Dolores River Restoration Partnership Rapid Monitoring

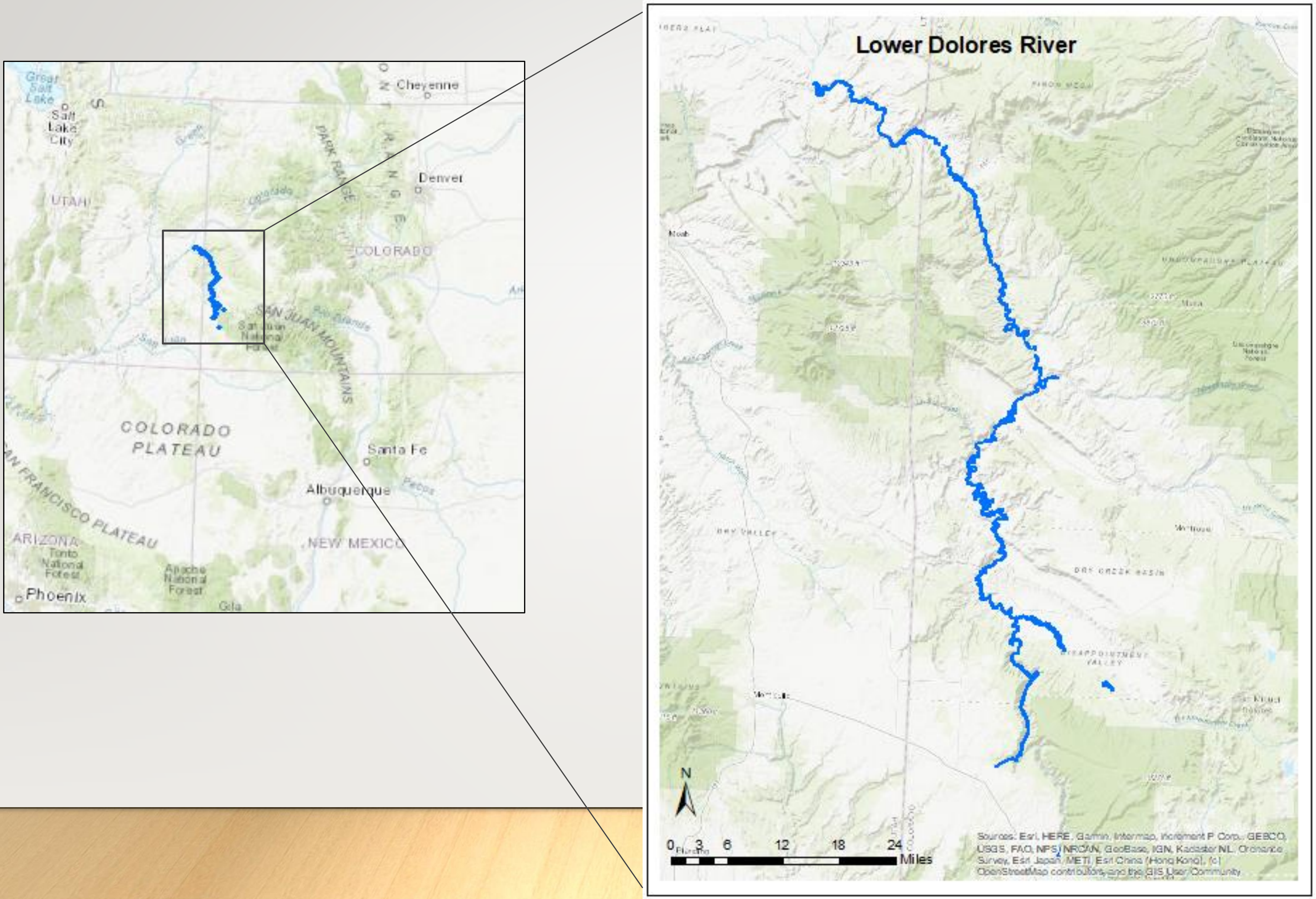
Tracking restoration progress on a site-by-site basis

Outline

- DRRP Background and History
- Partnership Goals
- Rapid Monitoring
  - What, Where, When
  - Data Collected
  - Methods
- How is the Data Used
- Advantages of Rapid Monitoring

What is the Dolores River Restoration Partnership (DRRP)?

