# Small mammal use of grazed and un-grazed restored native grassland and shrub habitats along the Sacramento River

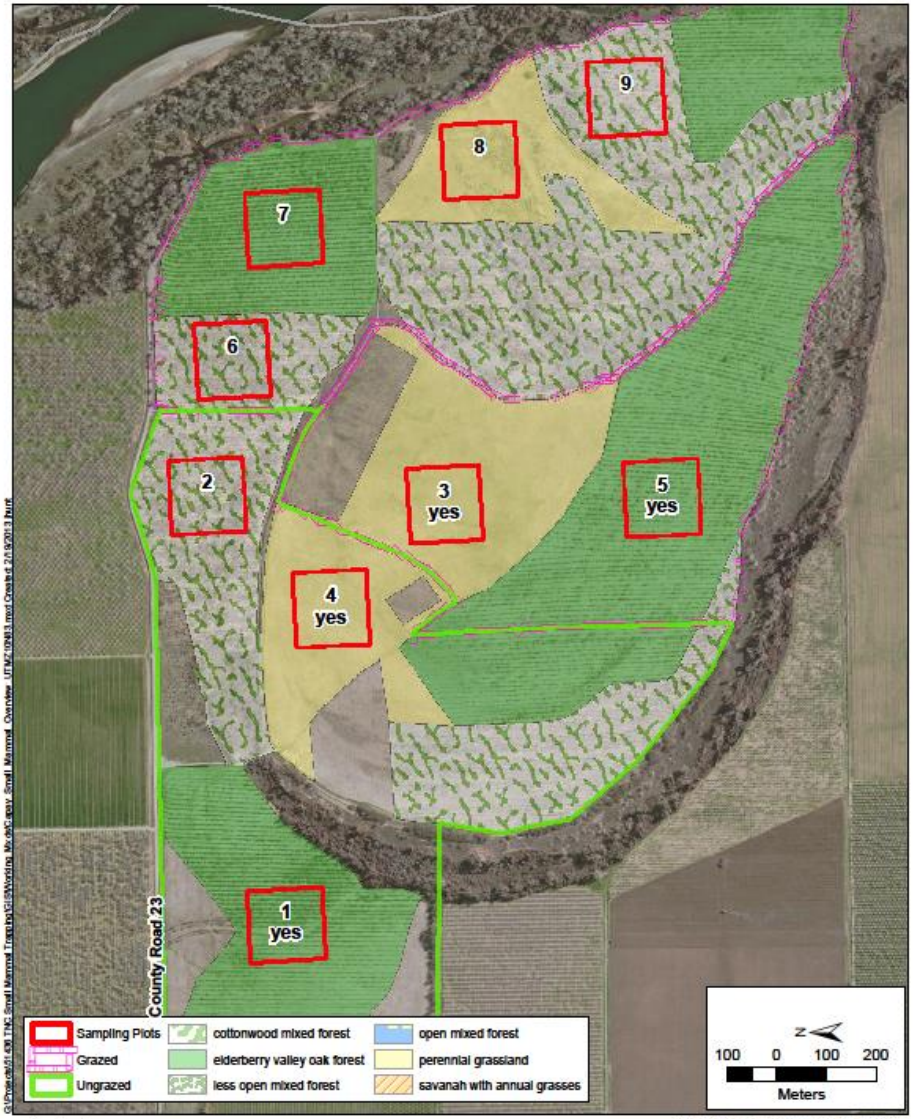
North State Resources, Inc.

