



**How Fire Managers and Resource Specialists Collaborate to Protect Rare and Imperiled Plant Communities in Rocky Mountain National Park**



**Fire Managers sometimes have  
different management objectives  
than Resource Specialists**





**Resource Specialist - Say Limit  
Fire Mortality in Shrubs to 10%  
Fire Manager - Say Limit shrub  
mortality to 20-60%**





# National Parks such as RMNP play a very important role in the global effort to conserve biological diversity

- It is a goal of RMNP management to protect in perpetuity the natural world within the park and to serve as a world leader in wilderness protection and education.
- It is a goal to preserve examples of rare communities and individual species that outside the park's boundaries are threatened by a wide range of human pressures.
- It is a goal of RMNP to balance the ecological role of fire and other natural disturbances with the protection of human property and safety.

# We are all familiar with the concept of protecting T&E and rare species

- *Botrychium furcatum*  
- newly described species
- RMNP has the largest known population in the world.



# However What About Protecting Rare and Imperiled Plant Communities?

- Antelope Bitterbrush/Mountain Muhly

## G2S2



# Natural Heritage Programs and NatureServe Rank Rare and Imperiled Plant Communities.

- Ranking system components –
  - (G) Global status of the specie
  - (S) range found within a state
  - Numeric extensions are added to these on a scale of 1 (critically imperiled) to 5 (demonstrably secure).
- <http://www.cnhp.colostate.edu/list.html>
- A reference to identify global status of a species maintained by NatureServe  
<http://www.natureserve.org/>



# Examples of Rare and Imperiled Plant Communities in RMNP

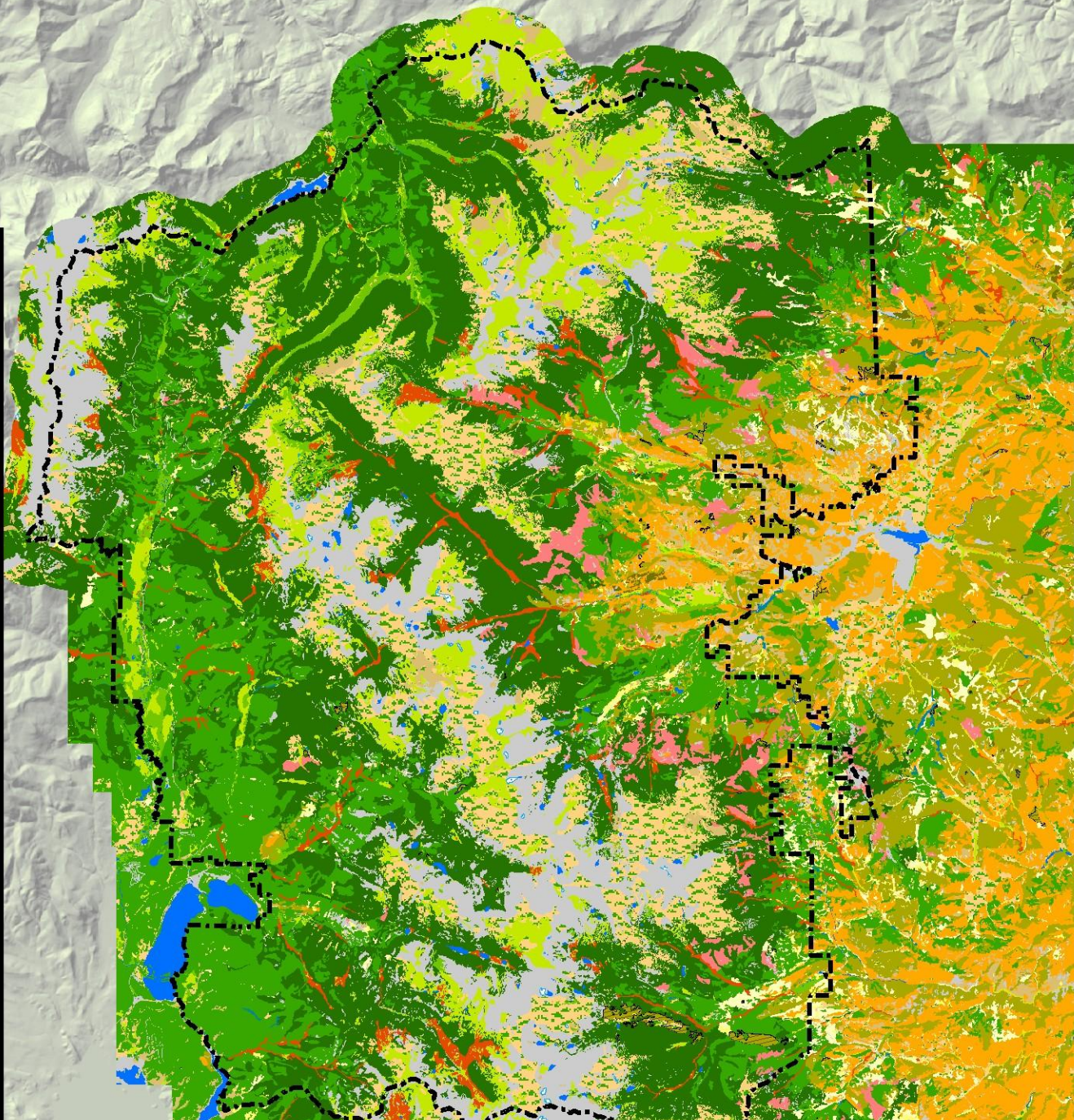
- *Purshia Tridentata* / *Muhlenbergia Montanus* Shrubland - G2 S2 Plot locations ROMO.040, ROMO.108, ROMO524, etc.
- *Populus tremuloides*/*Acer glabrum* Forest – G1G2, S2, Plot Locations ROMO.122, ROMO.485, ROMO.708, etc.





