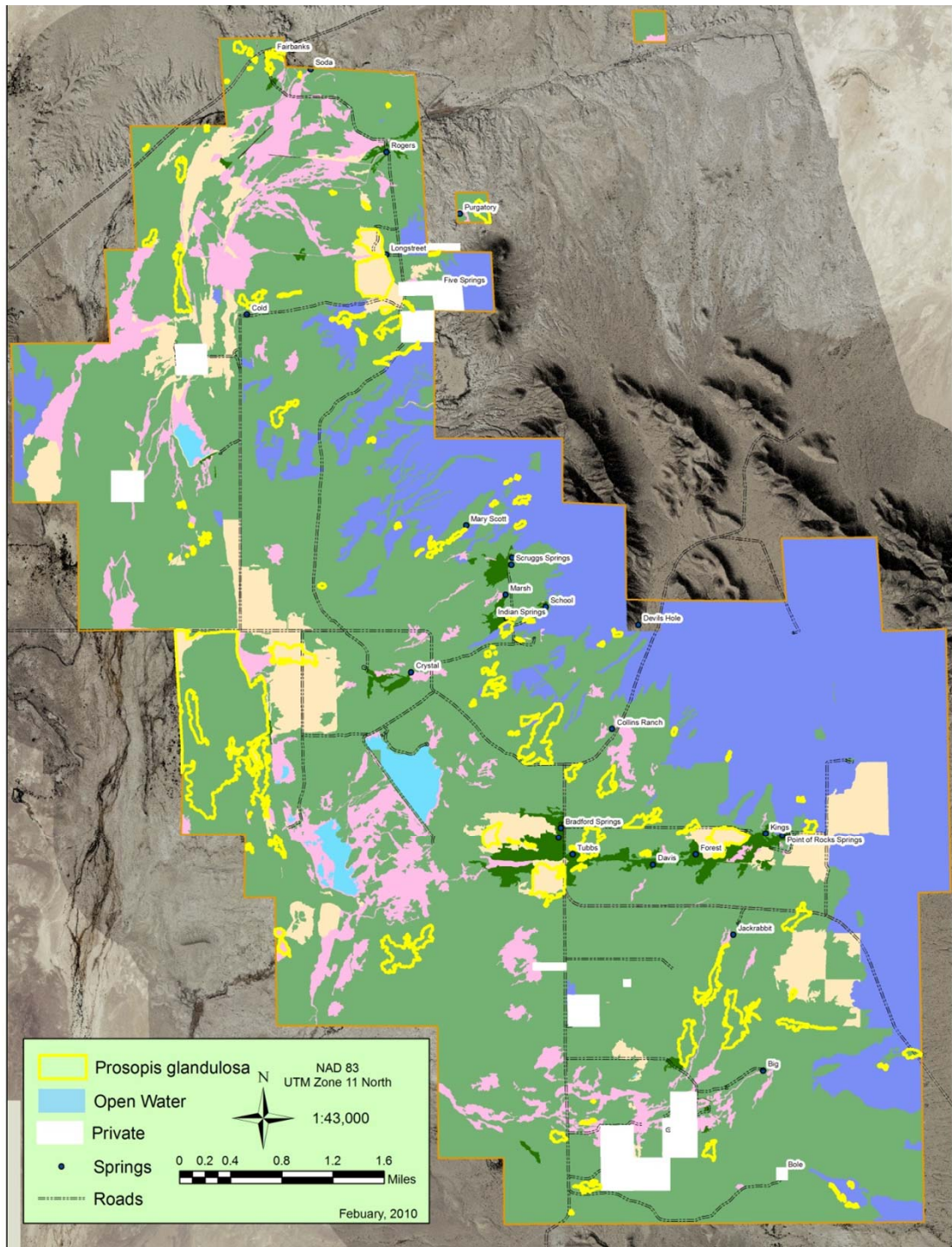




# *Prosopis glandulosa* Shrubland Alliance (honey mesquite)

- Largest concentration west of Horseshoe Marsh
- Often forming dune communities
- Associated species:
  - *Atriplex confertifolia* (shadscale)
  - *Isocoma acradenia* (alkali goldenbush)
  - *Suaeda moquinii* (Mojave seablite)
  - *Atriplex canescens* (four-wing salt bush)
  - *Larrea tridentata* (creosote bush)











# Total Acreage of Communities Reviewed

Total Acreage of Communities Reviewed	
Community	Acres
<i>Atriplex confertifolia</i> Shrubland Alliance	3,682
<i>Juncus arcticus</i> Herbaceous Alliance	694
<i>Larrea tridentata-Ambrosia dumosa</i> Shrubland Alliance	3,494
<i>Sporobolus airoides</i> Herbaceous Alliance	1,049
<i>Typha species</i> Herbaceous Alliance	314
<i>Prosopis glandulosa</i> Shrubland Alliance	715
<i>Prosopis pubescens</i> Woodland Alliance	1,054
<b>Total Acreage</b>	<b>11,002</b>
<b>Percent of Refuge</b>	<b>48%</b>