# Introduction

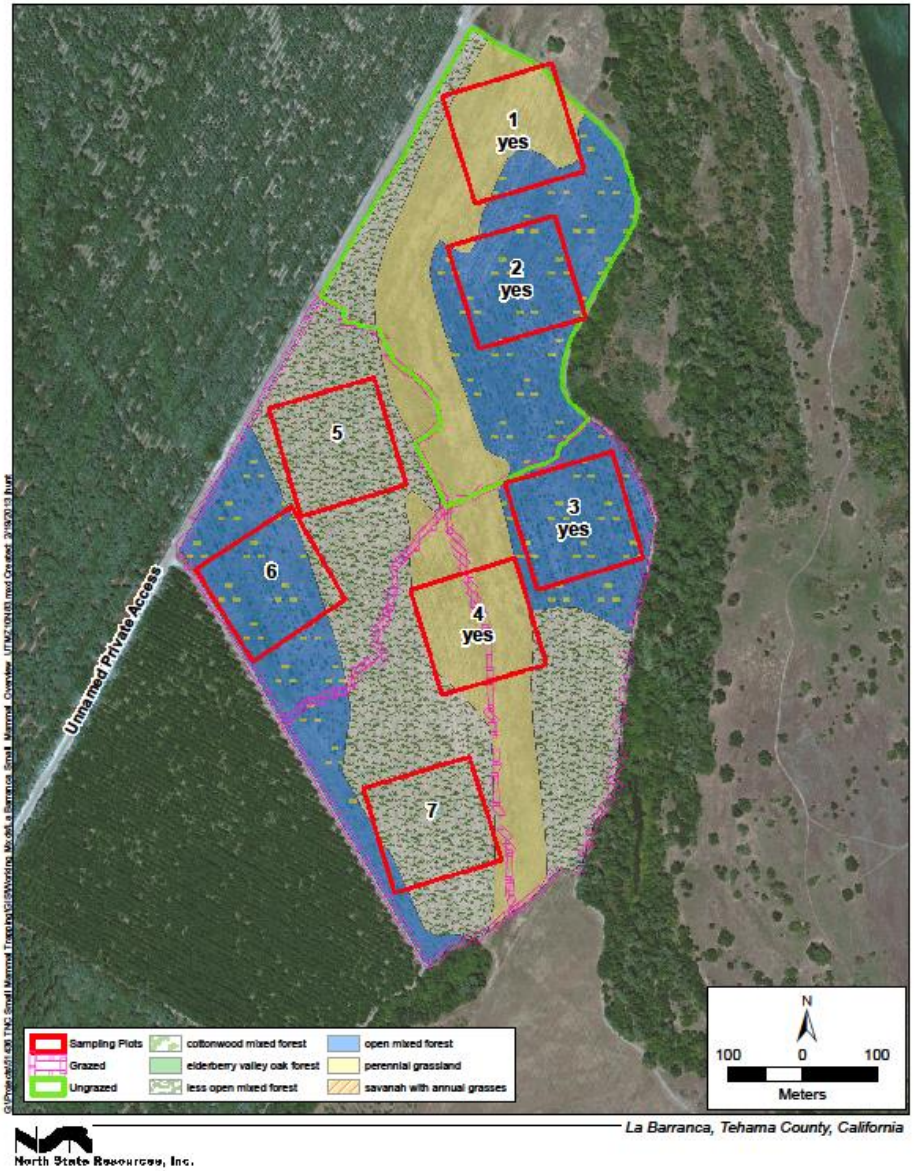
- Base of the food chain
- Indicators of
  - Restoration success
  - Attract predators (e.g. flock of long-eared owls observed)
- Balancing grazing and restoration through responsible management