- Collaborative group of individuals and organizations working to restore native vegetation communities and overall ecological function of the Dolores River


Lower Dolores River
Great Salt Lake
Salt Lake City
Cheyenne
Denver
UTAH
COLORADO
PARK RANGE
SAN JUAN MOUNTAINS
San Juan National Forest
COLORADO PLATEAU
Santa Fe
Albuquerque
NEW MEXICO
ARIZONA
Tonto National Forest
Apache National Forest
SAN FRANCISCO PLATEAU
Phoenix
Moab
DRY VALLEY
DRY CREEK BASIN
DISAPPOINTMENT VALLEY
N
0 3 6 12 18 24
Miles
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

THREATS TO THE DOLORES RIVER

- Tamarisk
  - displaces native plants
  - increases wildfire risk
  - impairs wildlife and fish habitat and forage
  - diminishes recreation access
- Other Noxious Weeds
  - Russian knapweed, Russian olive, Siberian elm, Canada thistle, Hoary Cress

RESTORATION ACTIVITIES

- Tamarisk removal (includes re-treatment)
- Some removal of Russian Olive and Siberian Elm
- Secondary weed treatments: Russian knapweed, Canada thistle, Hoary Cress, Musk thistle
- Active Revegetation
- Monitoring

Hypothesis

If we remove 90-100% of select invasive species the native species will naturally recruit on their own

Partnership Ecological Goals

- Less than 5% relative tamarisk cover
- Less than 15% relative non-native invasive cover
  → Greater than 75% relative native vegetation cover
- Greater than 30% total vegetation cover
- Evidence of native species passive recruitment

Key Questions

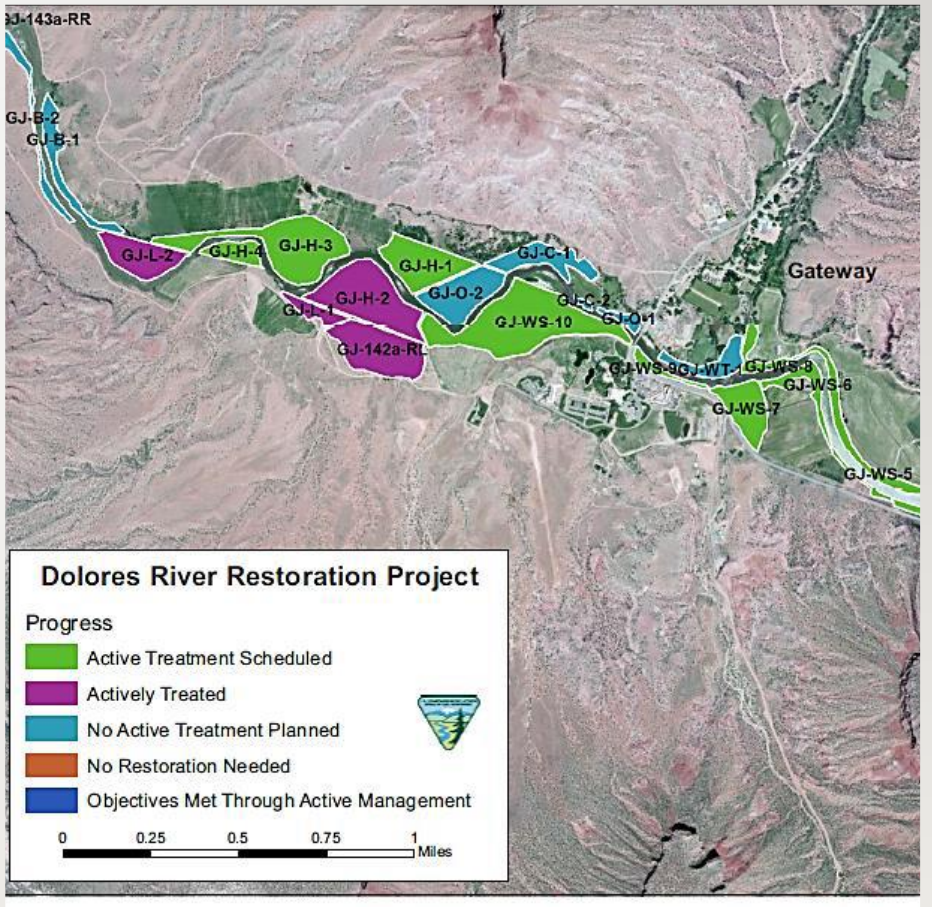
- Where do we need to put management resources?
- Where are we meeting restoration goals at a landscape scale?