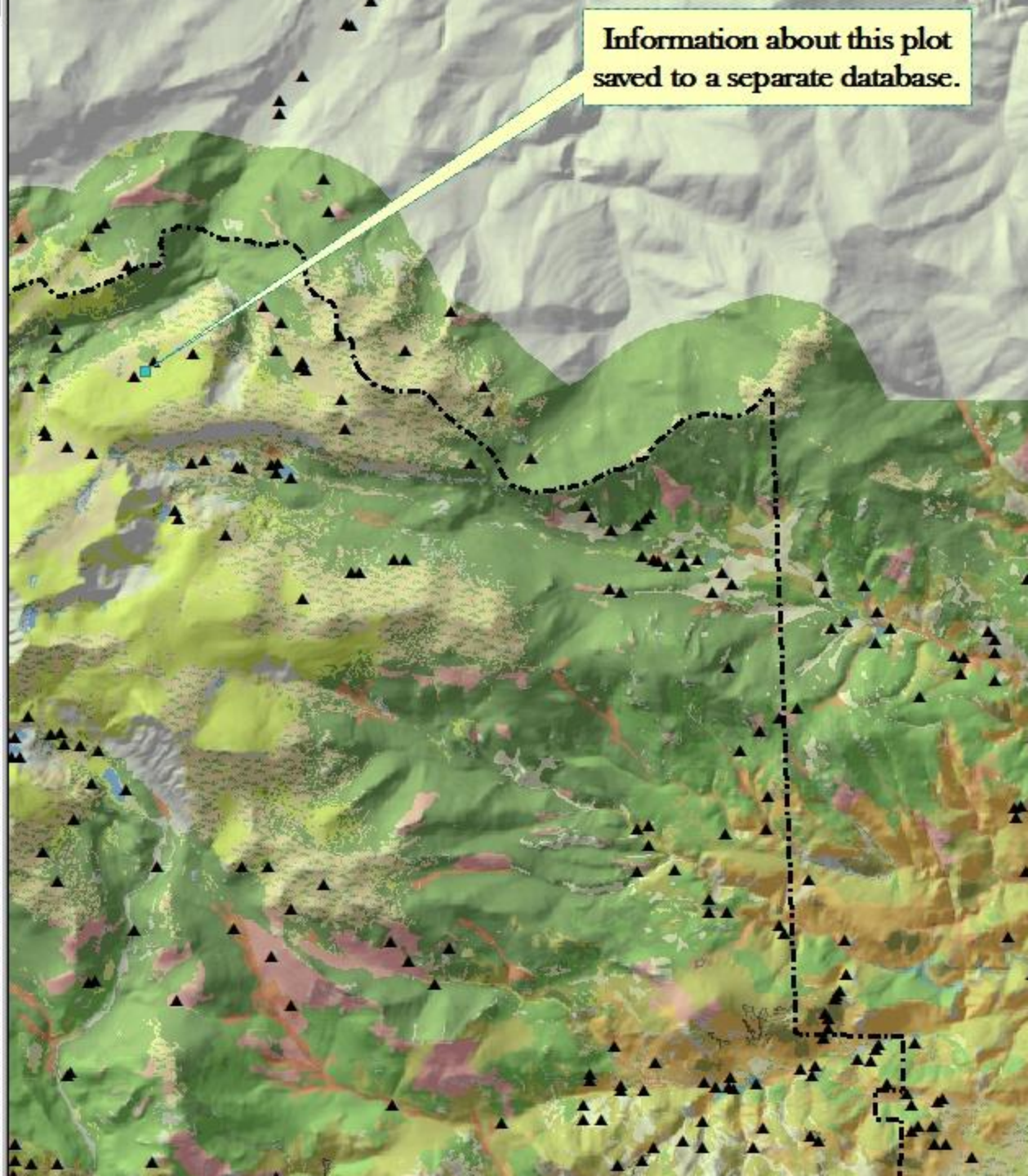
## RMNP Vegetation Data

- Ponderosa Pine
- Montane Douglas Fir
- Lodgepole Pine
- SubAlpine Mixed Conifer
- SubAlpine Limber Pine
- Juniper
- Blue Spruce
- Riparian Montane Mixed Conifer
- Mixed Conifer with Aspen
- Upper Montane Aspen
- Riparian Aspen
- Cottonwood
- Riparian Shrub
- Shrub
- Herbaceous Wetlands
- Herbaceous Uplands
- Glacier
- Water
- Disturbance - Dead and Down
- Rock, etc





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Information about this plot saved to a separate database.













