

**Invasive and special status plant  
early detection and management,  
following Yosemite's wildfires:  
Strategies for the landscape level**



**David Campbell  
Biologist**

**Vegetation and  
Ecological  
Restoration**

**Yosemite National  
Park**

# Fire is Natural in the Sierra Nevada





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- Fire has the potential to: support meadow health, improve visitor experience, protect us from catastrophic high intensity fire, and promote biodiversity

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- Fire followers, **respond** to fire...



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- Some are **rare endemics with a limited distribution in space and time**



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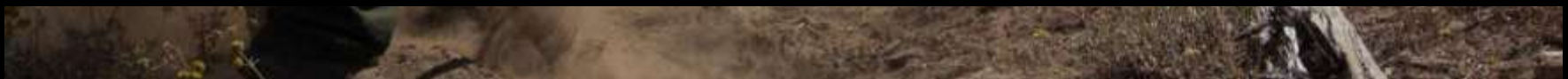




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- **Fire fighting operations disturb soil**, creating the preferred habitat for invasives
- **Fire crews and their equipment act as vectors** for invasive plants





# Recent Fire History: 2011





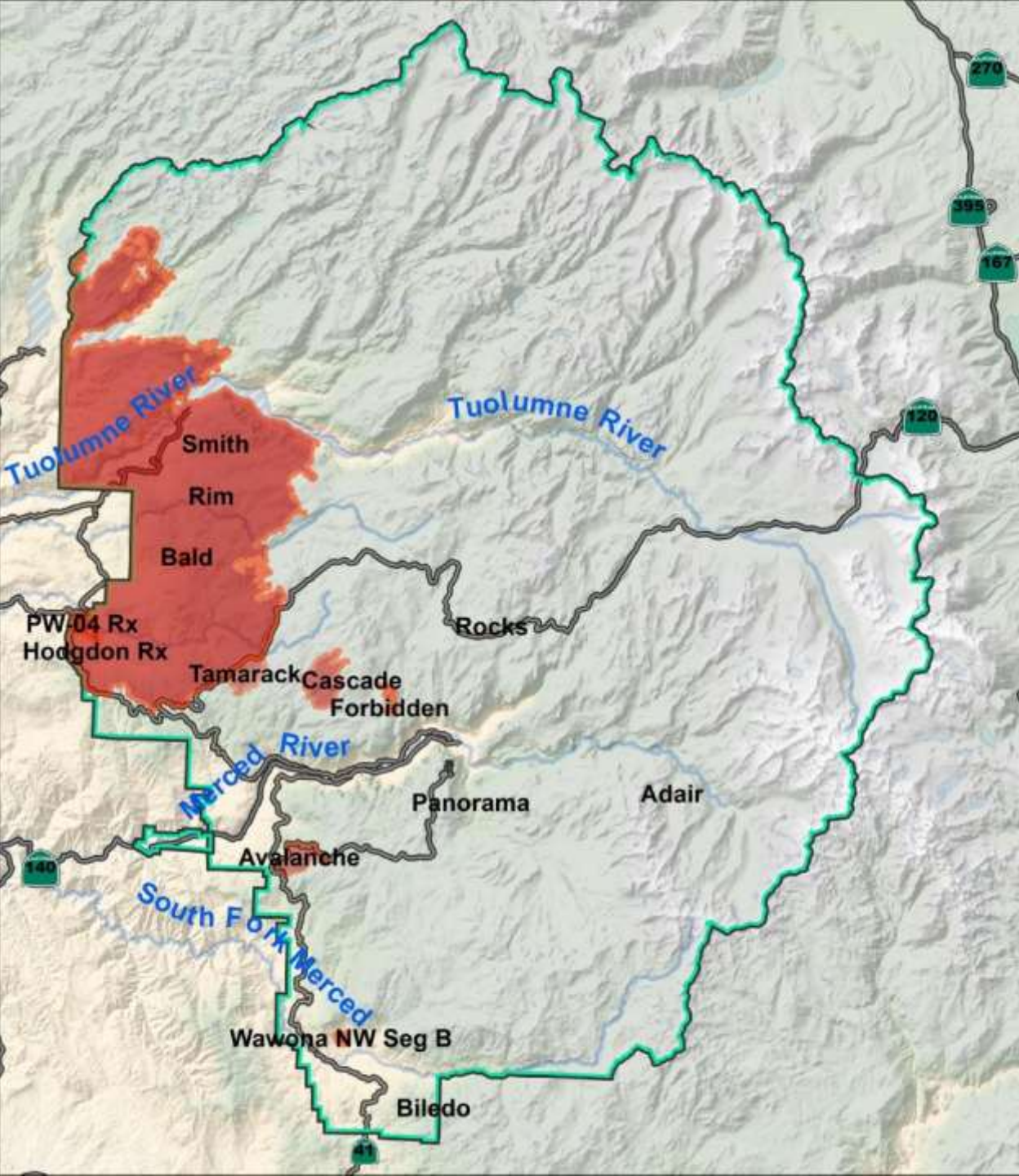
# Recent Fire History: 2011-2012





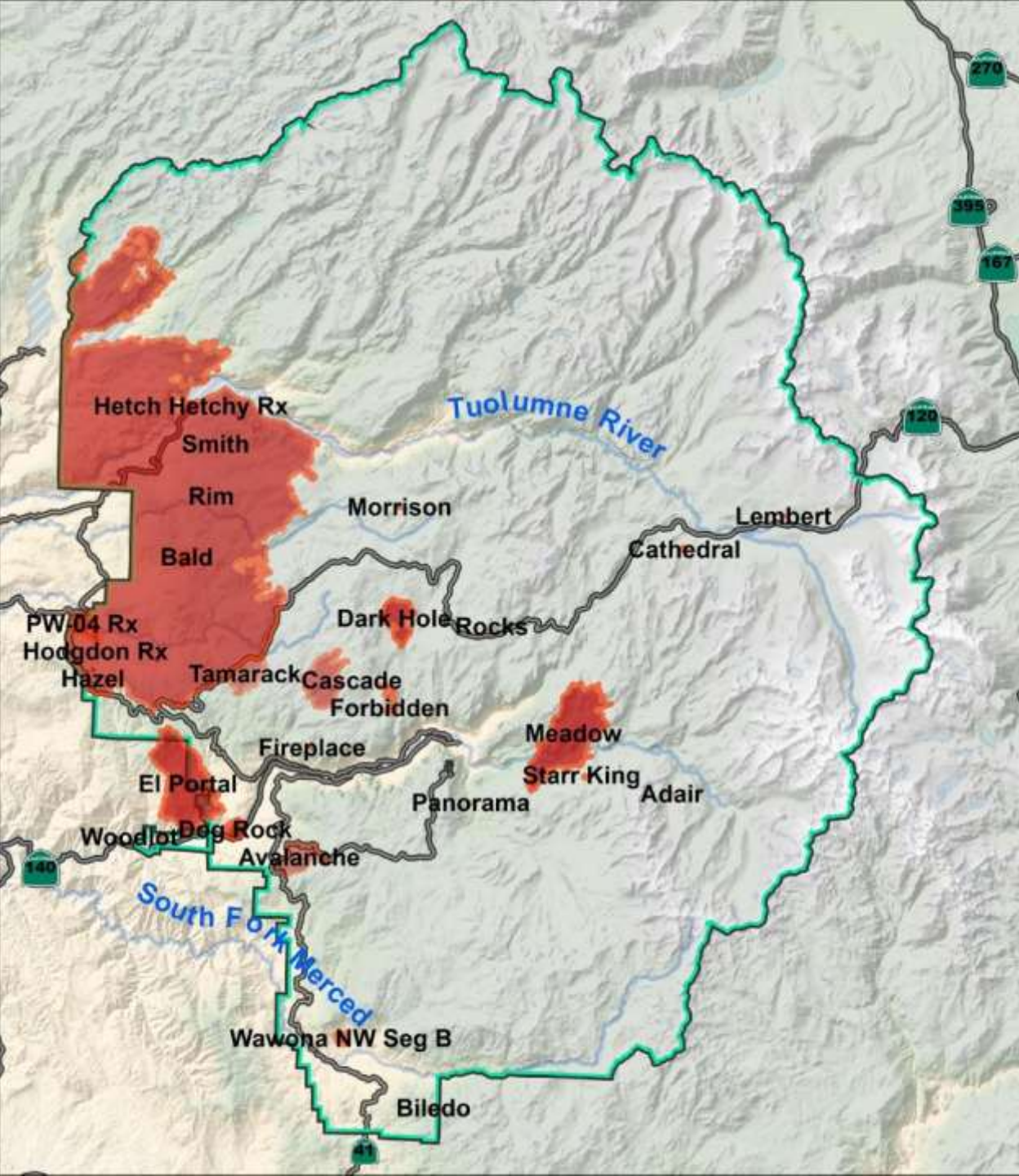


# Recent Fire History: 2011-2013





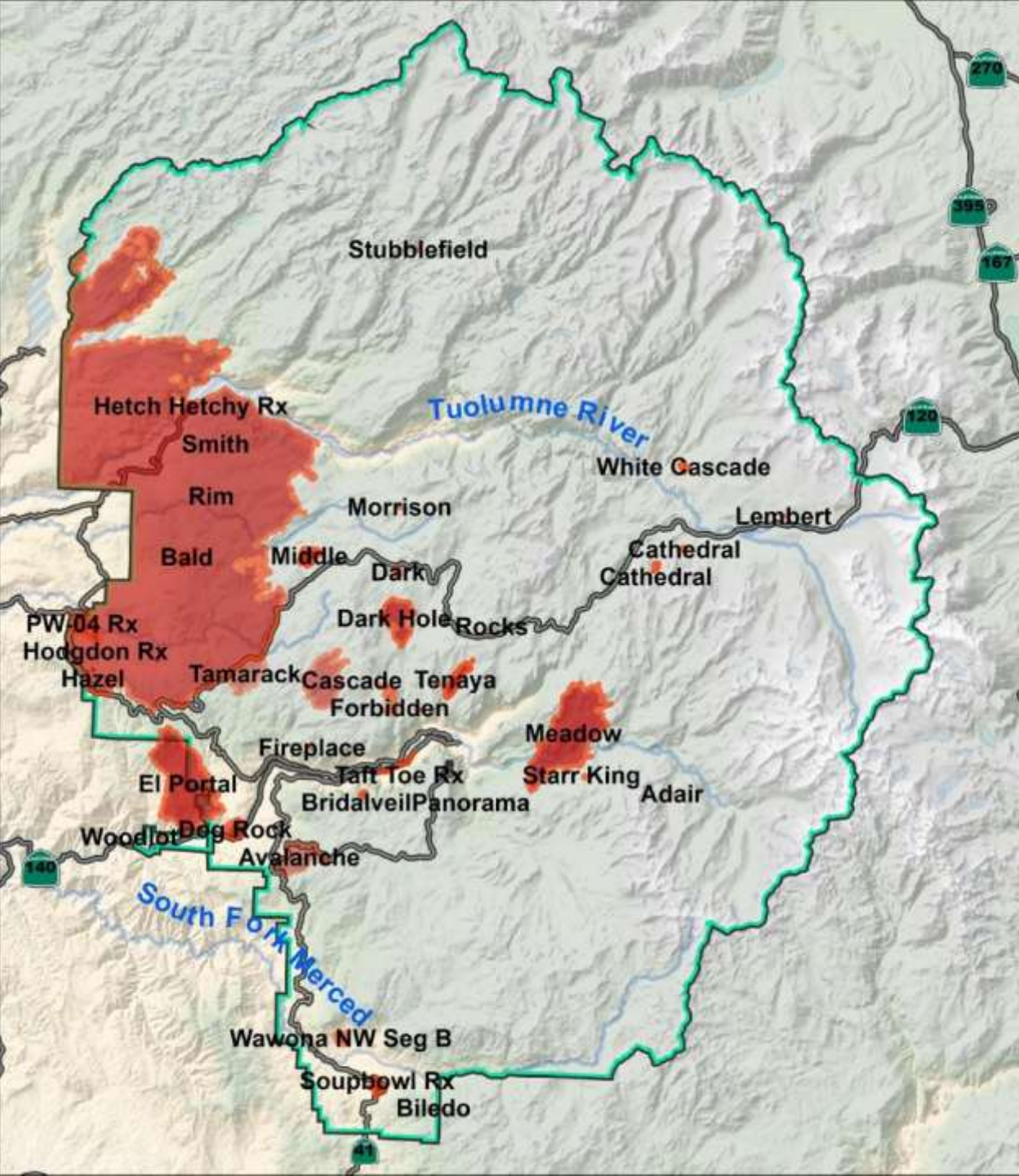
# Recent Fire History: 2011-2014







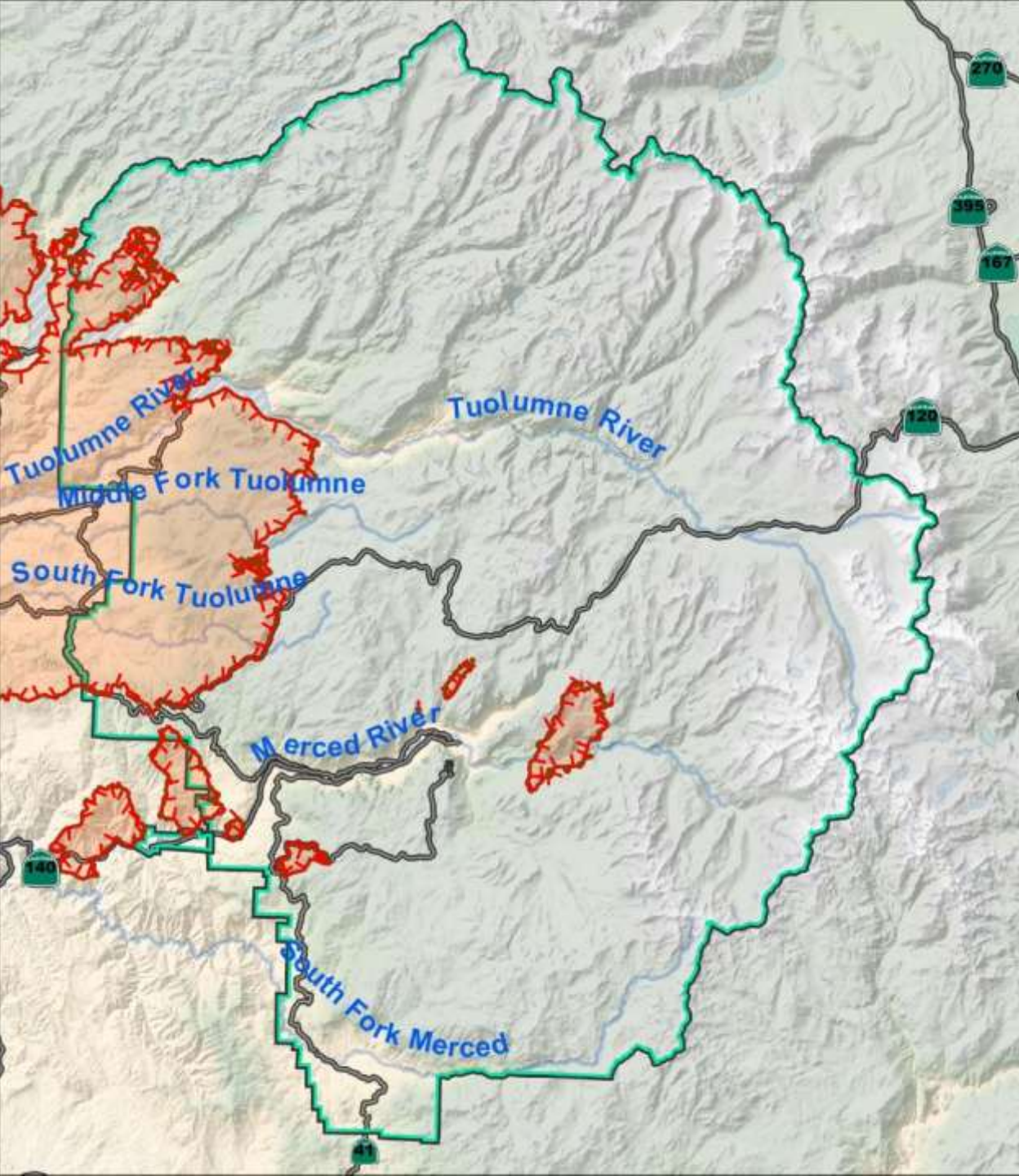
# Recent Fire History: 2011-2015





# BAR Fires: 2011-2015

Burned Area  
Rehabilitation (BAR)