# Objectives

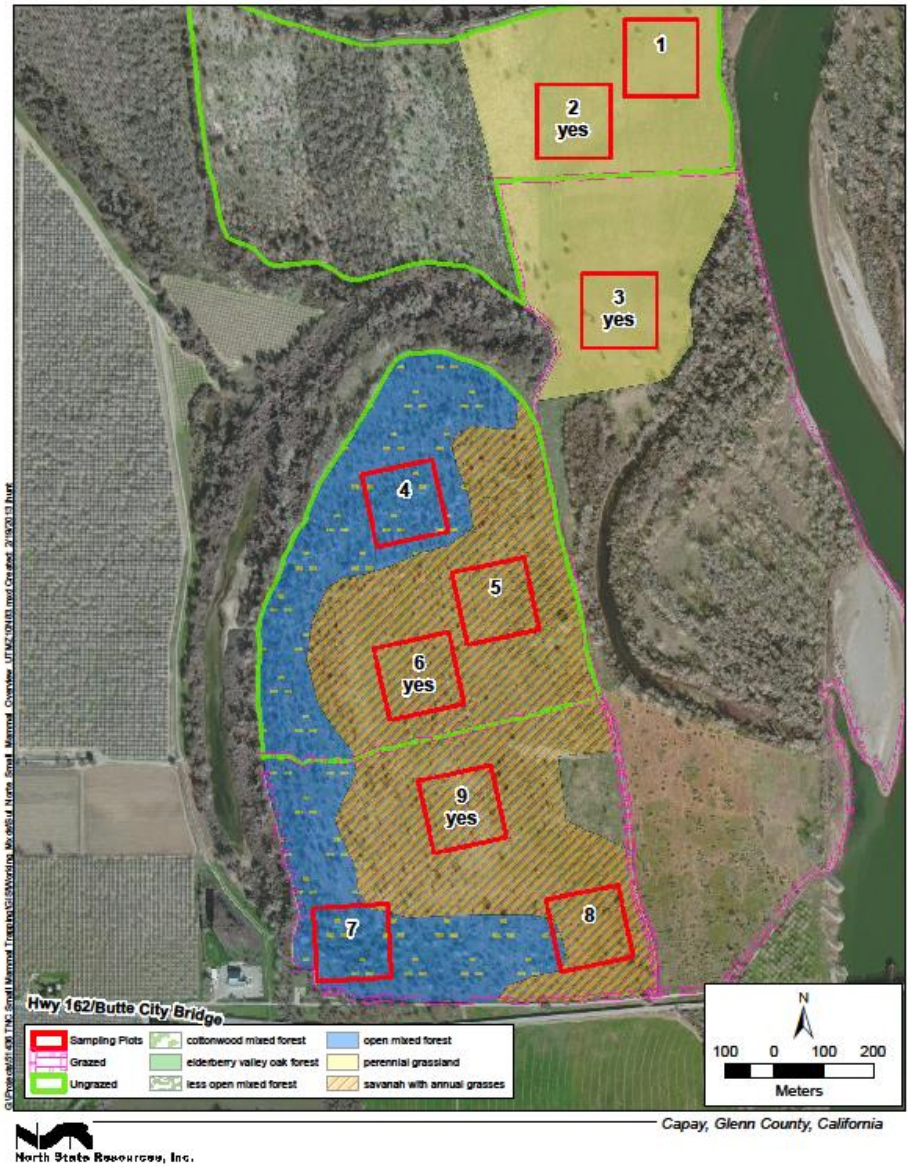
1. What small mammal (rodent) species are present in the native grasslands and shrublands restored by The Nature Conservancy?
   - Capay
   - La Barranca
   - Sul Norte
2. Do these species respond to cattle grazing?
3. What other mammal species were directly or indirectly observed utilizing these habitats?




Capay Unit




La Barranca Unit




Sul Norte Unit

California vole (*Microtus californicus*) and restored native grassland

Representative view of restored native shrub habitat.

# Methods

- **Trapping:**
  - Sampling plots - 100 $m^2$
  - 100 traps per sampling plot spaced 10 m.
  - Baited “Sherman” traps
  - Traps placed in closed position; left overnight
  - Opened, baited/bedding, traps shaded the following AM no later than 2.5 hours after sunrise
  - Traps checked in the PM
  - Traps checked the following AM

# Methods

- **Visual Surveys:**
  - Sampling plot - 100 $m^2$
  - 100 survey cells spaced 10 $m^2$
  - Timing not coincident with trapping
  - Botta's pocket gopher, coyote, broad-footed mole, mule deer, black-tailed jackrabbit, rats, (cattle)
  - Scat, tracks, runways, burrows, skeletal remains (owl pellets)

