



# Terrestrial and Aquatic AIM Examples

Using aquatic and terrestrial AIM projects from 3 scales, we will discuss the following:

- Monitoring goals/applications
- How sites were selected?
- What indicators were measured?
- Example results

# AIM data—the big picture

BLM multi-scale data needs:

- Permit renewals
- RMP effectiveness
- State-wide reporting
- Ecoregional assessments
- Bureau-wide

Scale



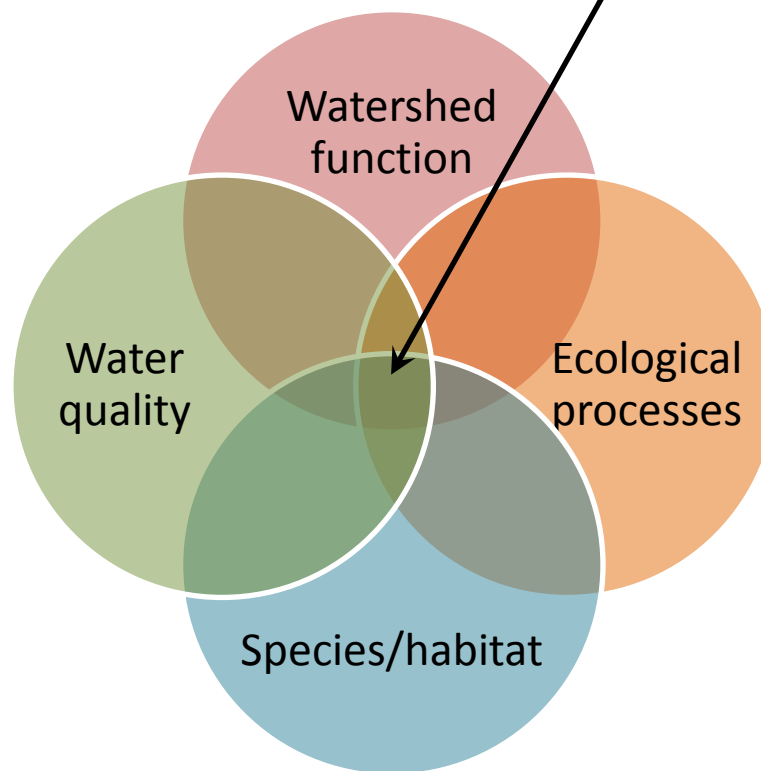
# AIM data—the big picture

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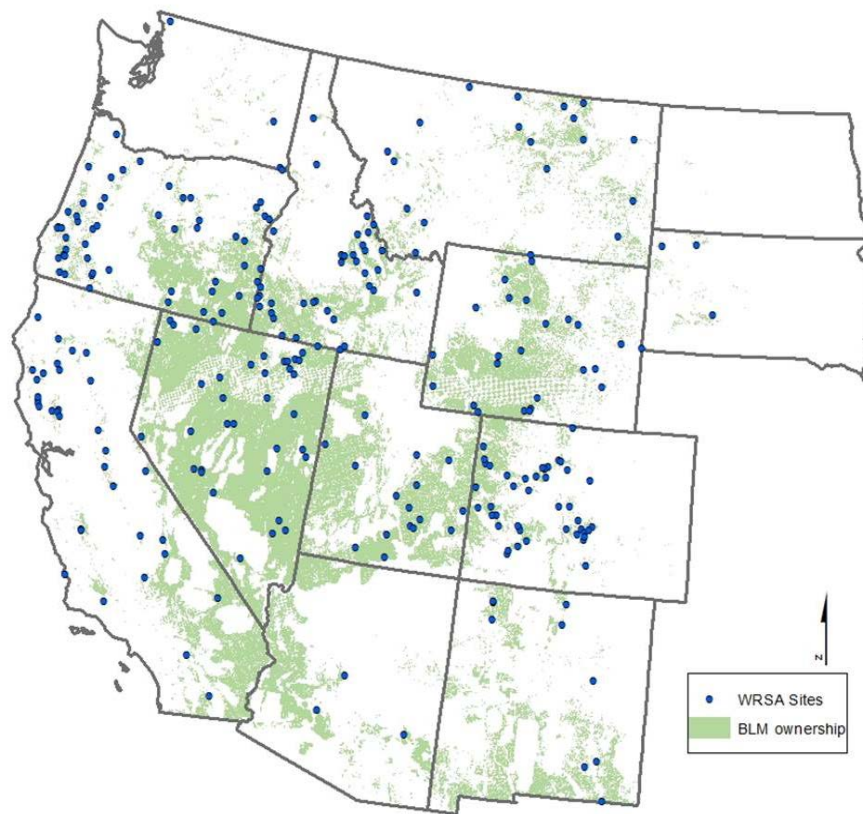
**Fundamentals of Land Health:  
Ecosystem Integrity**



# National scale example – Western Rivers and Streams Assessment

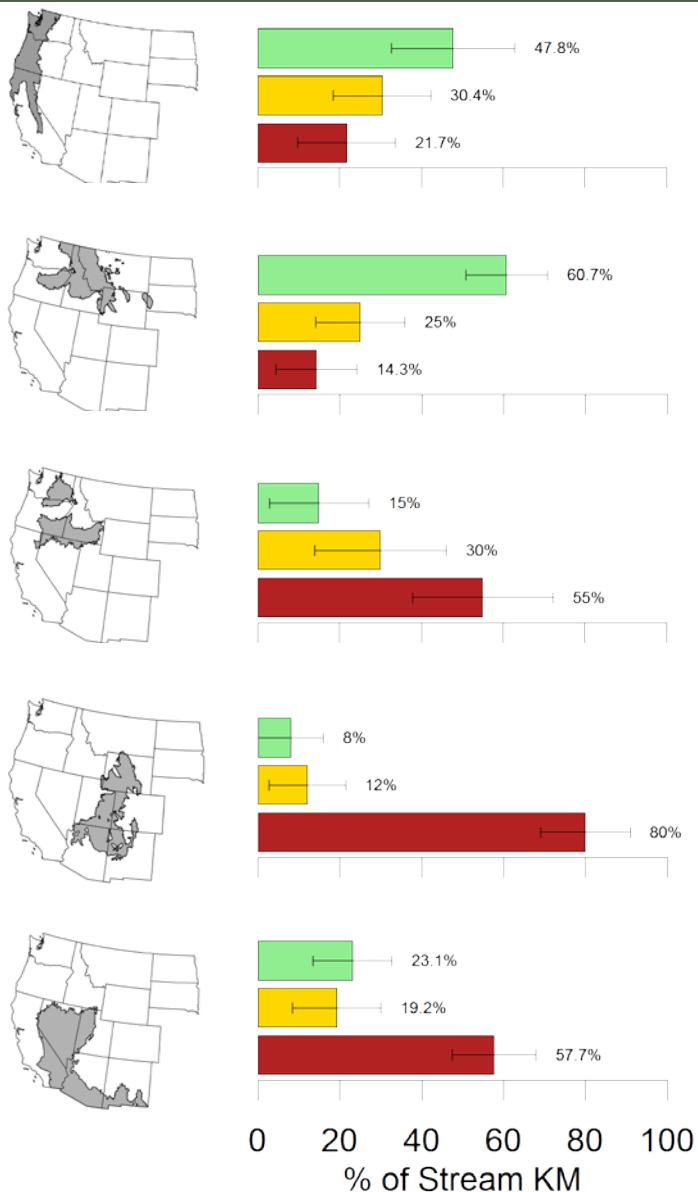
## Monitoring goals & applications:

- What percentage of BLM's streams and rivers are in good, fair or poor biological condition?
- What is the risk posed by the observed stressors to biological condition?
- Public Land Statistics reporting
- Regional management priorities