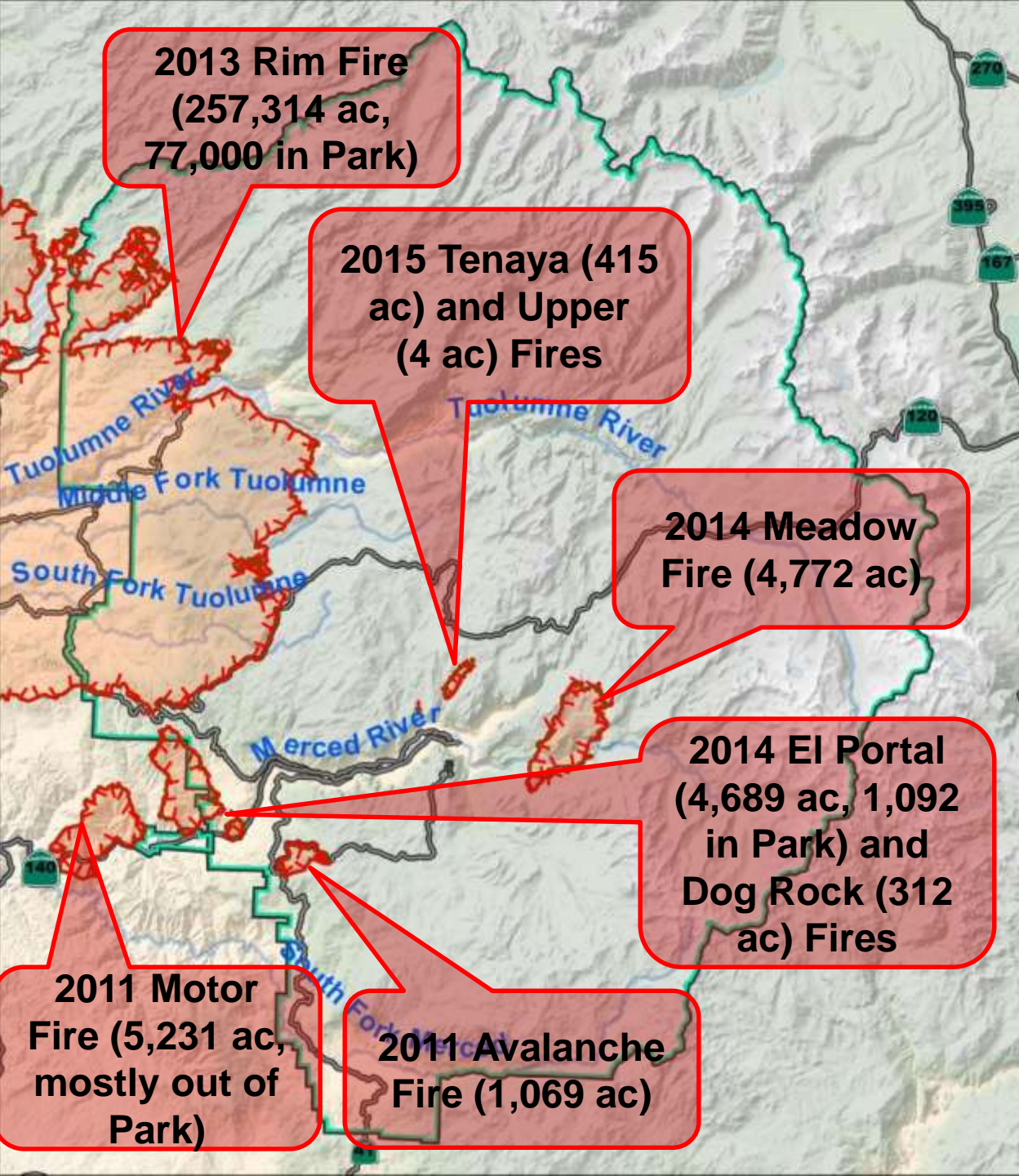






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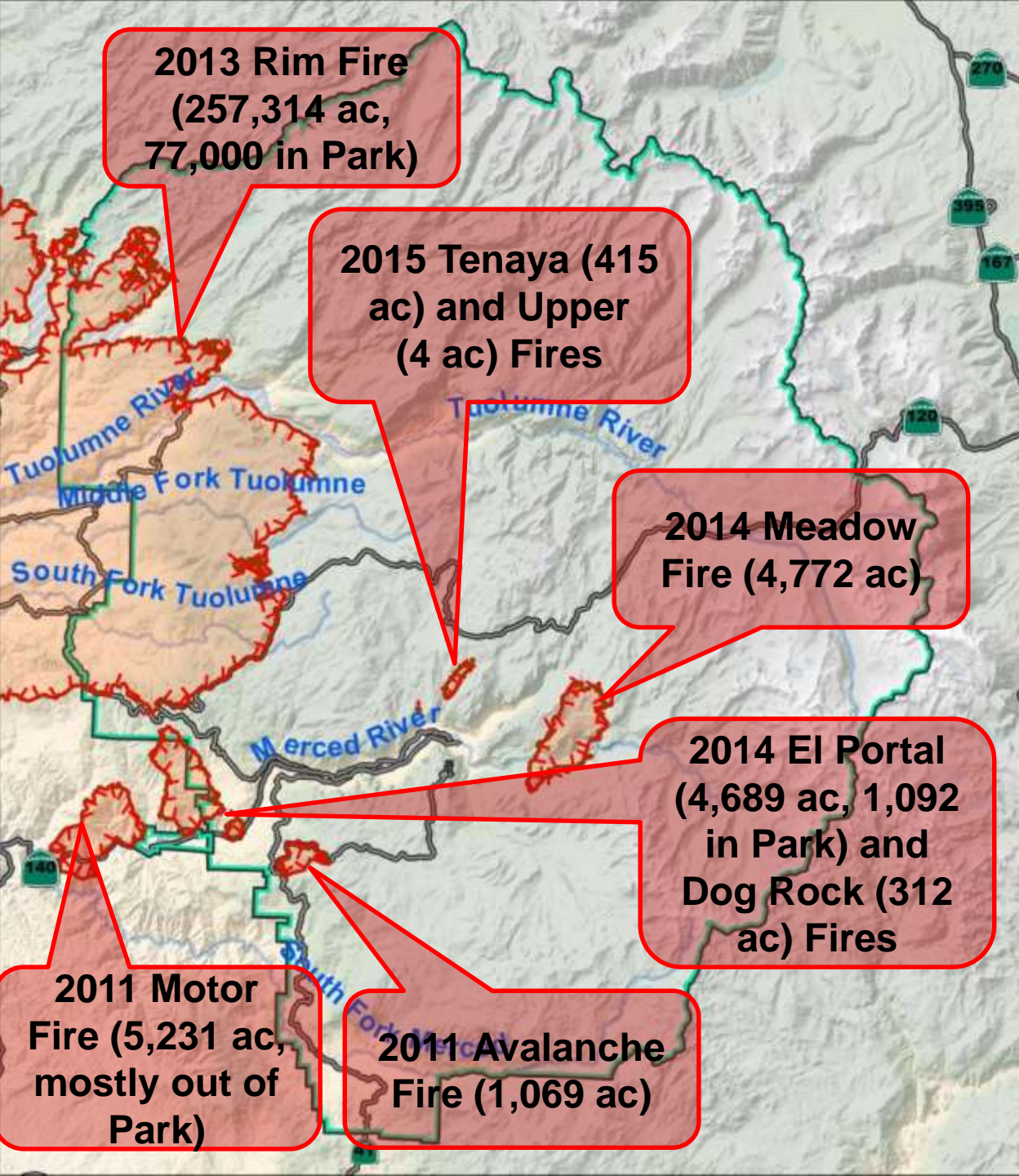


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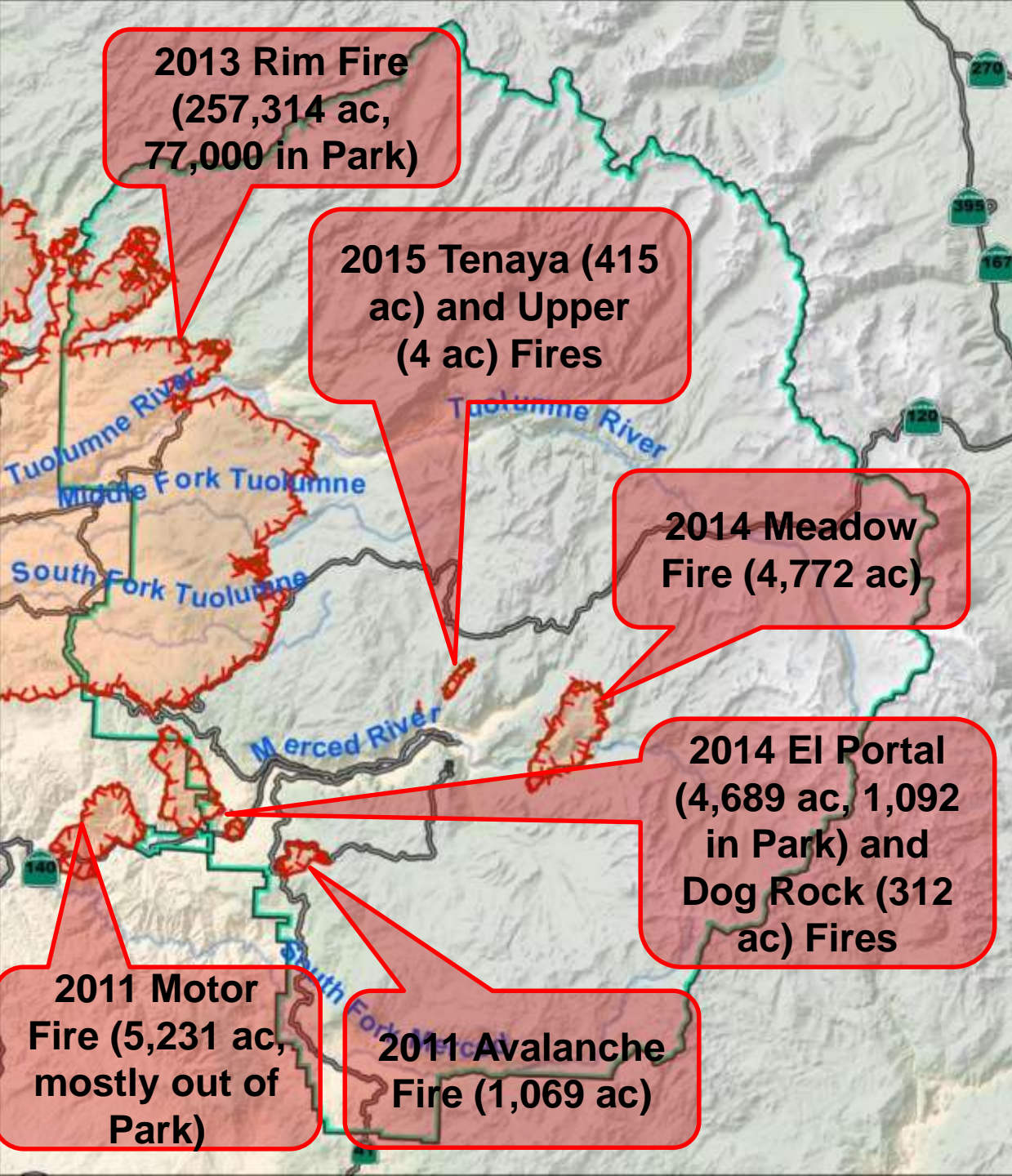