# Results – Grassland Trapping

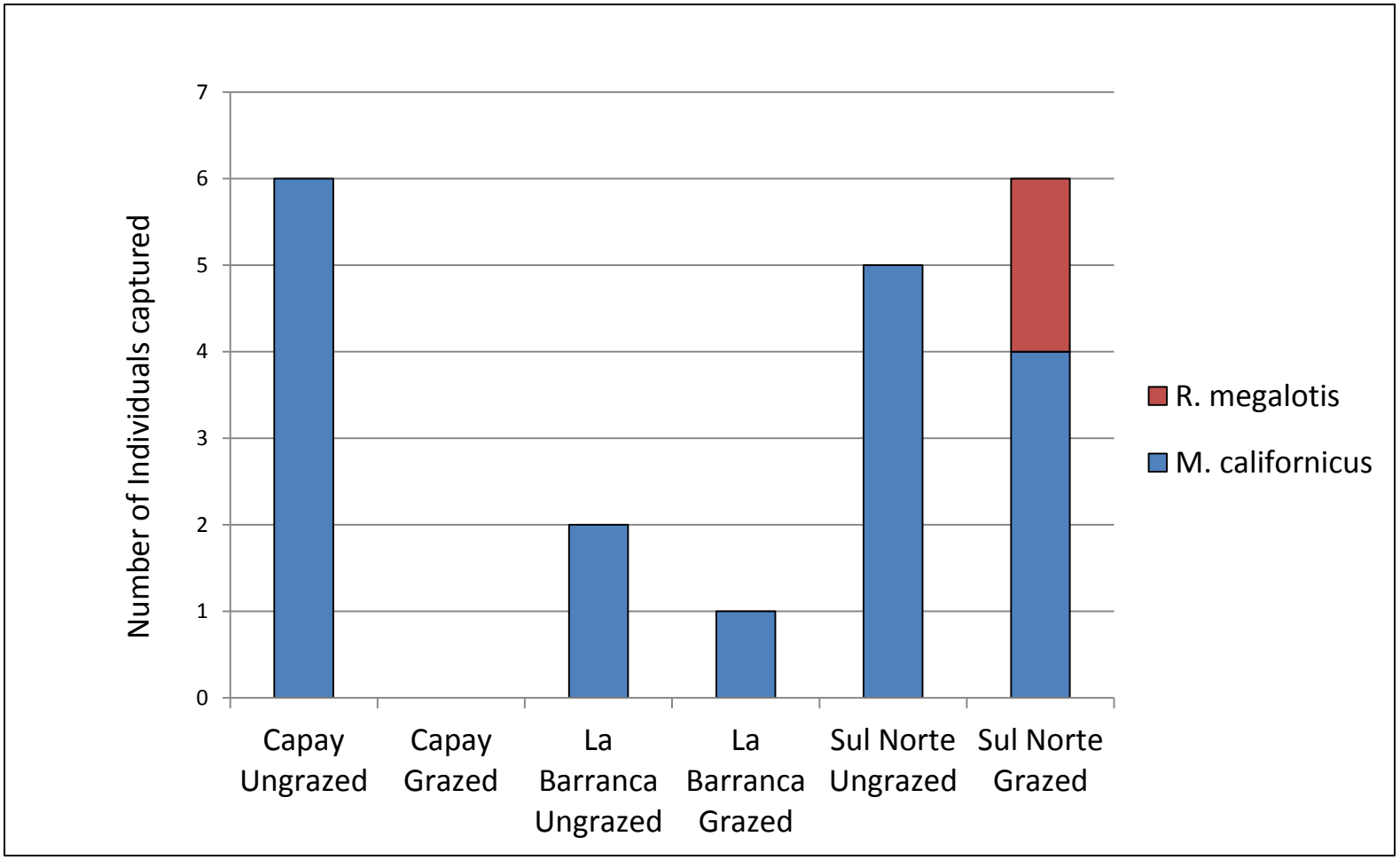



Figure 1: Trapping results in grazed- and un-grazed grasslands.