**Current abundance of elk on their winter range and in Wildland Urban Interface areas is unnatural**



# Research Question - What are the combined effects of ungulate browsing and prescribed fire?



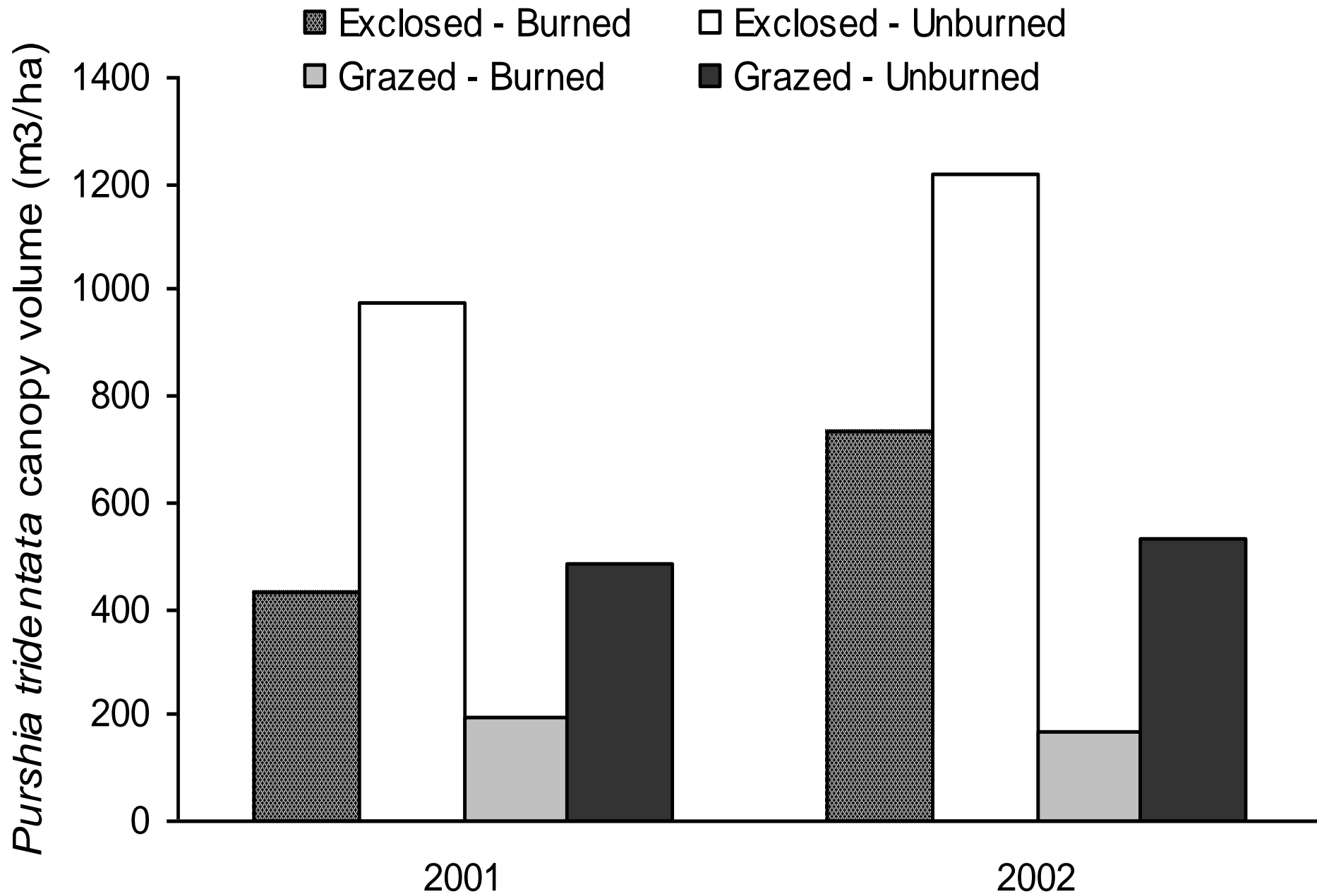


# Combining heavy browsing with prescribed fire on the elk winter range impeded shrub regeneration

- Seven years after prescribed burns upland shrubs grazed and burned had substantially lower biomass than unburned and grazed (Nesvacil and Olmsted 2002)









# The Effects of Prescribed Fire on Rare Plant Communities within RMNP are not well understood

Ponderosa/Antelope Bitterbrush (-)

Aspen-Ponderosa/Danthonia parryi (-)

Aspen-Subalpine Fir/Common Juniper (-)

Aspen/Mountain Maple (-)

Aspen/Common Juniper (-)

Antelope bitterbrush/Sagebrush/Stipa (-)

Antelope bitterbrush/Mountain Muhly (-)



# FMP and Burn Plan Input



- Pre Plan - Research, T&E  
Rare Species, Maps
- Plan Input -
  - Values at Risk
  - WUI Mitigation for Natural Resources
  - Goals and Objectives
- Briefing
- Post Burn provide evaluation on protection of rare plant communities