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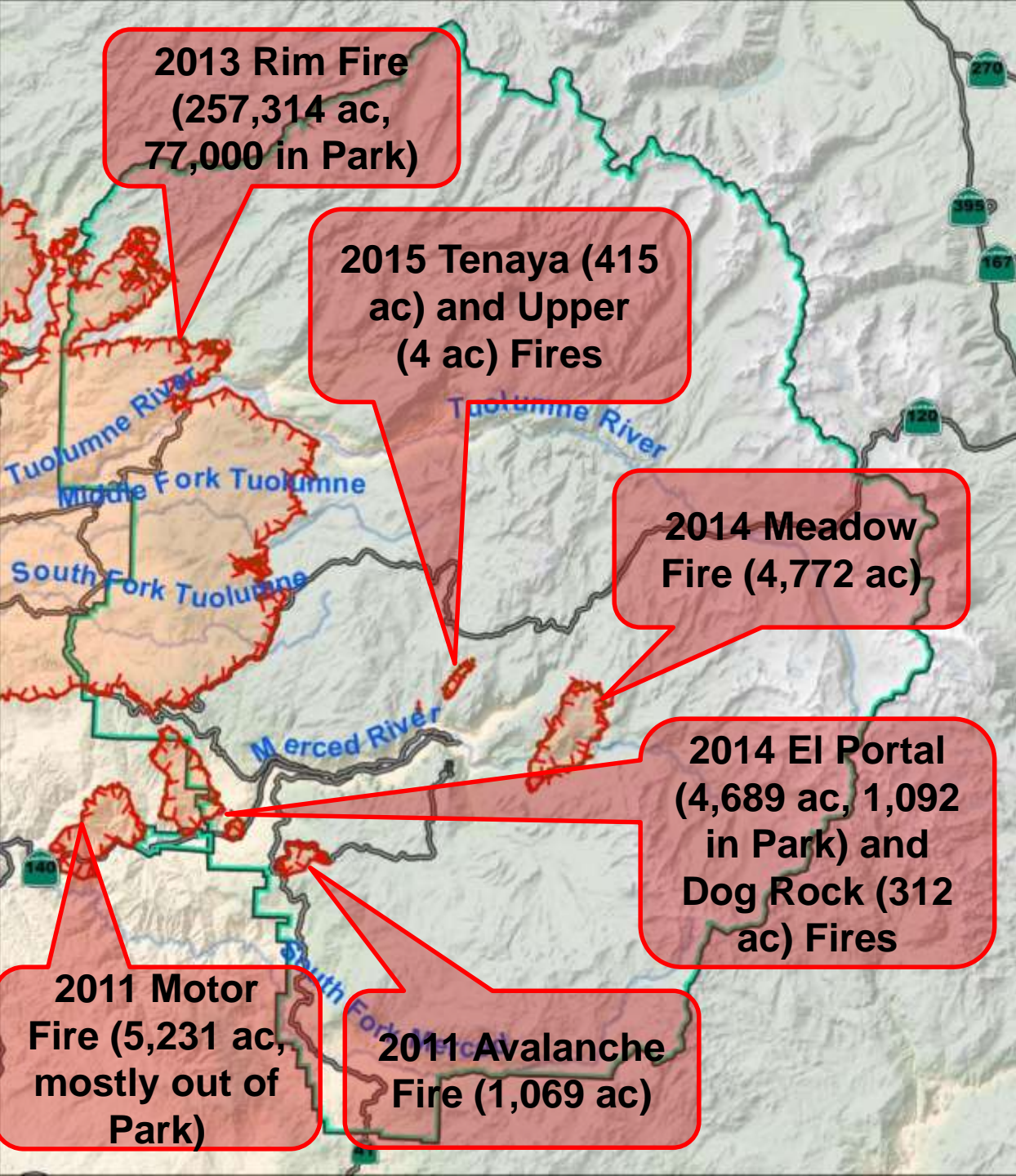


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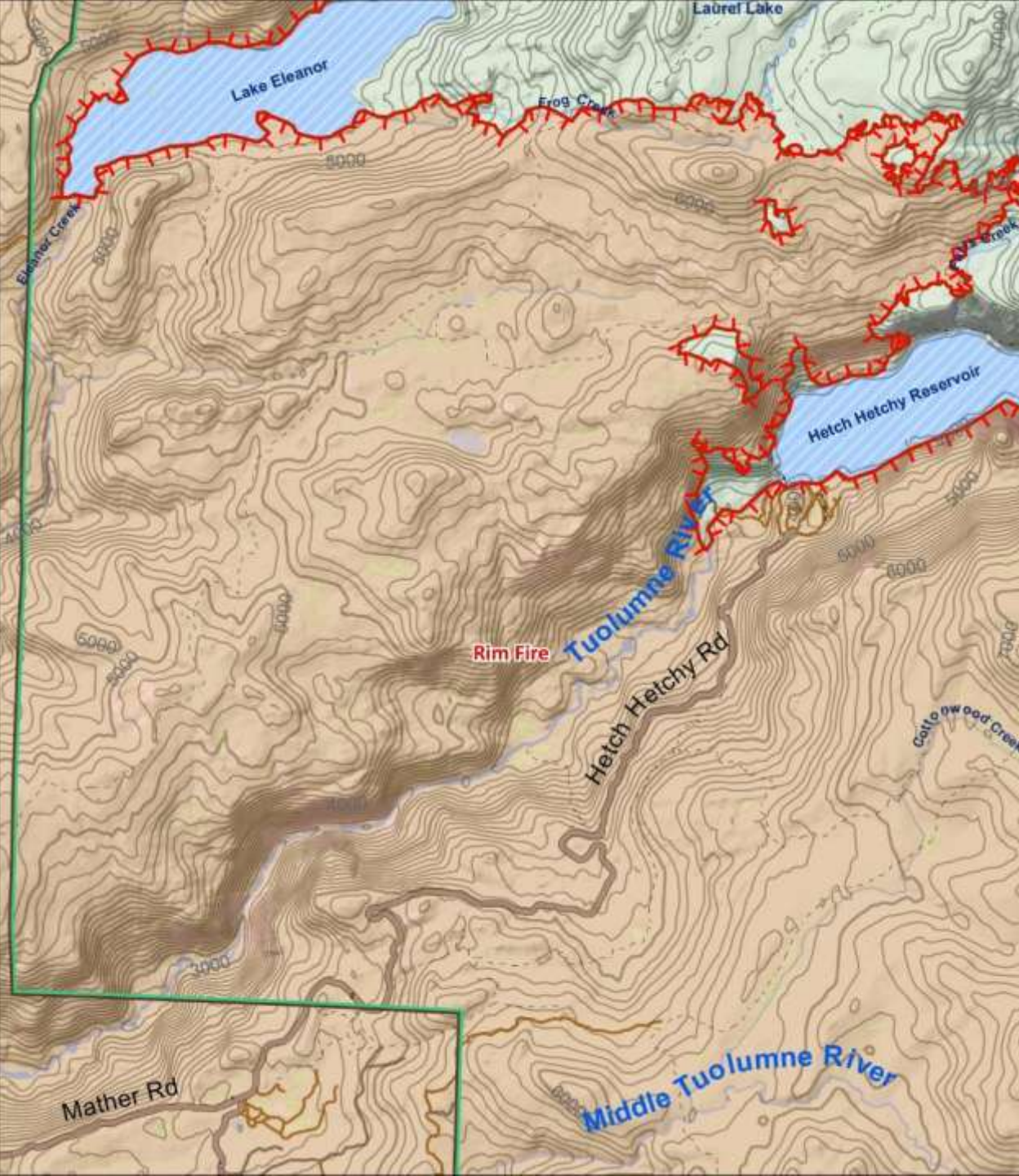
- Elevation
- Proximity to known infestations
- Level of fire suppression response