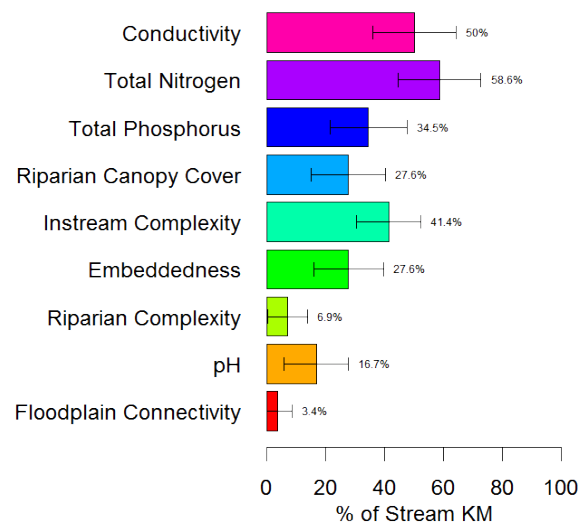
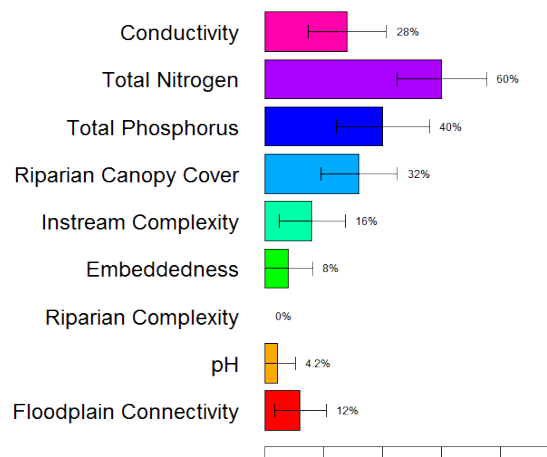


# Instream biological integrity results

Biological condition significantly differs among ecoregions

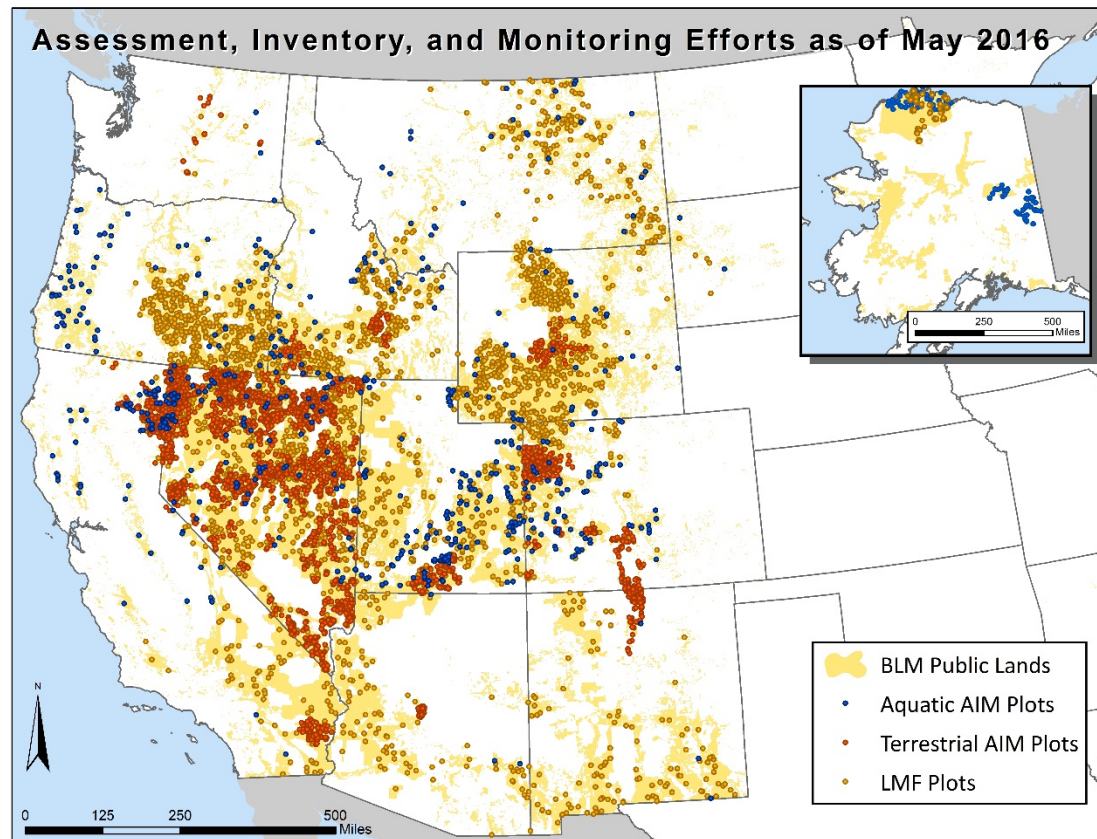


# Priority stressors by region



# Landscape Monitoring Framework (LMF)

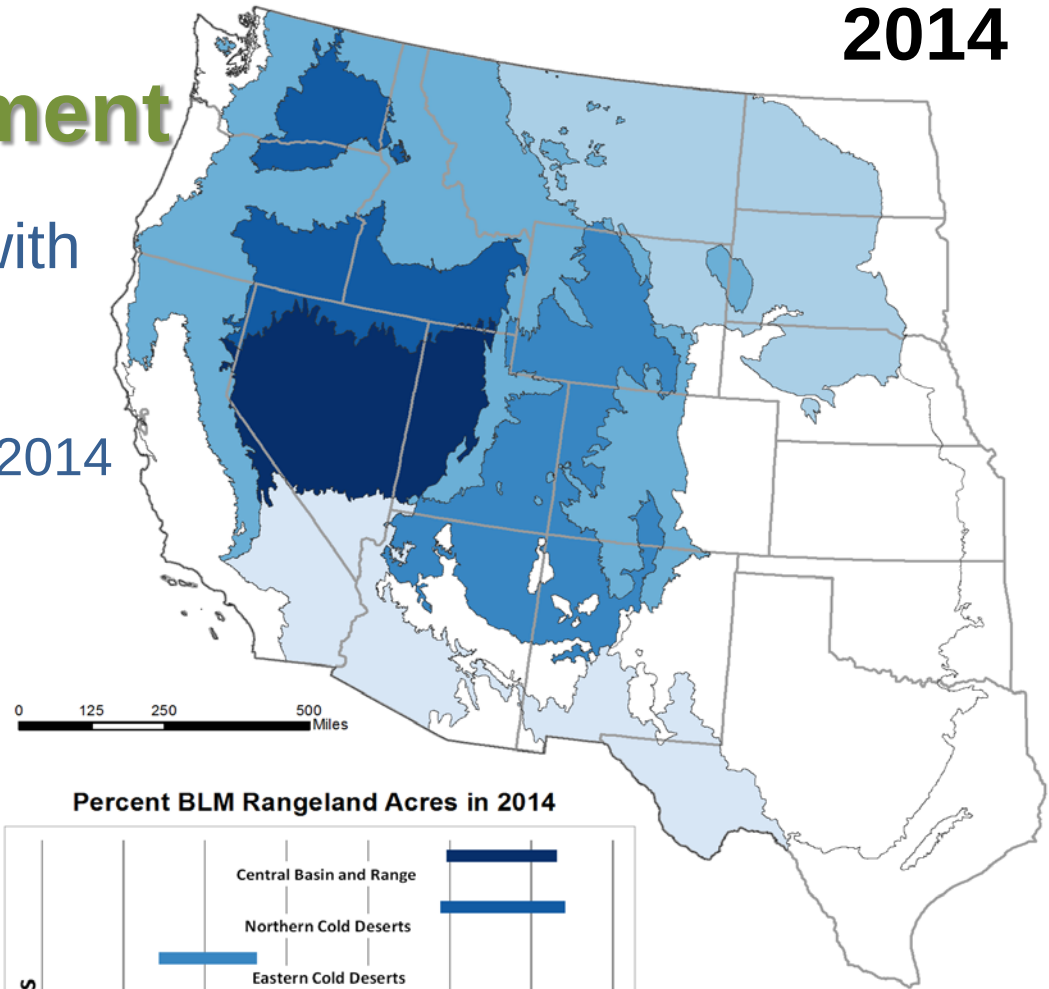
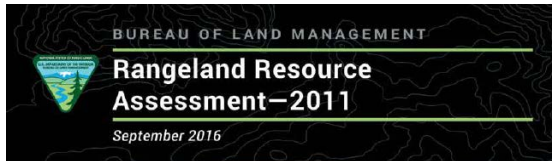
- Low-intensity terrestrial monitoring network on BLM lands to satisfy national reporting requirements
- AIM Core methods
  - Extension of NRI onto BLM lands
  - Collected by NRCS crews
  - Data available for use by local offices.
  - ~7000 points as of 2016.