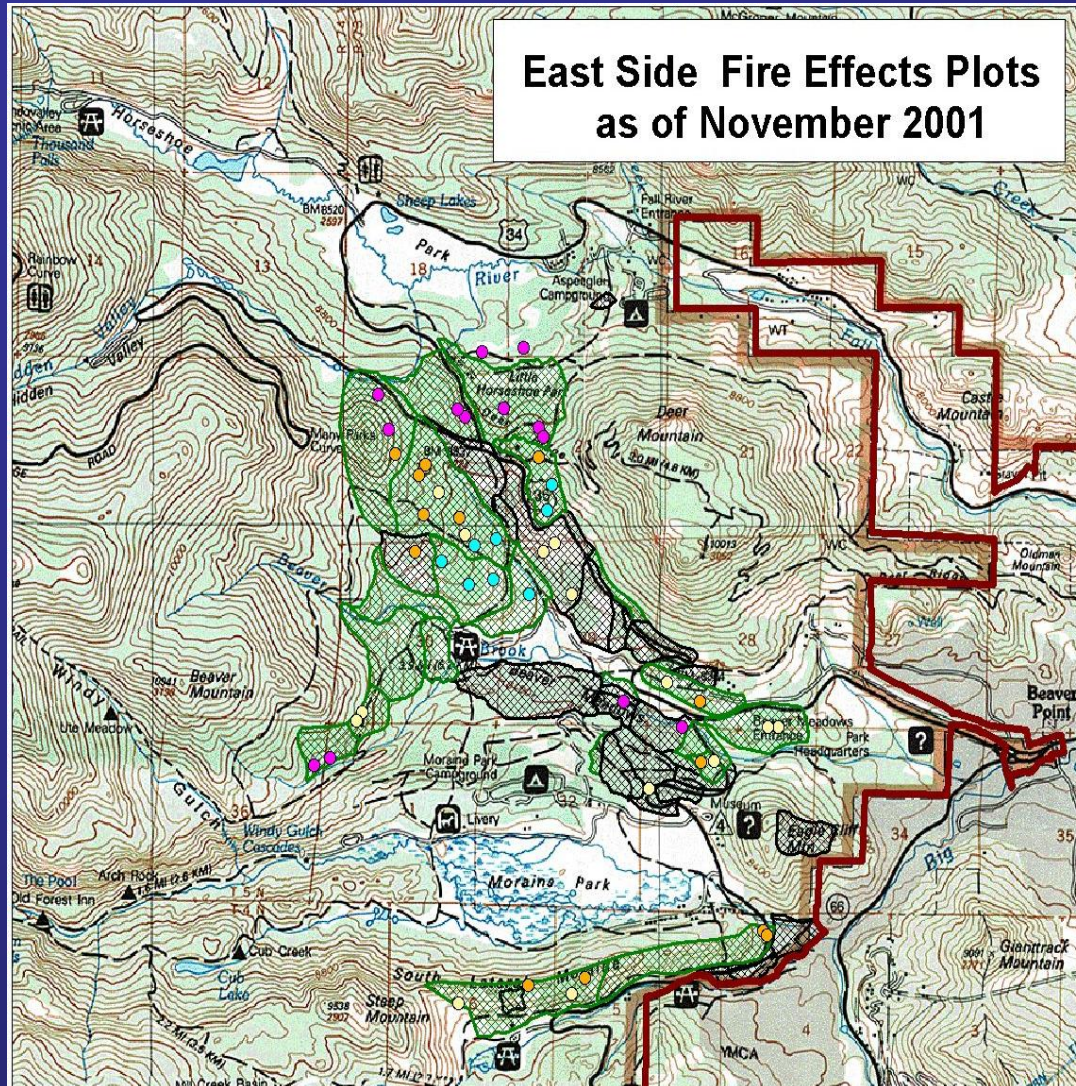


**Using research, Fire Management initiated mitigations to protect rare plant communities that met everyone's goal**





# Fire Effects Plots are a source to monitor effects on rare plant communities post burn



## Monitoring Plots through 2001

- FARTR1D05
- FPICE1T08 - Mechanical
- FPICM1T08
- FPICO1T08
- FPIPO1T09
- FPIPS1T02

## RMNP Boundary

## Prescribed Fire Units

- Unburned
- Burned





# Having information to make informed management decisions - FMO, burn boss and holding crew did a great job