# Methods: Prioritize Survey Area

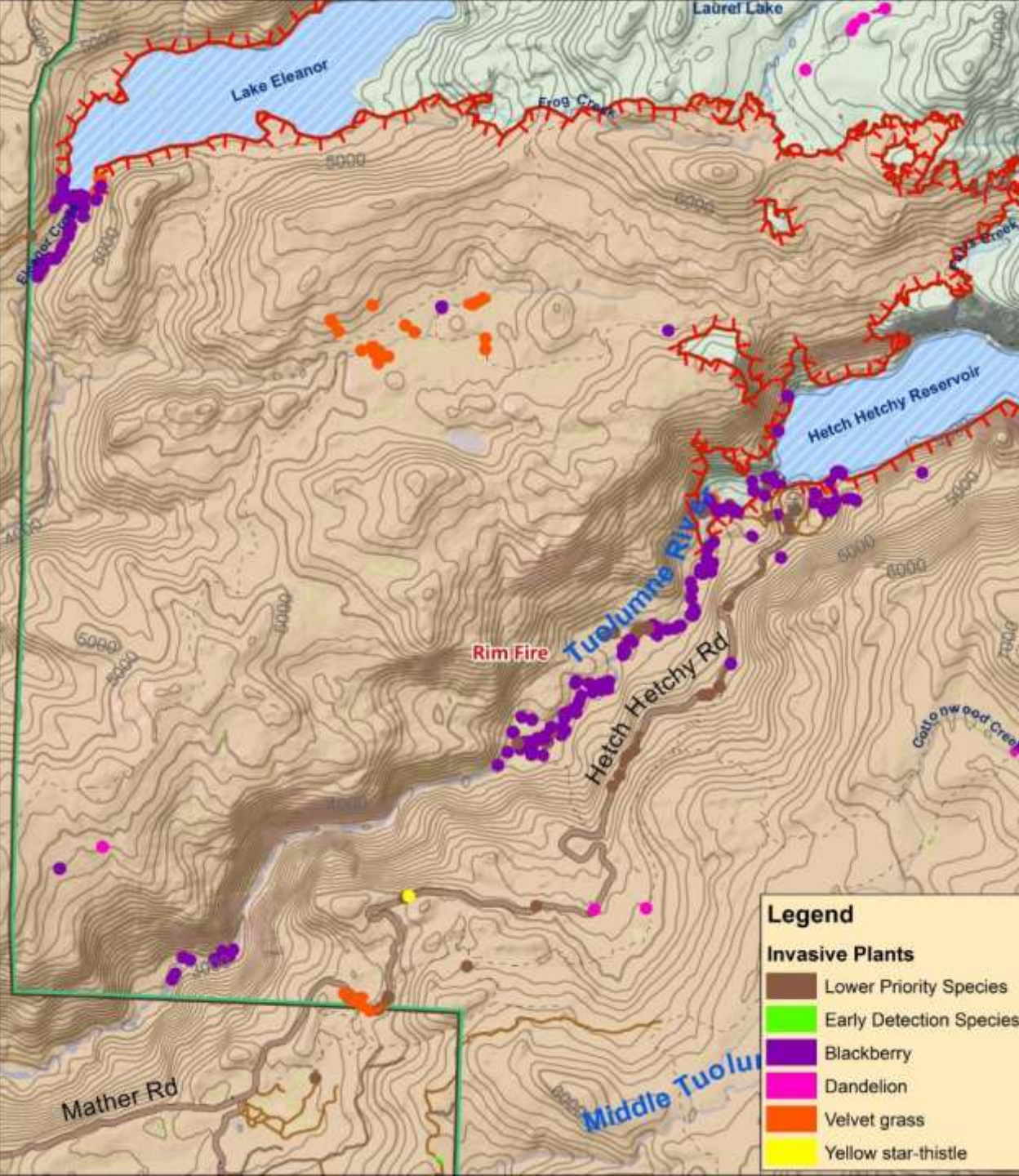






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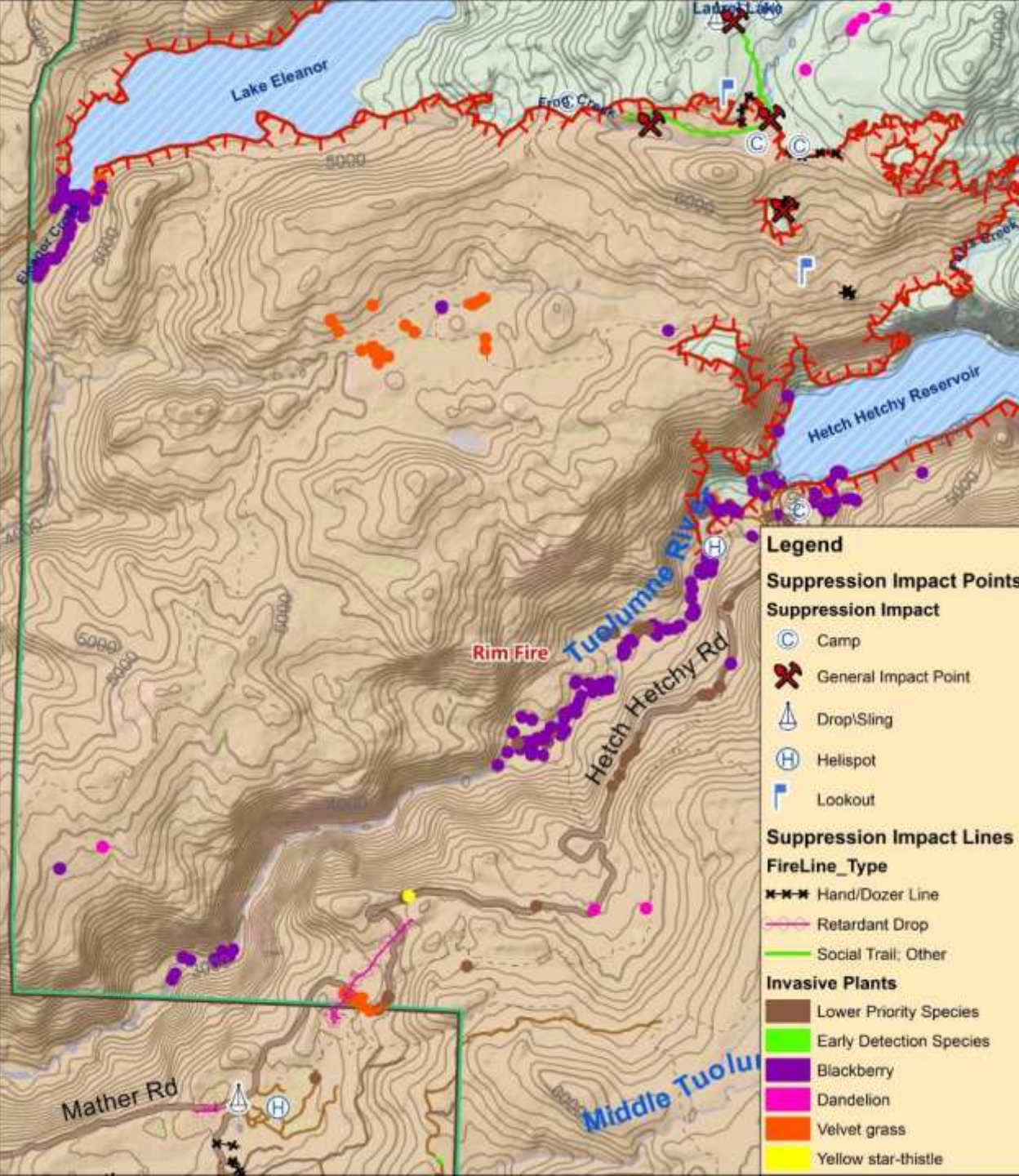






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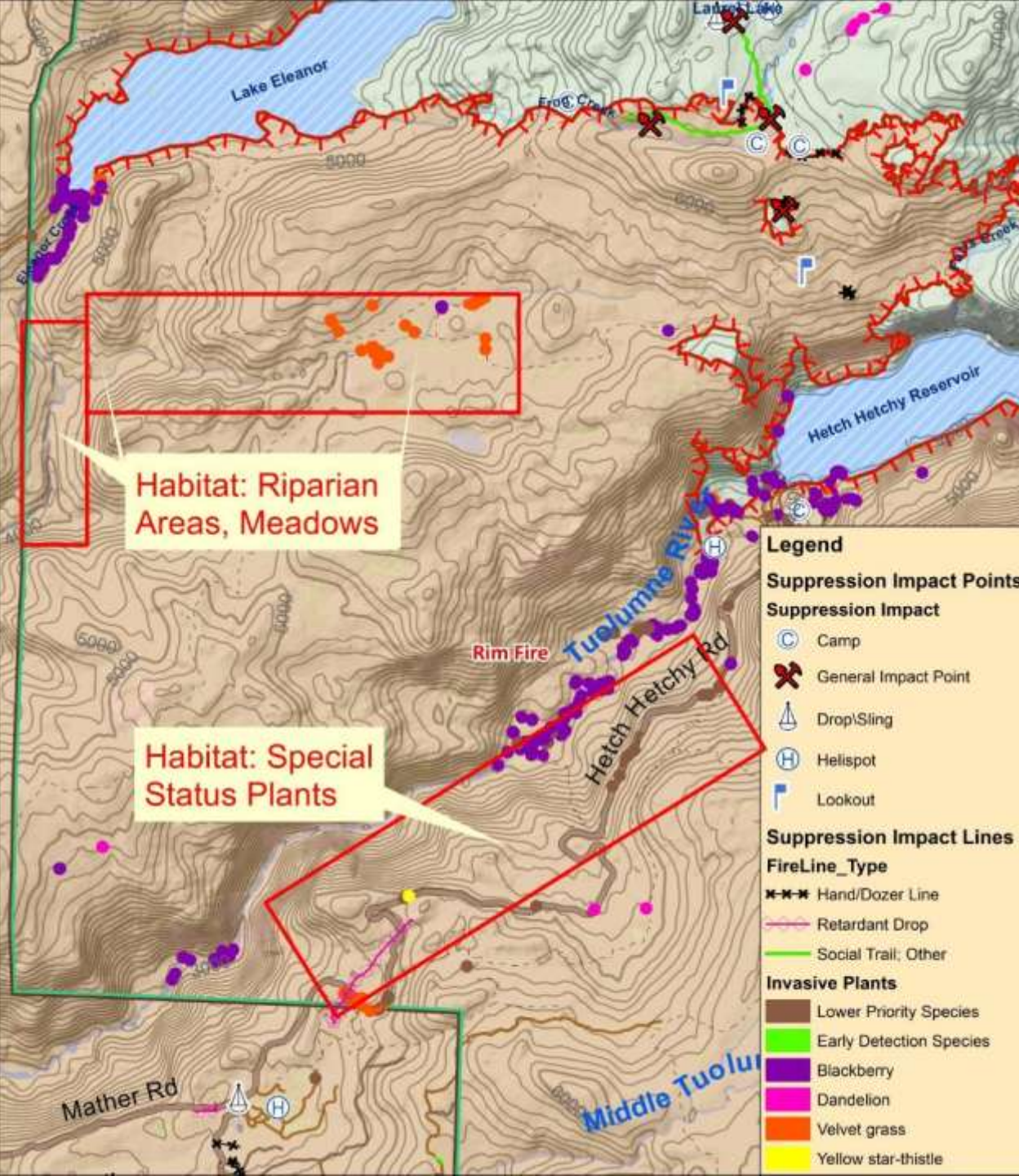