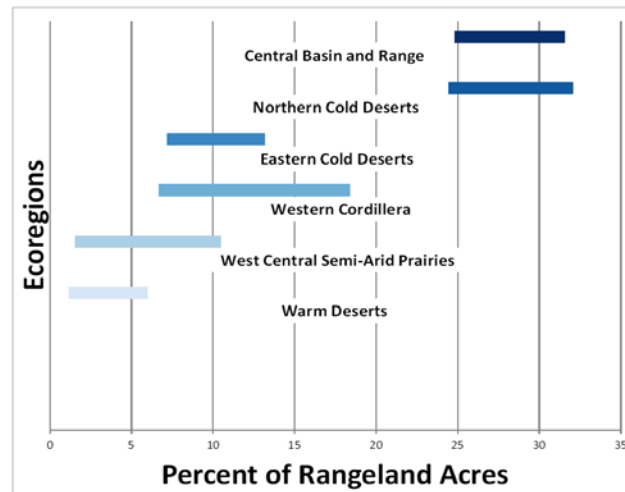
# BLM Rangeland Resource Assessment

2014

- Percent of BLM Acres with invasive species
  - LMF analysis
  - >2,100 sample points in 2014



Percent BLM Rangeland Acres in 2014

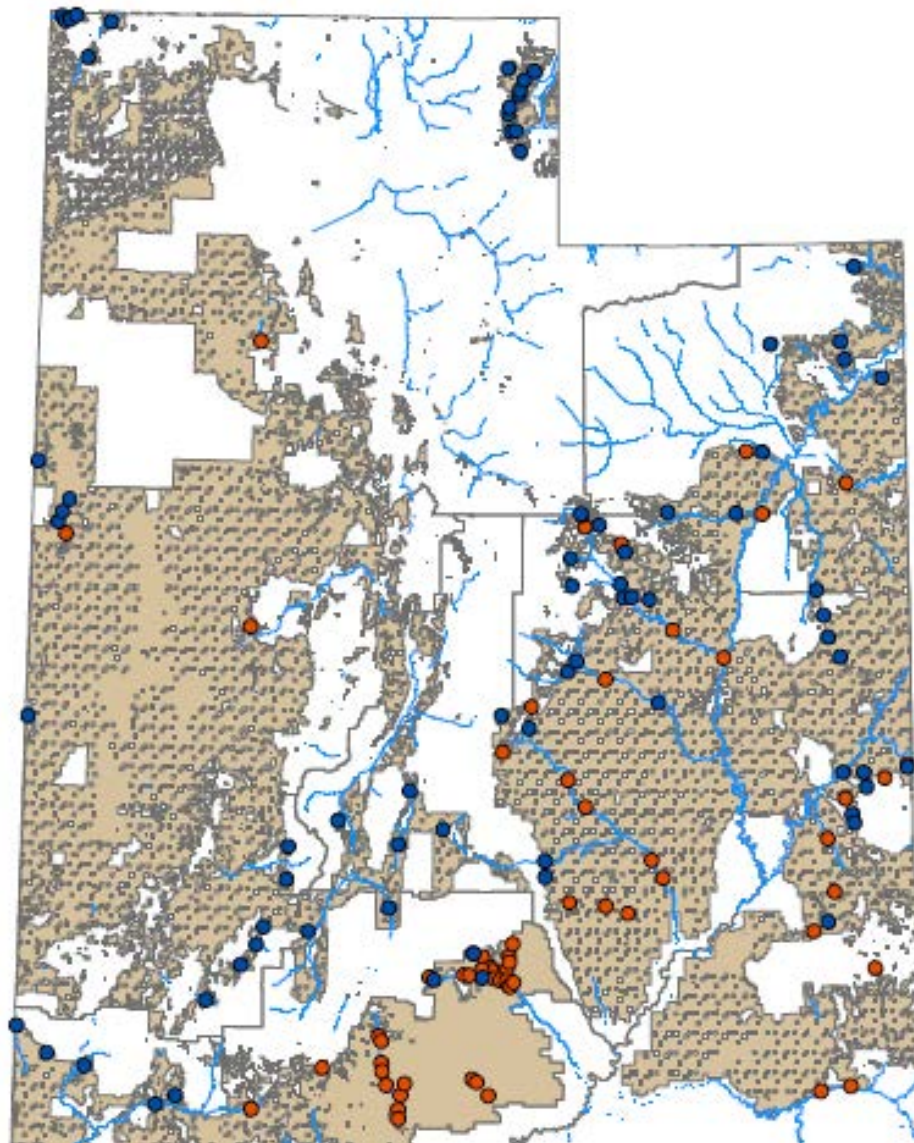


BLM Administered Lands



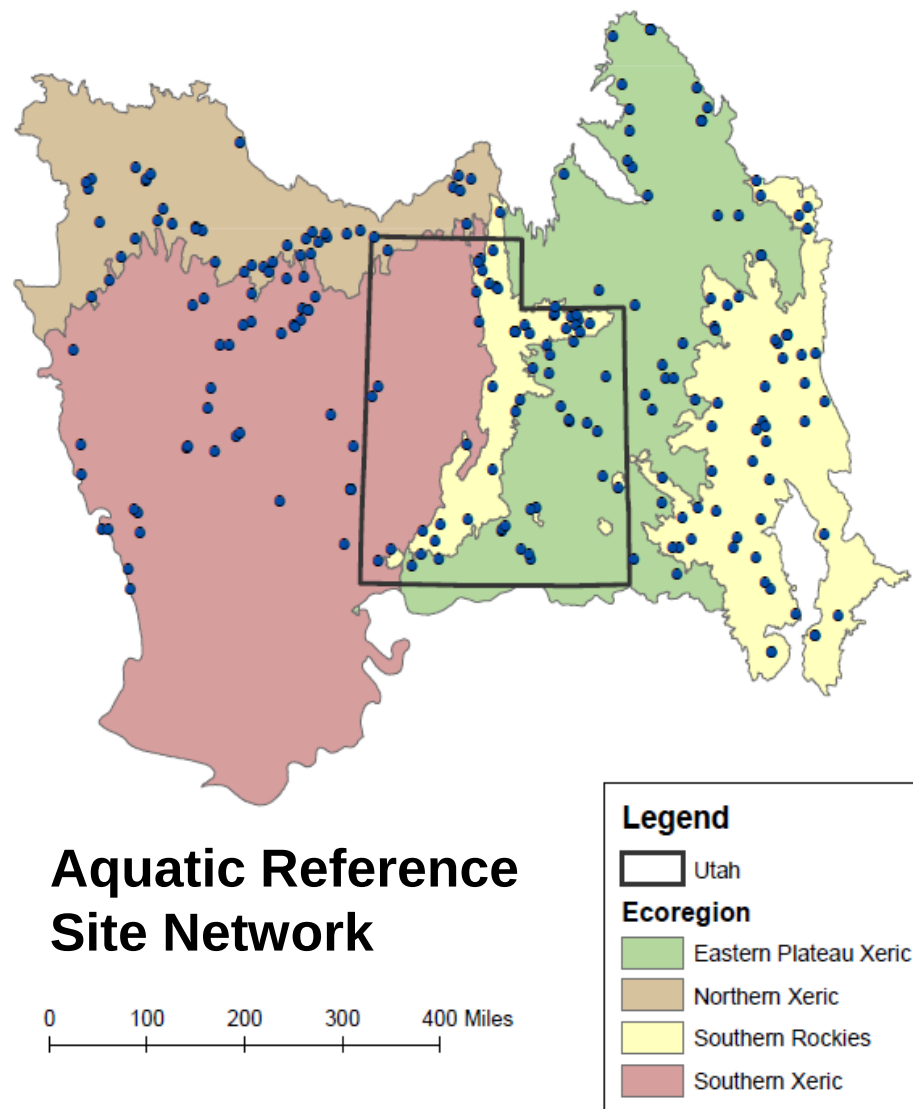
# Benefits of regional monitoring for field offices