What is DRRP Rapid Monitoring?

- Vegetation monitoring
- General idea of vegetation response to restoration activities on and throughout EVERY SITE
- Designed to cover a lot of acreage in a reasonable amount of time

Where and When is Rapid Monitoring Performed?

- Reporting Polygons = "Sites"
- Rapid Monitoring conducted on
  - Actively Treated
  - Active Treatment Scheduled
  - Some Objectives Met sites
- Monitor roughly 1/3 of sites every year → Monitor on 3 year cycle
- 8 weeks in the summer



Rapid Monitoring - Key Data Collected

- Relative Cover - Ocular Estimates
  - Cover Classes: 0%, 1-5%, 6-10%, 11-20%,…, 81-90%, 91-95%, 96-100%
  - Native species, tamarisk, most abundant invasive species
- Tamarisk Leaf Beetle Presence
- Passive Recruitment
- Invasive Species Inventory
- Photo-Points

Data Collection Method

- Crew of 2 people
- Thorough site walk-through
  - Eyes on entire site
  - Consensus for cover class of tamarisk, native species, etc.
- Arc Collector on tablets → Monitors sync data to Arc Online from downloaded offline maps

Passive Recruitment

- Focus on willows and cottonwoods
- Evidence of Natural Recruitment
  - ≥ 20 cottonwoods greater than 1 meter in height and between 1 and 10 years of age

  And/or

  - ≥ 100 willow stems that are at least 0.5 meters in height

Photo Points

- At least 3 photos per site

Invasive Species Inventory

- Create a polygon for each secondary weed infestation within each site
- Tamarisk cover is estimated for every polygon

Canada Thistle
Musk Thistle
Russian Knapweed
Hoary Cress
Yellow Starthistle
Phragmites (Common Reed)
Russian Olive
Siberian Elm
Perennial Pepperweed
Purple Loosestrife

How is Rapid Monitoring Data Used?