# Methods: Prioritize Survey Area

- Known Infestations
- Fire Suppression Impacts
- Suitable Habitat

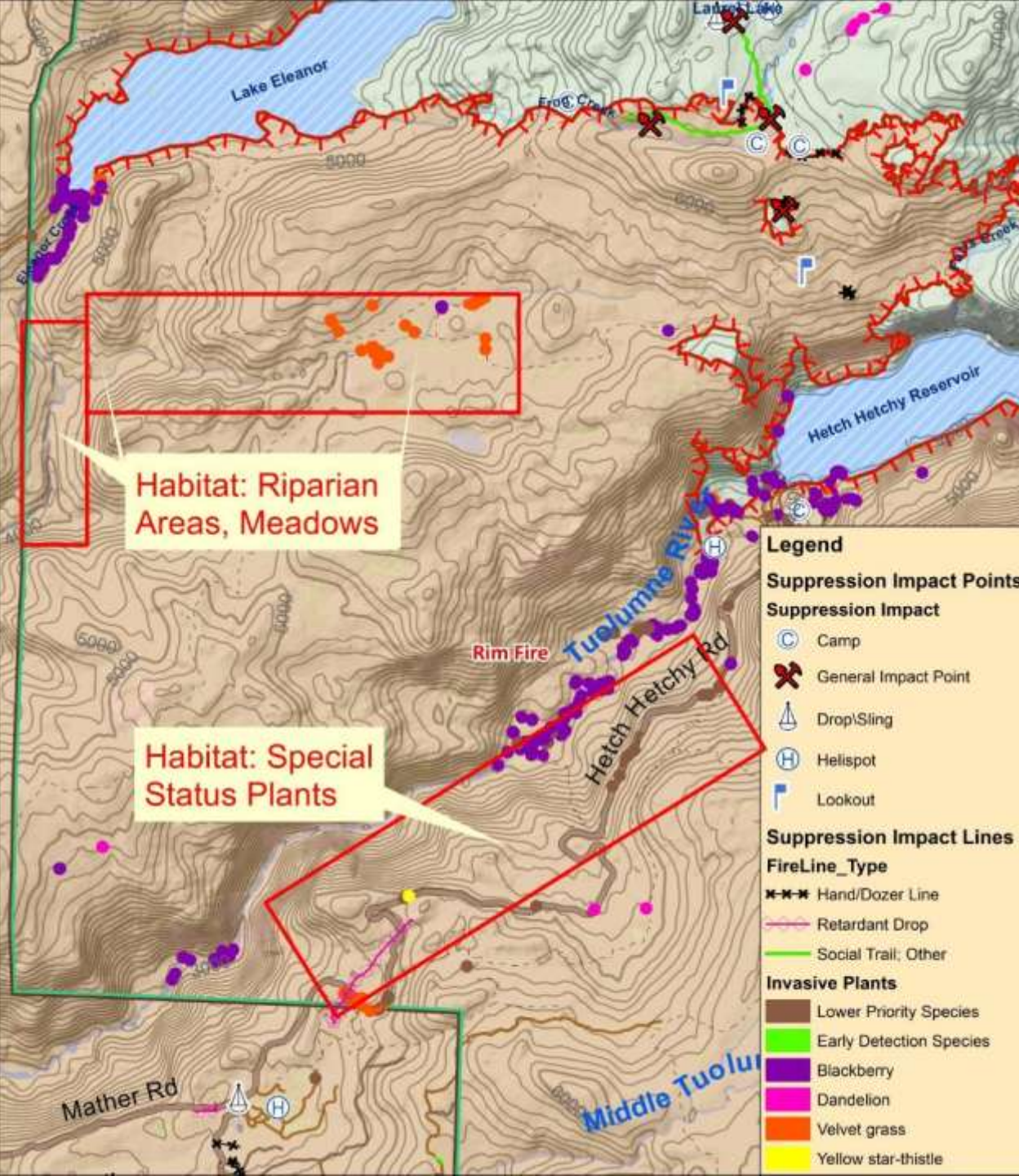






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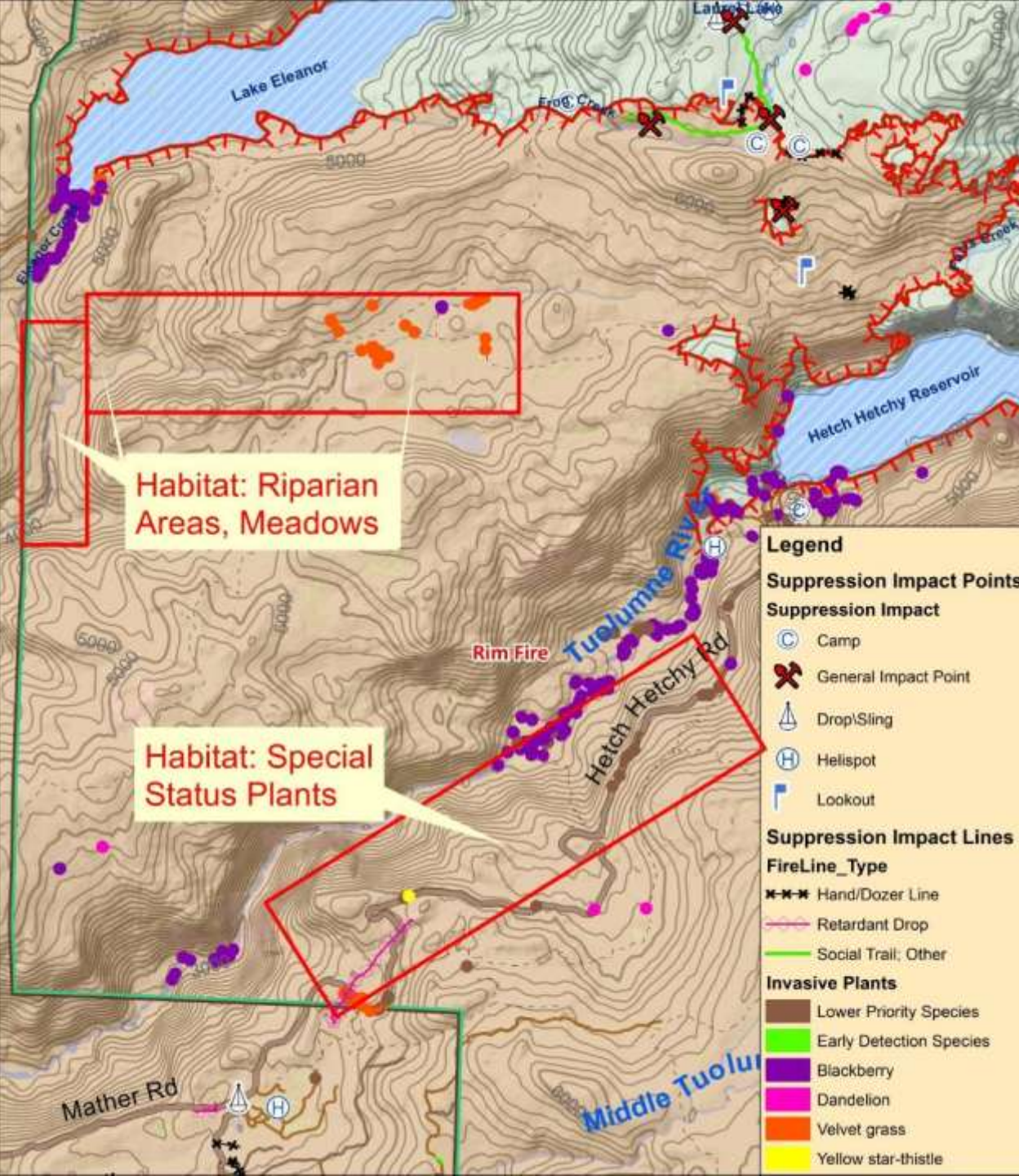






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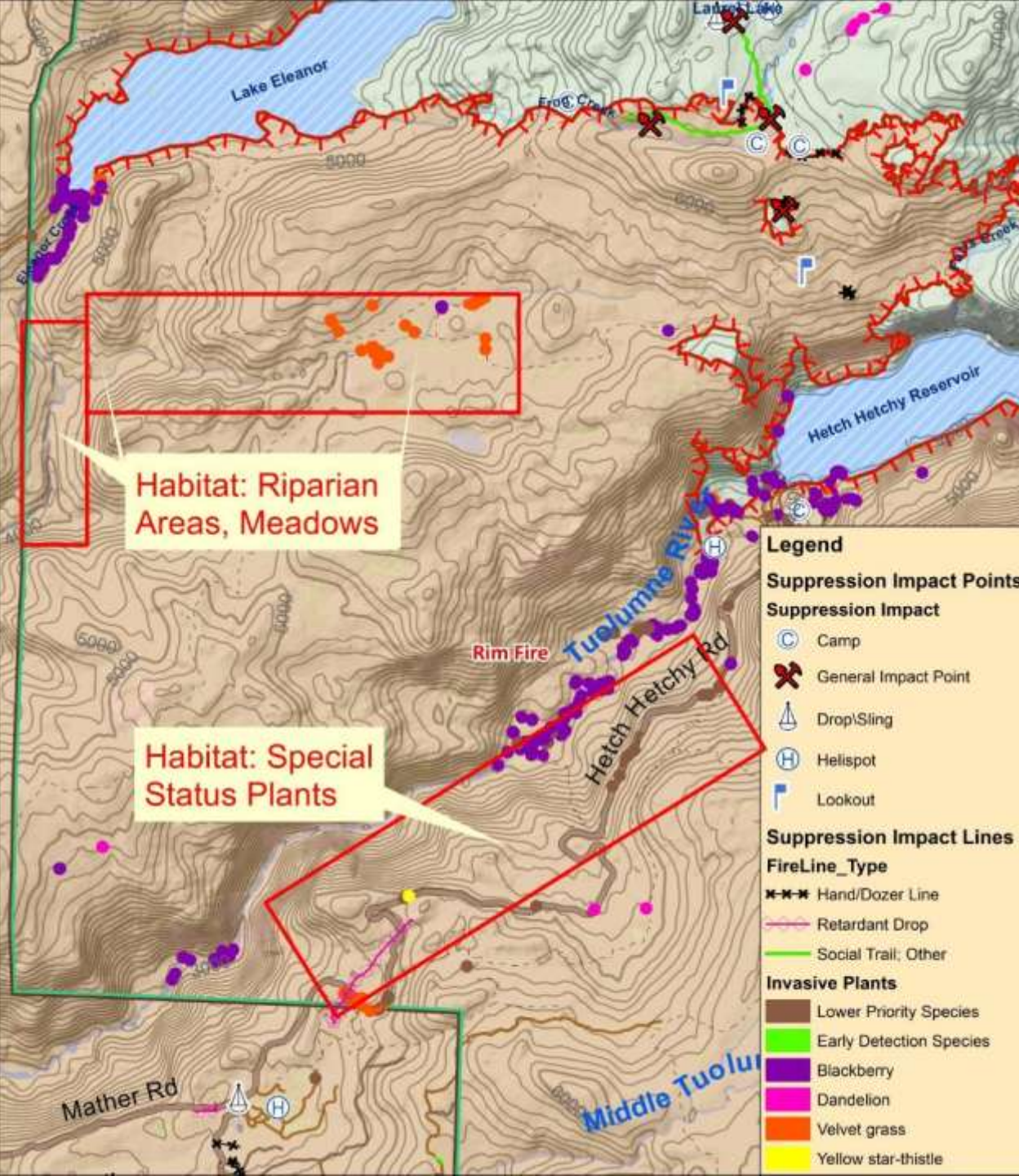