- Sample points can be used for local applications – free to FO
  - o 30+ points



# Benefits of regional monitoring for field offices

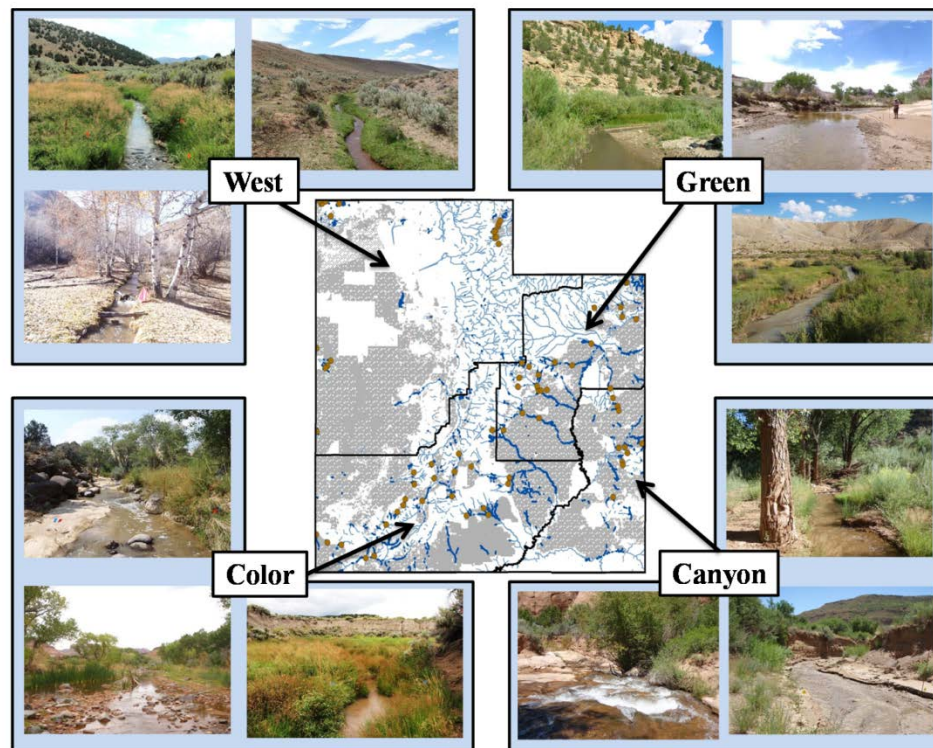
- Put data into context – reference site networks and benchmark development/refinement
- Data from established sites can be reused for other monitoring purposes (as appropriate)



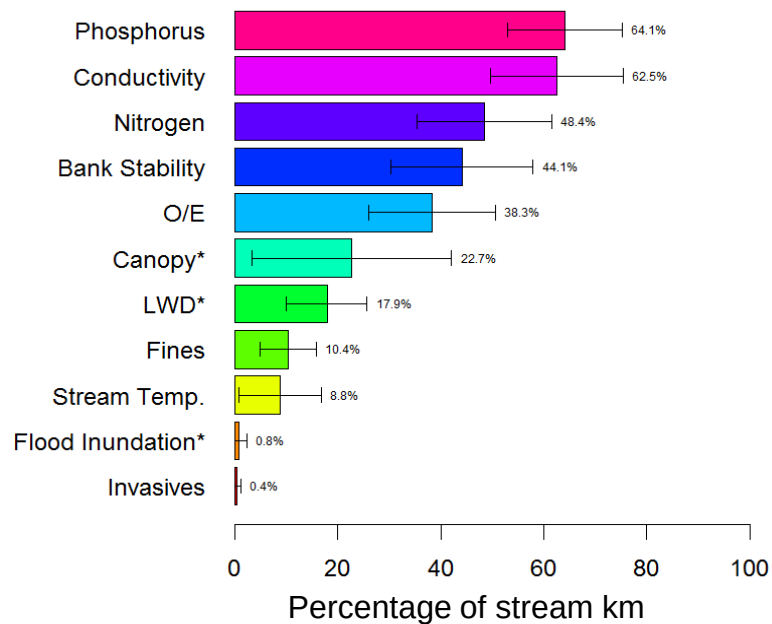
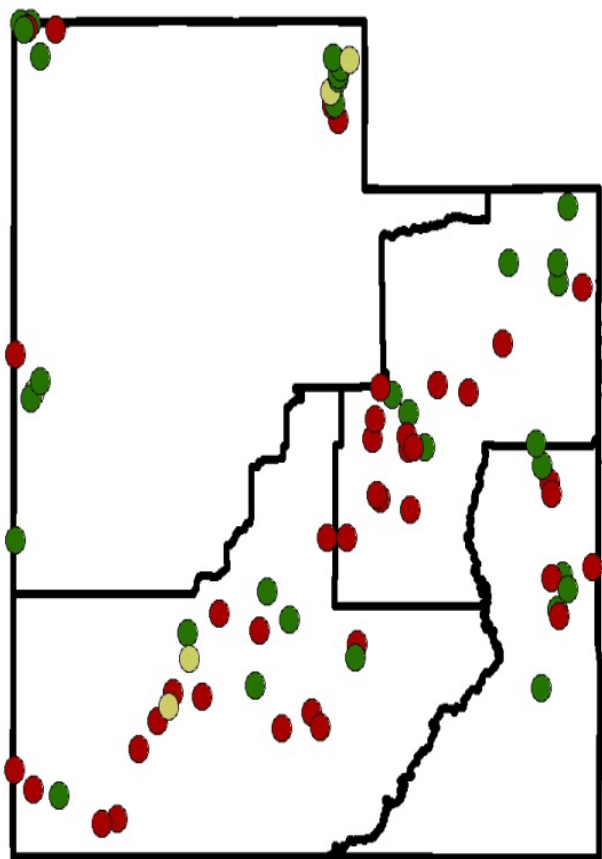
# Statewide scale example: UT

## Monitoring goals & applications:

- Establish quantitative, baseline conditions
- Assess LHS attainment
- Identify priority stressors by region
- Inform more intensive, local monitoring and management actions

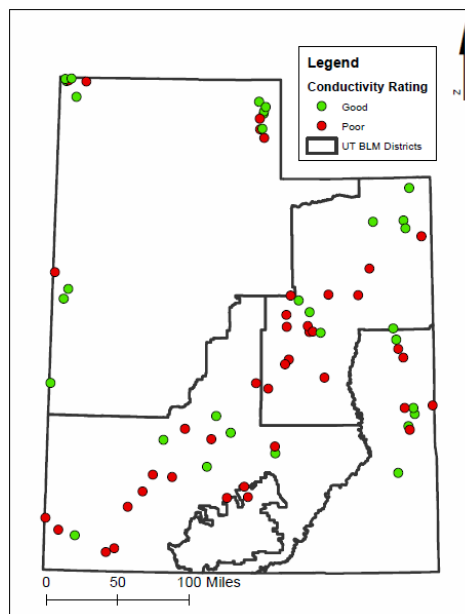
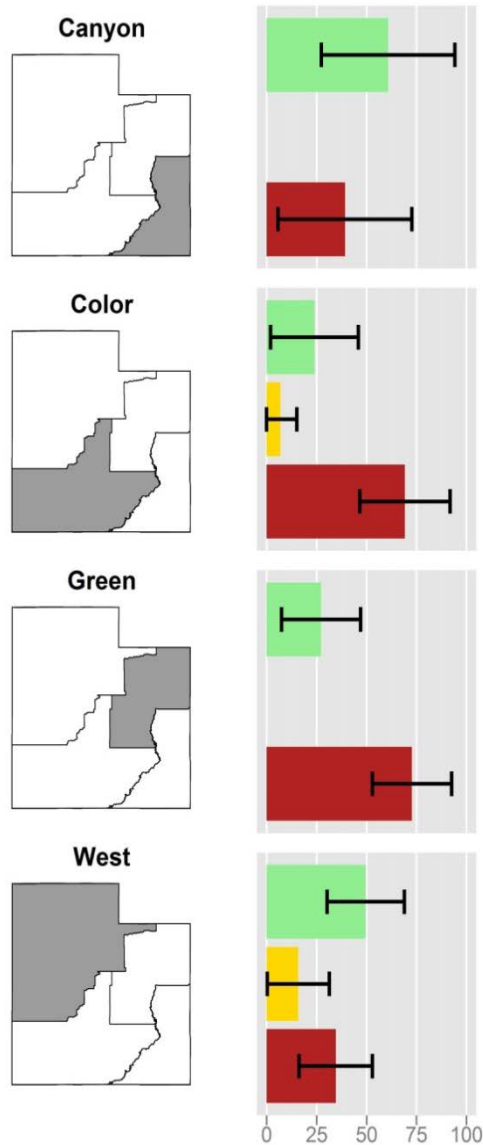