# Results – Shrubland Trapping

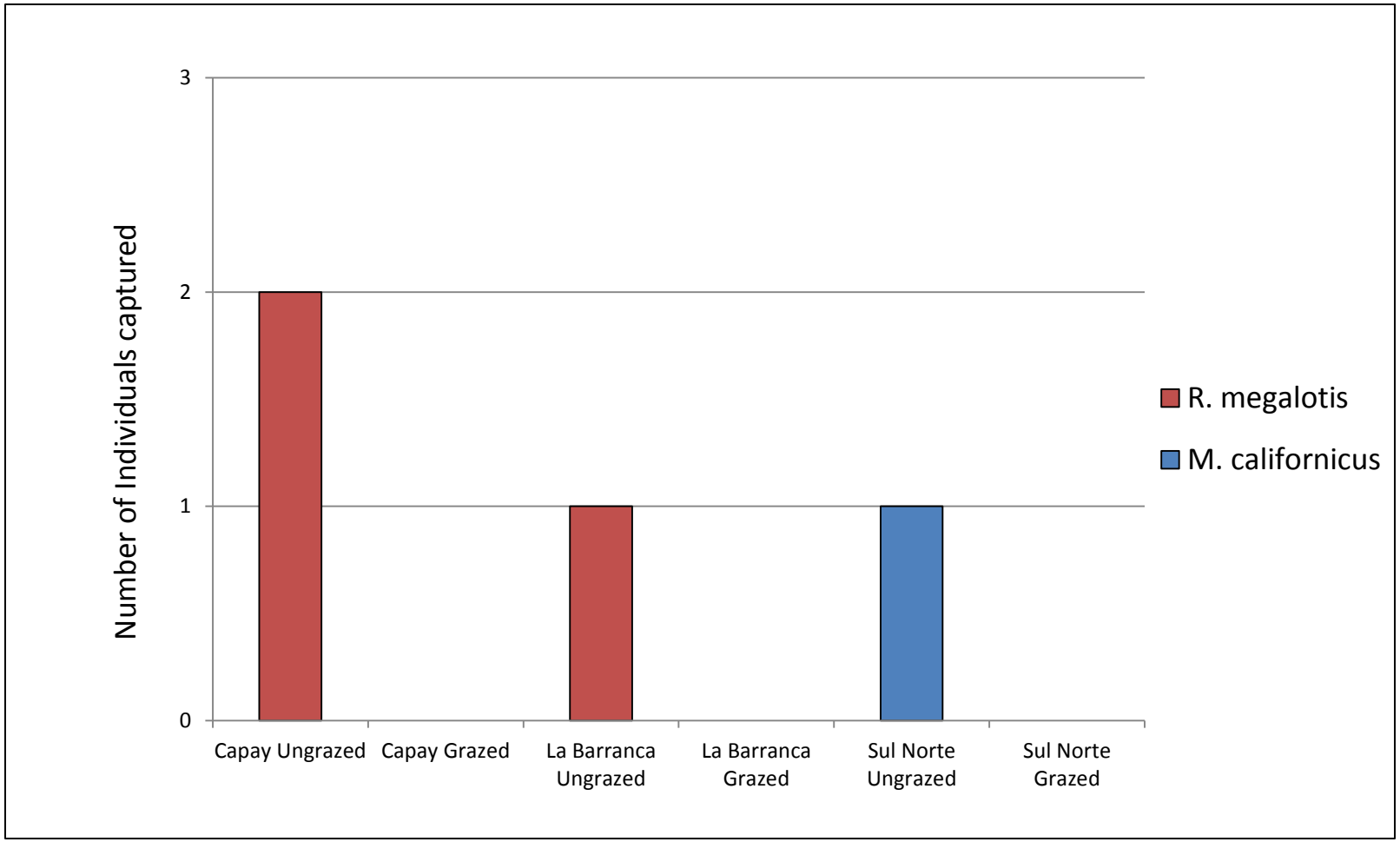



Figure 2: Trapping results in grazed and un-grazed shrublands.

# Results – Visual Surveys

- Visual evidence supported:
  - Greater species abundance and richness than observed through trapping (e.g. rats, other mouse species)
  - Additional mammal spp. that cannot be trapped using the Sherman technique
  - Shortcomings of Sherman technique (e.g. individuals observed running underfoot; empty traps)

# Discussion/Conclusions

- Seasonality
- Variations in topography and habitat in grazed and un-grazed

- Baseline data
- Continued monitoring

# Acknowledgements


- John Hunt, N. California Regional Land Trust
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- Mark Wuestehube, North State Resources
- Chris Geach, North State Resources

# Additional photographs

Ready for deployment: looking inside a Sherman trap loaded with bedding and food.

Deployed Sherman trap prior to being shaded with a covering of grass.

Western harvest mouse.

Observing the grooved incisors characteristic of  Western harvest mouse.

A portion of a California vole runway and burrow complex.

Thanks to all that contributed to this multidisciplinary grazing analysis project.