# Methods: Data Collection

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- Update individual populations and allow tracking over time
- Prioritize species, data value, and treatment

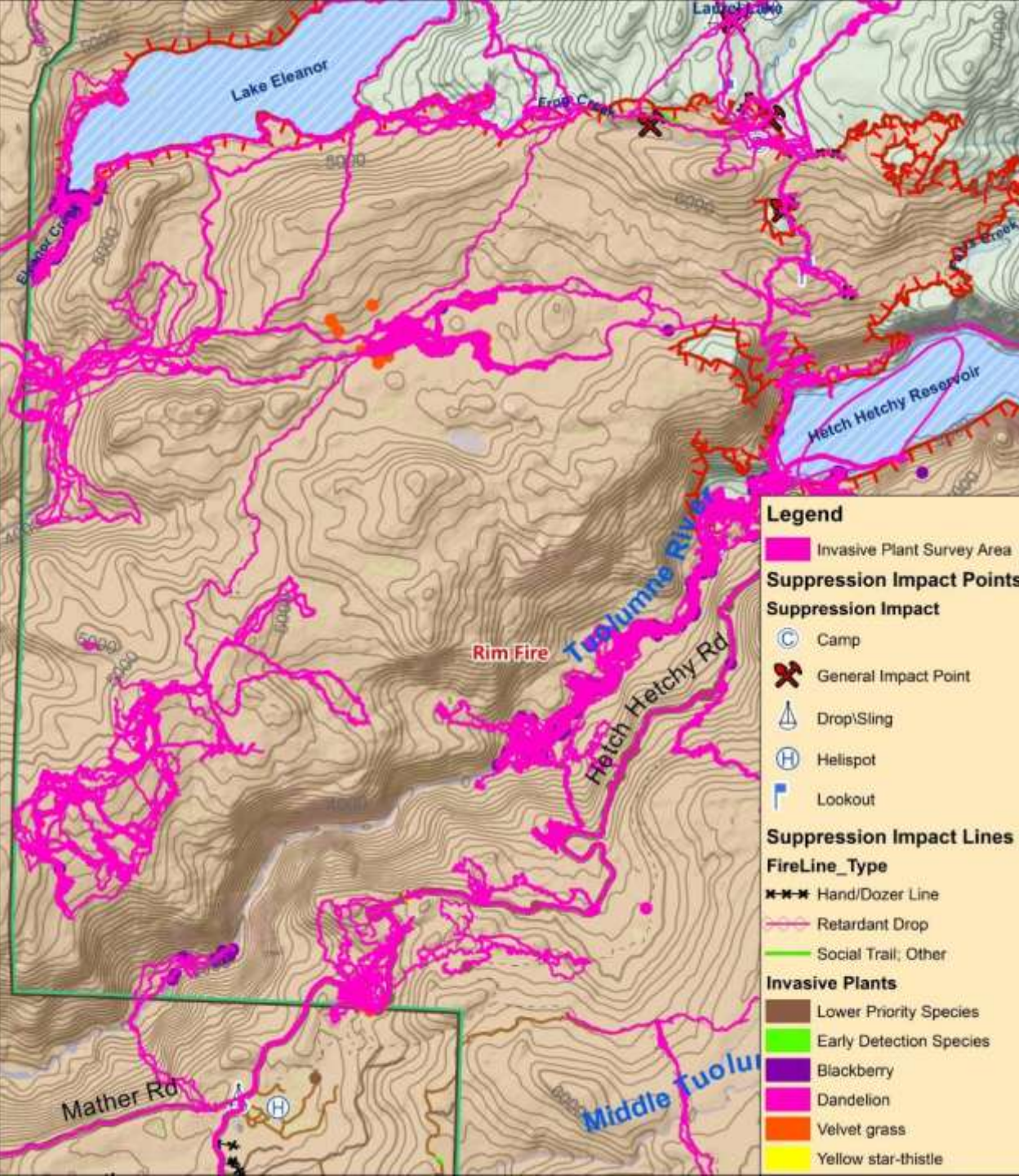






# Rim Fire Results:

Surveys: 5,290 acres





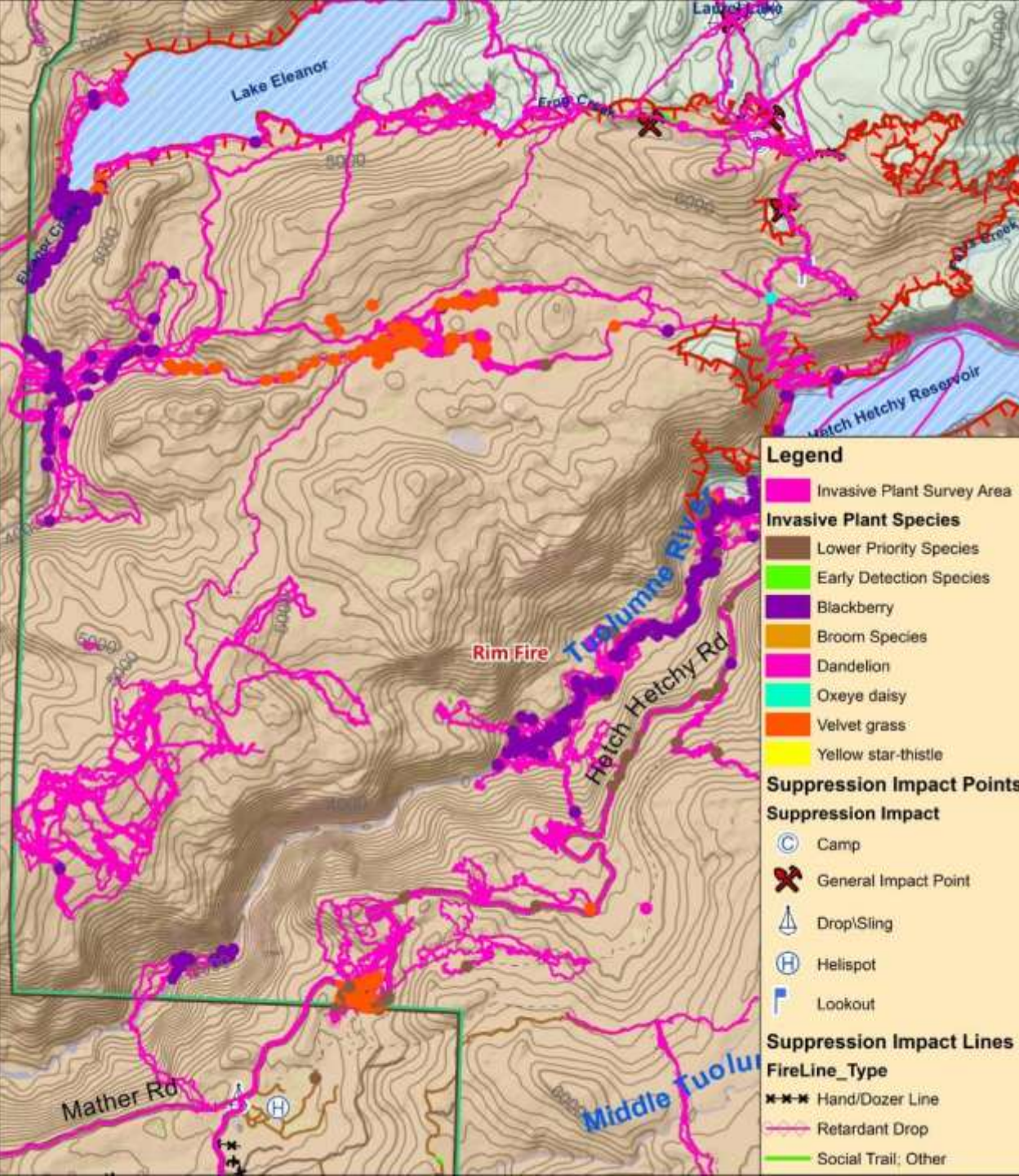


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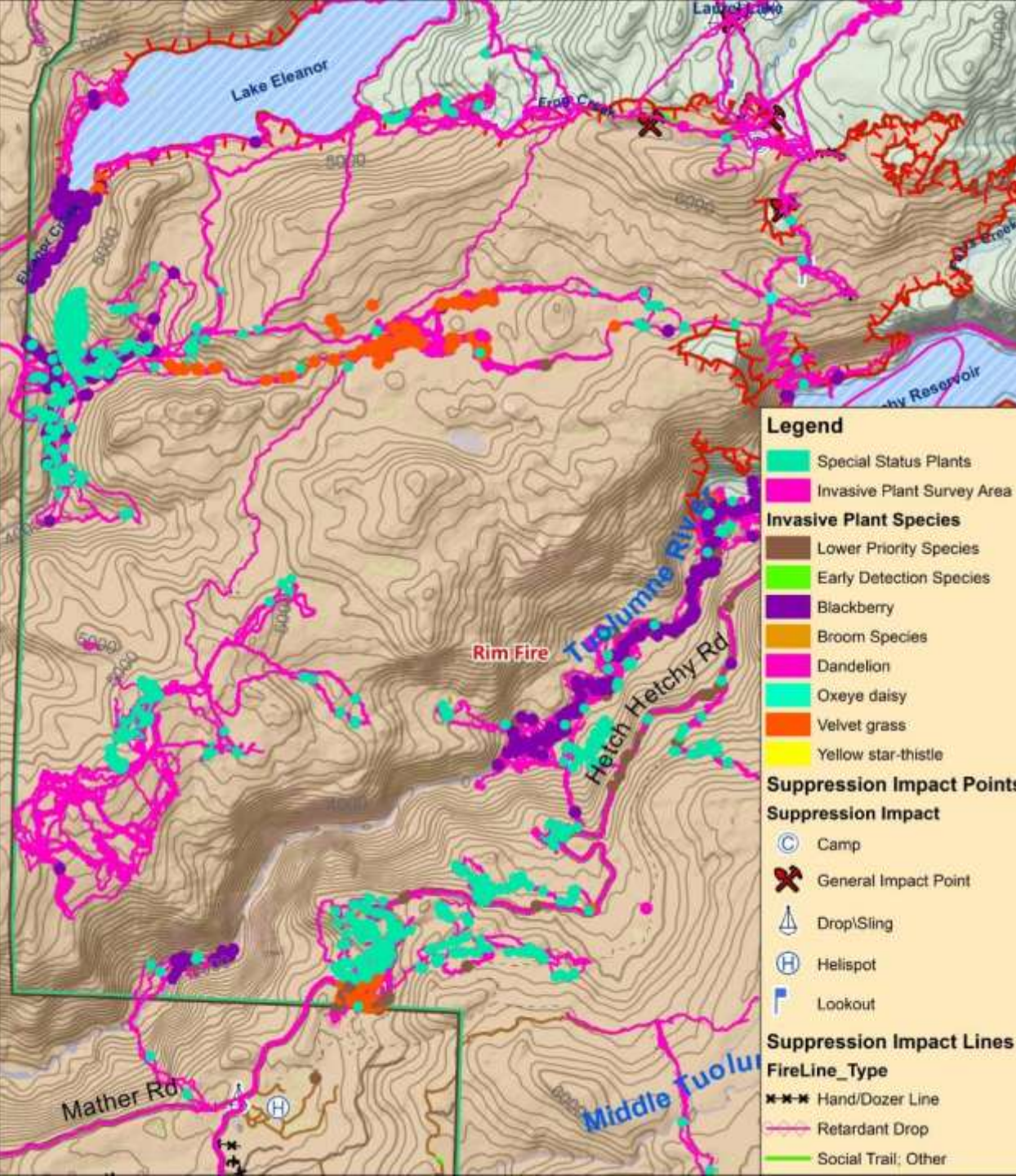
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Special Status Plants (all fires):

- Species: 32
- Acres: 253





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- Discovered and treated large area of **Himalayan blackberry** in Wilderness ~18 acres
- Discovered and began major campaign to treat **velvet grass** in front country and Wilderness ~48 acres



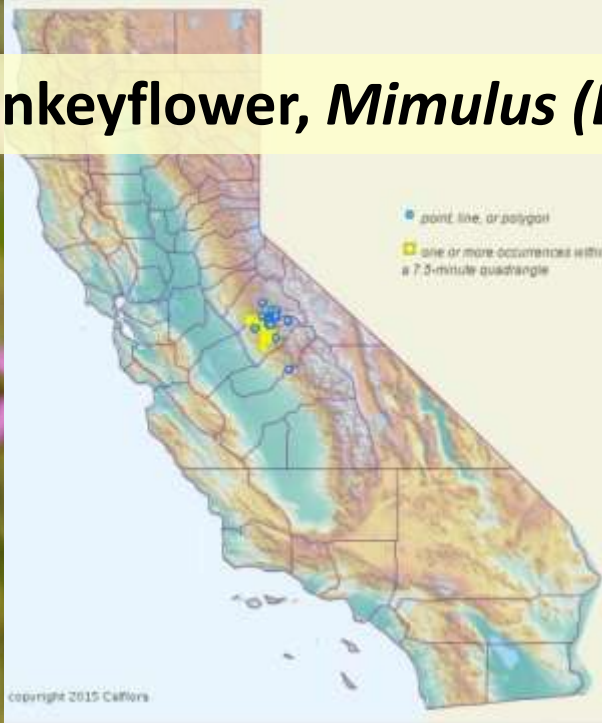
# Slenderstem Monkeyflower, *Mimulus (Erythranthe) filicaulis*



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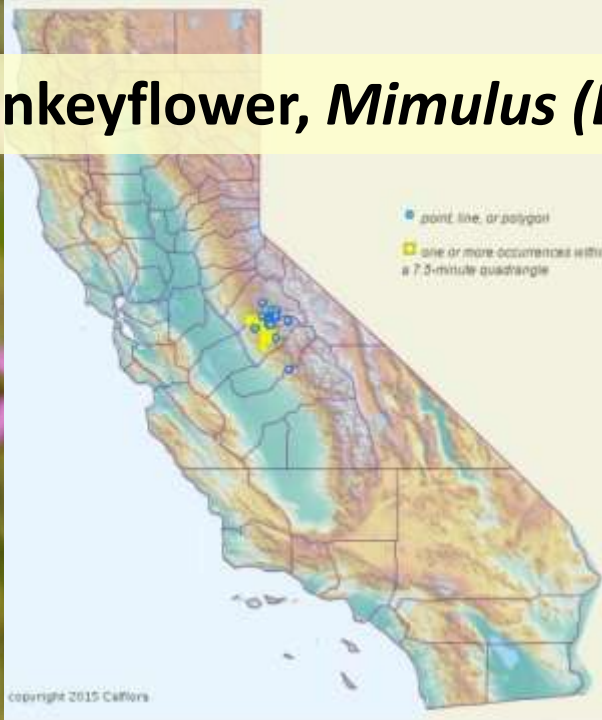