# Priority stressors



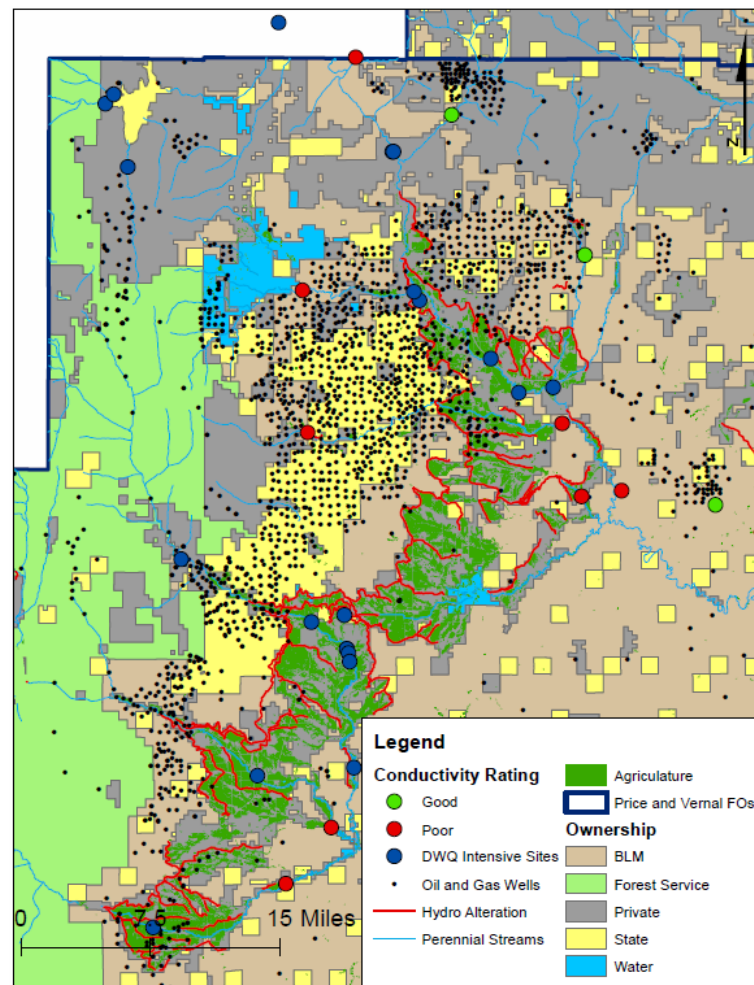
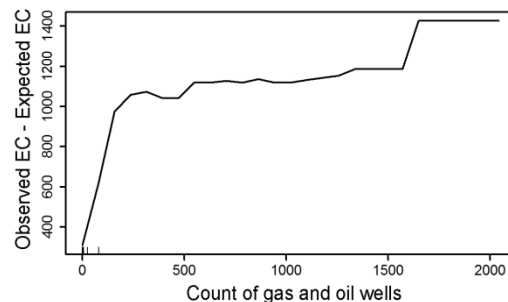
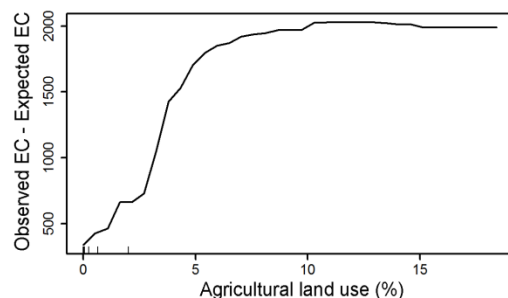
# Priority stressors by district

Salinity is a priority stressor in parts of UT



# Land-uses associated w/ priority stressors

Salinity: 65% of spatial variability explained by % ag, density of oil & gas wells, % hydrologic alteration



# Sage-Grouse Habitat Assessments

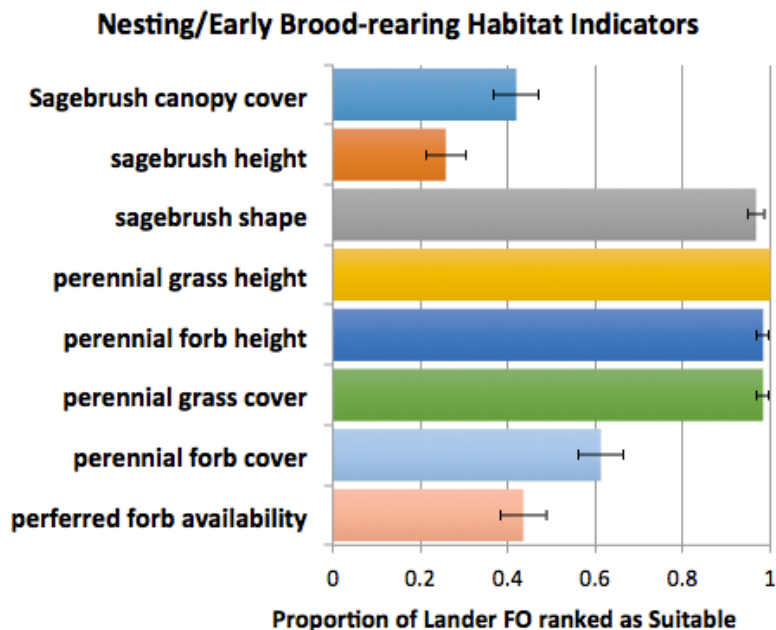
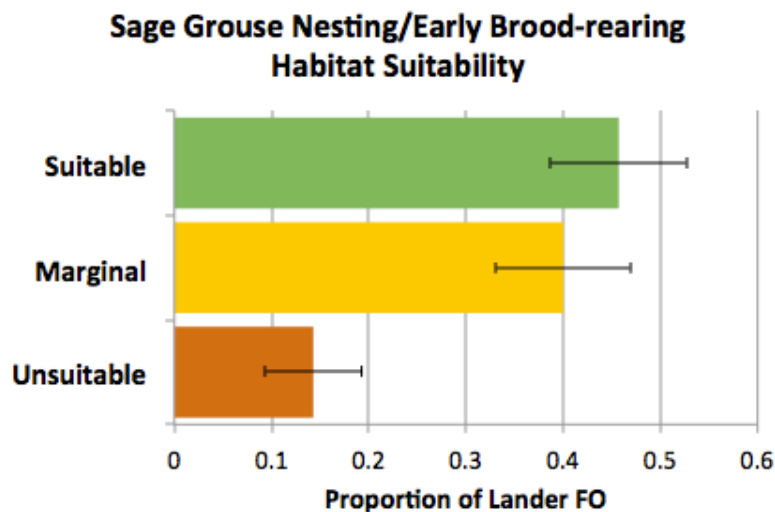
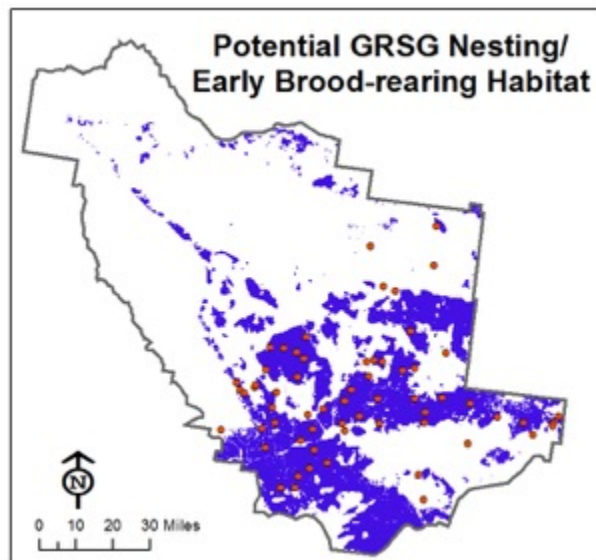
## Monitoring goals and applications:



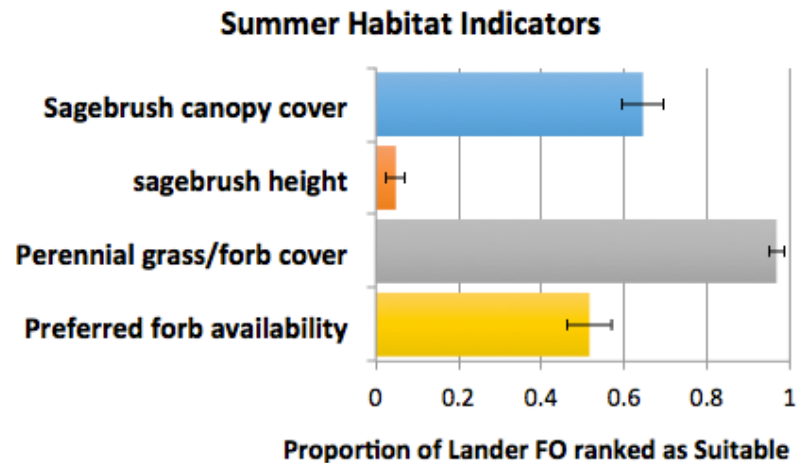
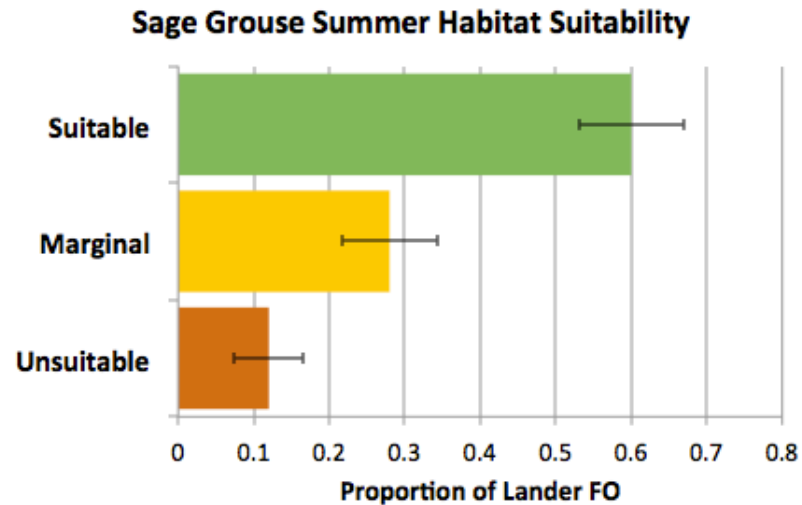
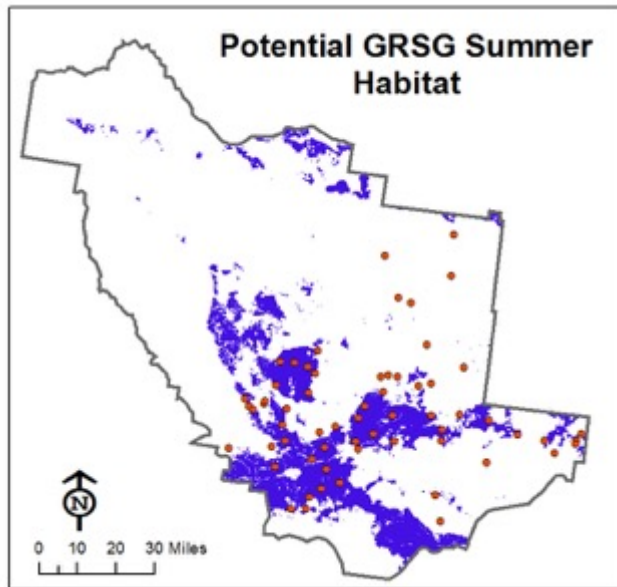
- Establish quantitative, baseline conditions
  - Sage-Grouse Habitat Assessment Framework (HAF)
- Maintain sage-grouse habitat
  - E.g., native perennial herbaceous plant cover on all sagebrush habitats remains above 15% after 10 years with 80% confidence