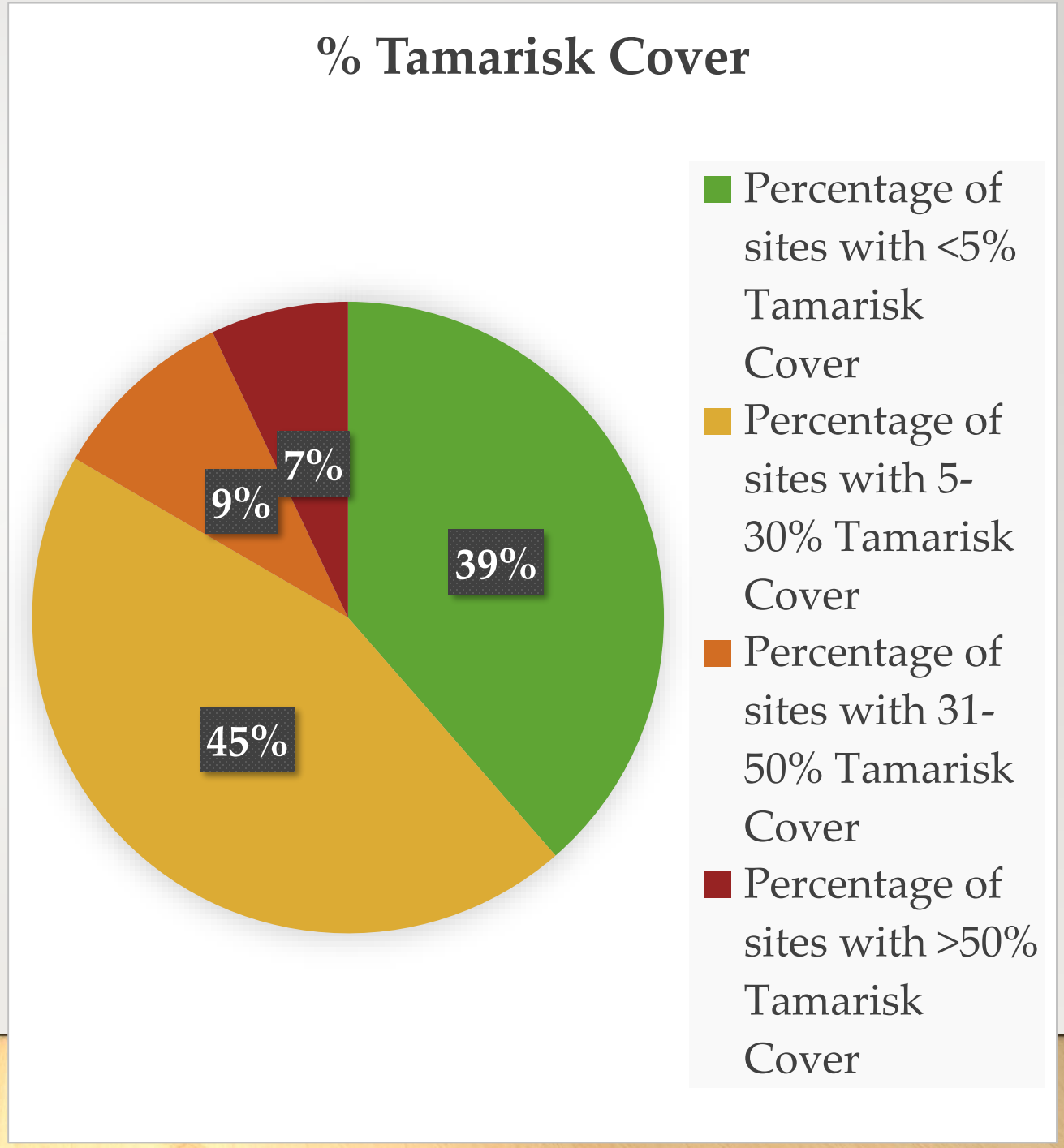
- Informs management decisions on a site-by-site basis
  - Prioritize sites for secondary weed treatments
  - Track where tamarisk is re-sprouting and establishing
  - Do we need active revegetation?
  - Adaptive management

How is Rapid Monitoring Data Used?

- Project planning - type of treatment needed, how long treatments might take, supplies needed
- Rapid-detection/early response for weeds like purple loosestrife and yellow starthistle
- Track which sites are meeting restoration goals
- Able to see how restoration is progressing over 200 miles of river

Restoration Progress

- 79% of sites have Tamarisk leaf beetle presence
- 69% of sites have > 50% native vegetation cover
- 93% of sites infested by Russian knapweed



Advantages of Rapid Monitoring

- Eyes on every single restoration site on a 3-year basis
  - 241 total sites encompassing over 2,600 acres
- Efficient with time and cost
  - Can monitor 1/3 of the watershed in 8 weeks with 2 people
  - Minimal tools and software
- Engage conservation corps
  - Help educate and engage the next generation of stewards!

Questions?