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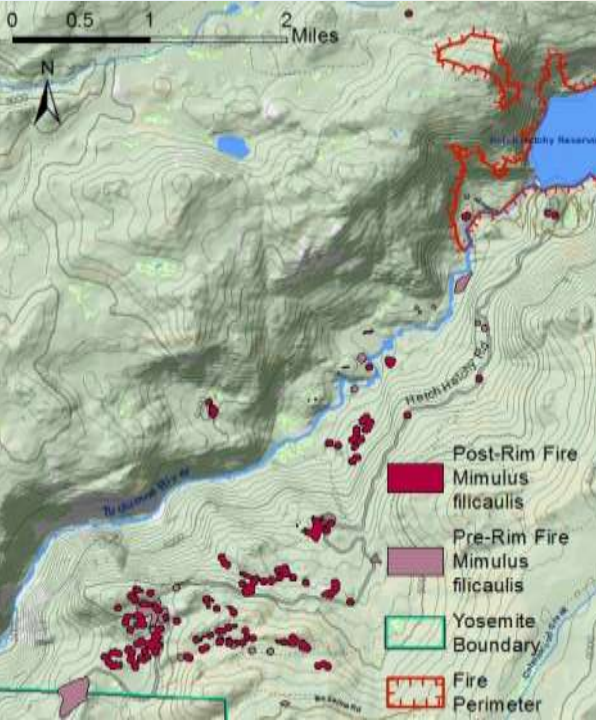


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- 25 additional acres discovered in burned areas, a 24% increase in known area for this species in the park

Pre-Rim Fire  
*Mimulus filicaulis*

Yosemite Boundary

Fire Perimeter

Post-Rim Fire  
*Mimulus filicaulis*

Pre-Rim Fire  
*Mimulus filicaulis*

Yosemite Boundary

Fire Perimeter



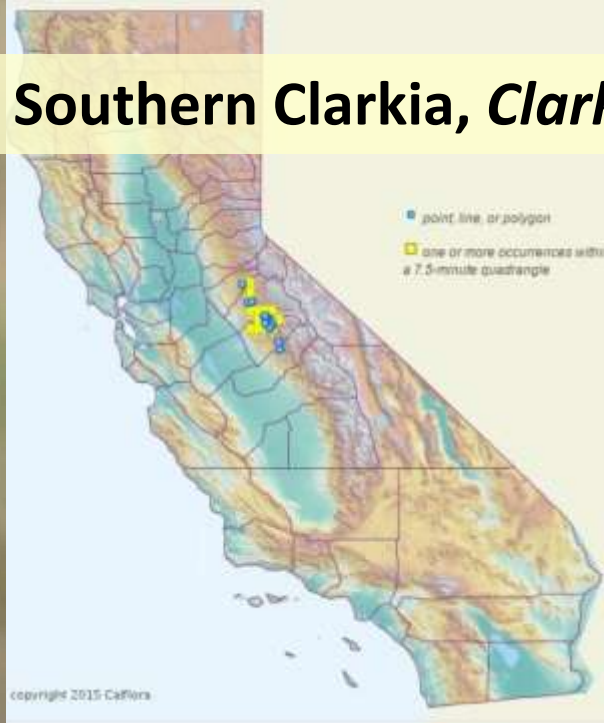
## Small's Southern Clarkia, *Clarkia australis*



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- 118 additional acres discovered in burned areas, a 1,475% increase in known area for this species in the park





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- Fire suppression may result in loss of dormant seed viability and local extirpation
- Dormant populations are vulnerable to disturbance



Thank You!