# Nesting/Early Brood-rearing Habitat

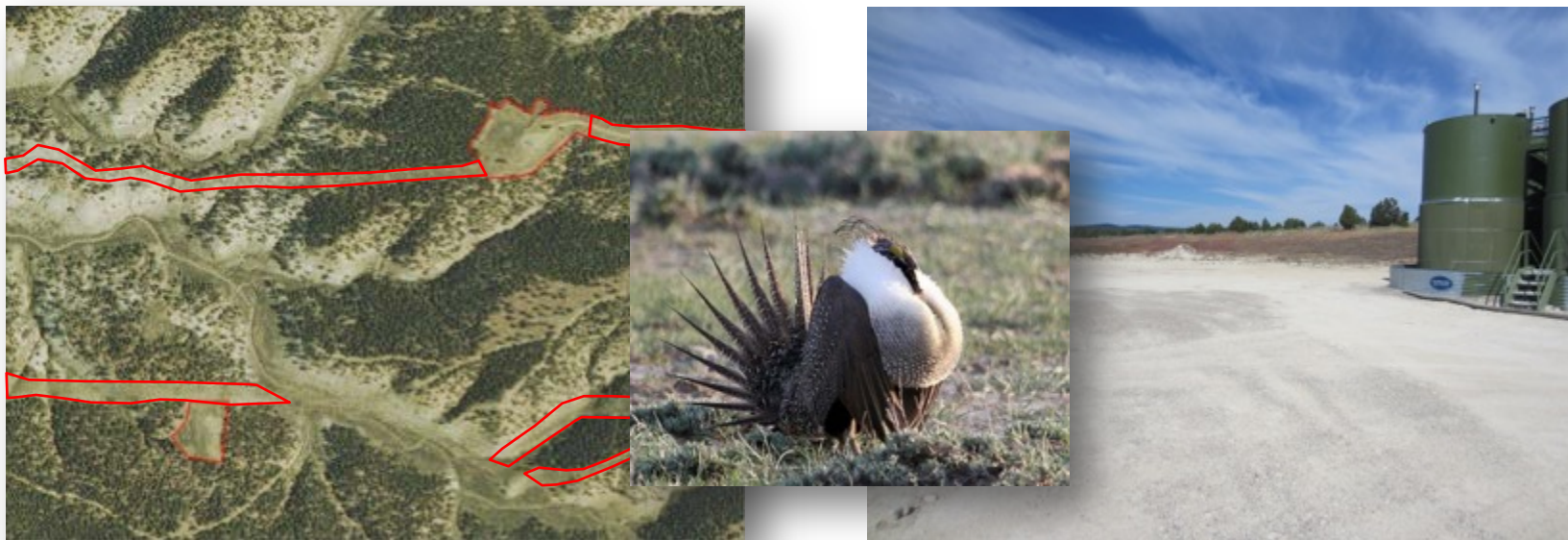


# Summer Habitat



# Reclamation/Treatment Effectiveness-- Disturbance & Reclamation Monitoring

## Monitoring goals and applications:



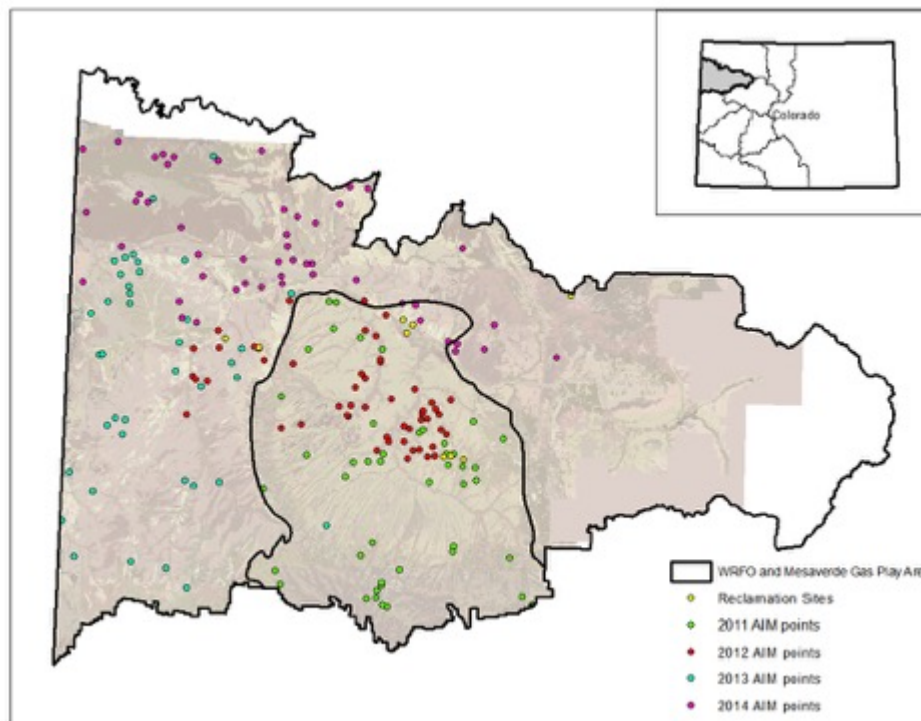
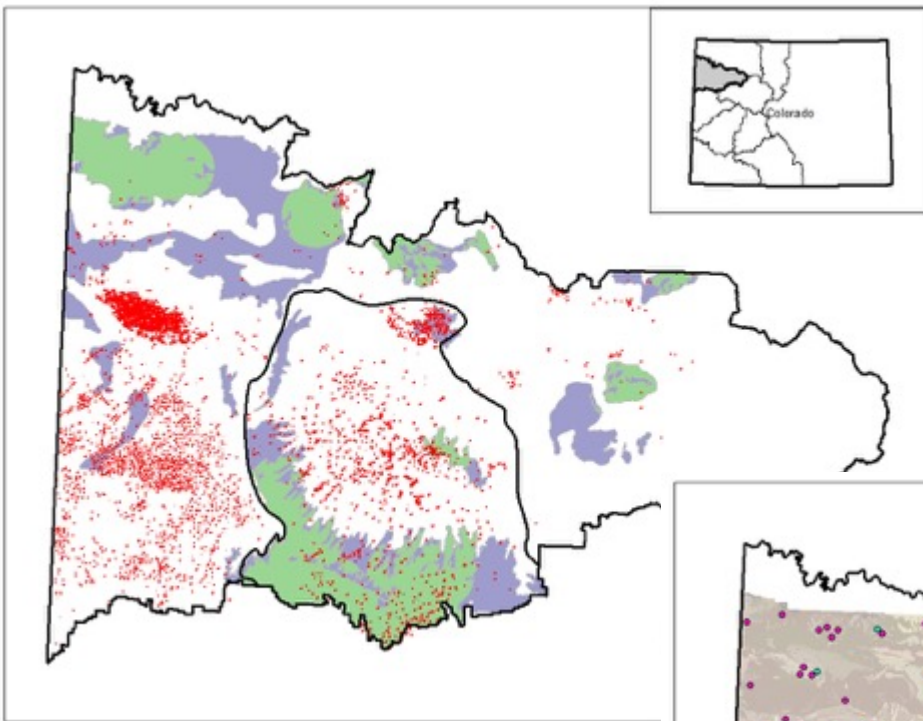
- Use AIM quantitative to determine reclamation success in White River FO, Colorado
- Reclamation success criteria
  - E.g., Vegetation with 80% similarity to desired foliar cover, bare ground, and shrub and/or forb density in relation to the identified Desired Plant Community.





# Oil & Gas Surface Disturbance

## AIM Monitoring Design



# Results – Pinyon Juniper range site

## Reclamation

| Criteria Indicators             | Values |
|---------------------------------|--------|
| Foliar Cover                    | 37%    |
| Bare Ground                     | 27%    |
| Shrub/Forb density (stems/acre) | 5,370  |

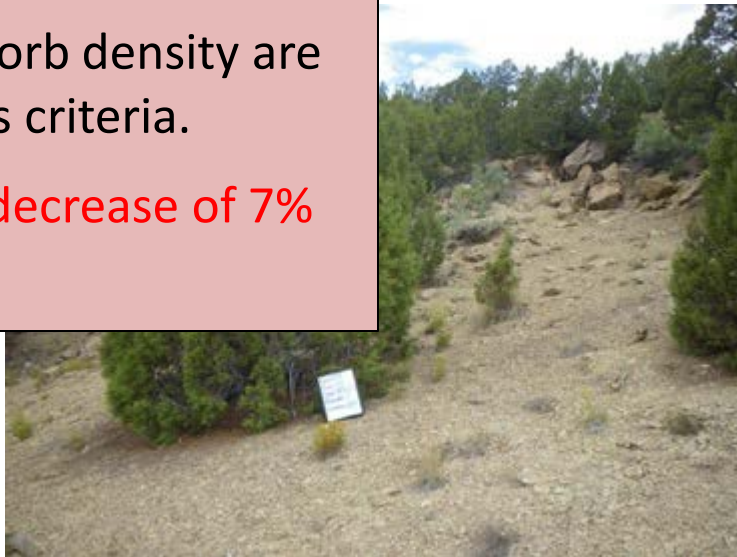
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## Nearby Undisturbed #1

| Criteria Indicators             | Values |
|---------------------------------|--------|
| Foliar Cover                    | 27%    |
| Bare Ground                     | 17%    |
| Shrub/Forb density (stems/acre) | 4,156  |

Foliar cover and shrub/forb density are all within 80% of success criteria.

Bare ground requires a decrease of 7% to achieve success.



# Results – Pinyon Juniper range site

BLM

Assessment, Inventory, and Monitoring (AIM) Strategy

## Reclamation

| Criteria Indicators             | Values |
|---------------------------------|--------|
| Foliar Cover                    | 37%    |
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| Shrub/Forb density (stems/acre) | 5,370  |

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## All *Similar* PJ AIM Sites

| Criteria Indicators                   | Values        |
|---------------------------------------|---------------|
| Foliar Cover (n=27)                   | 51% ± 3%      |
| Bare Ground (n=27)                    | 15% ± 1%      |
| Shrub/Forb density (stems/acre) (n=6) | 4,795 ± 1,292 |

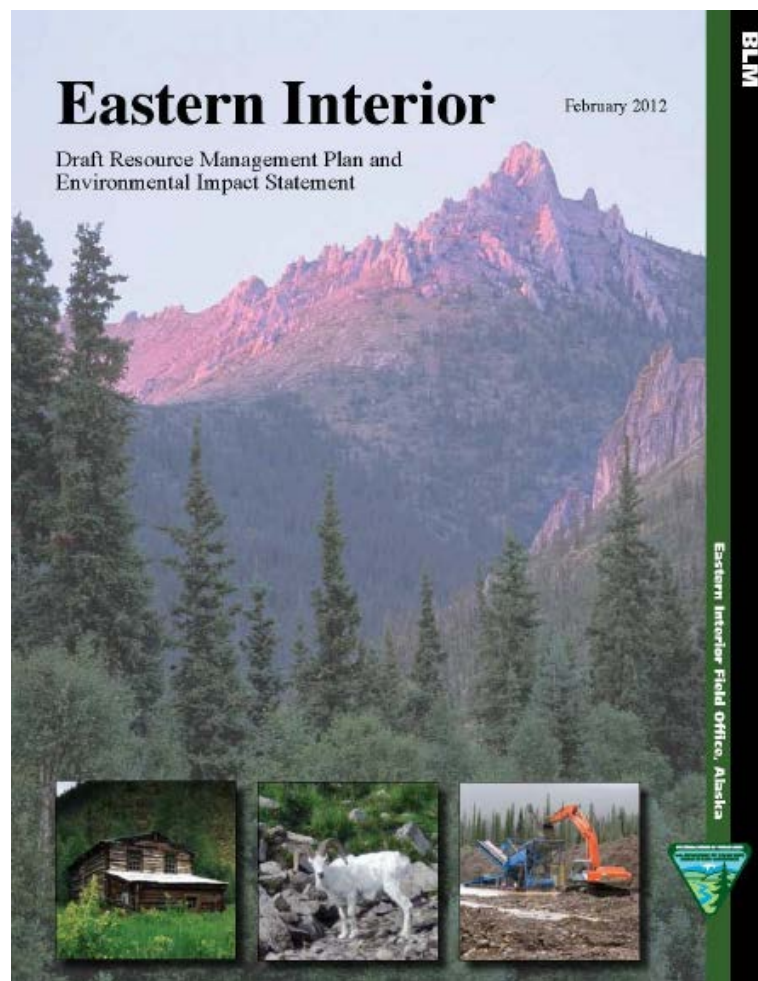
- Foliar cover too low.
- Bare ground too high.
- Shrub/forb density is within 80% of success criteria.



# Field office scale example - Alaska

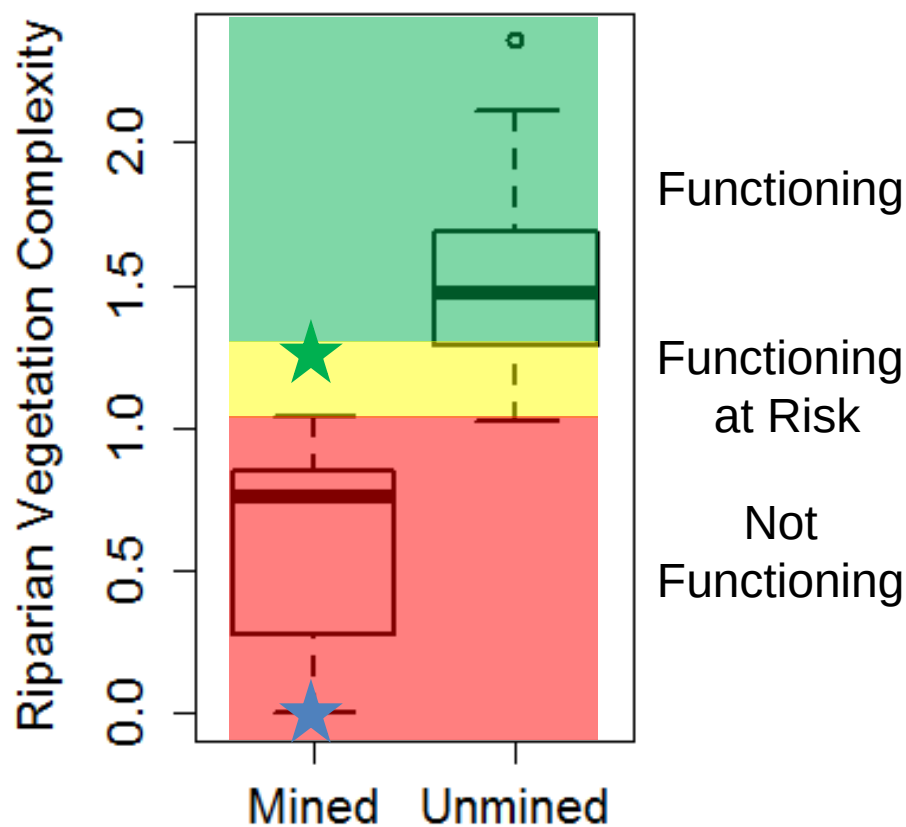
## Monitoring goals and applications:

- Establish quantitative, baseline conditions
- Monitor LUP effectiveness
- Quantify the response and recovery of streams to placer mining



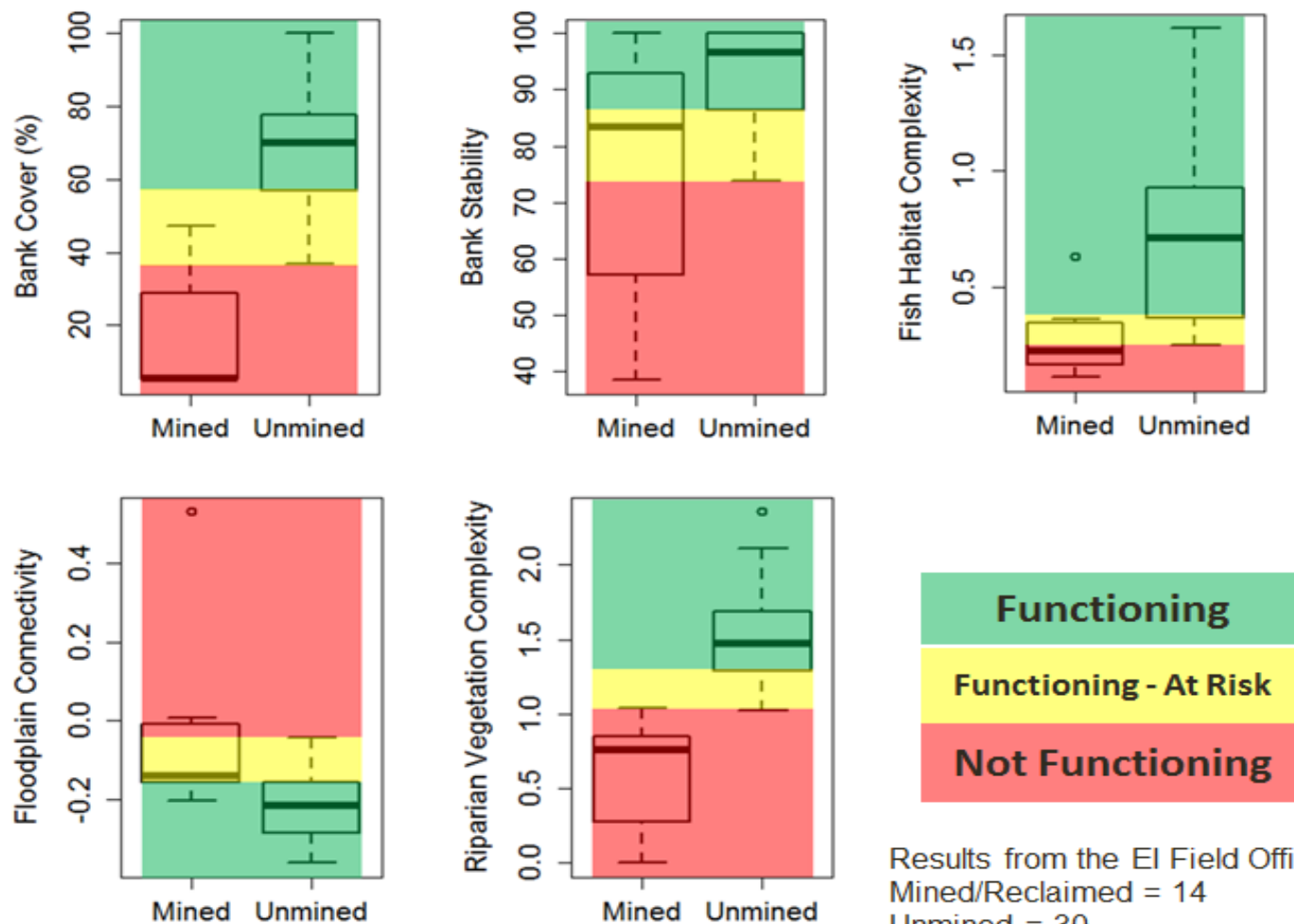
# Baseline & Placer mining reclamation

Placer mining = example reclamation effectiveness results



# Baseline & Placer mining reclamation

Placer mining = significant alterations to water quality, riparian and instream habitat



# Conclusion:

- Public lands are not islands
- Consistent data collected using consistent methods can be used by various audiences with different objectives (as seen in examples)
- **AIM provides unbiased data – multiple scale questions and defensible data**

