Gorse (*Ulex europaeus*) eradication in a coastal park unit

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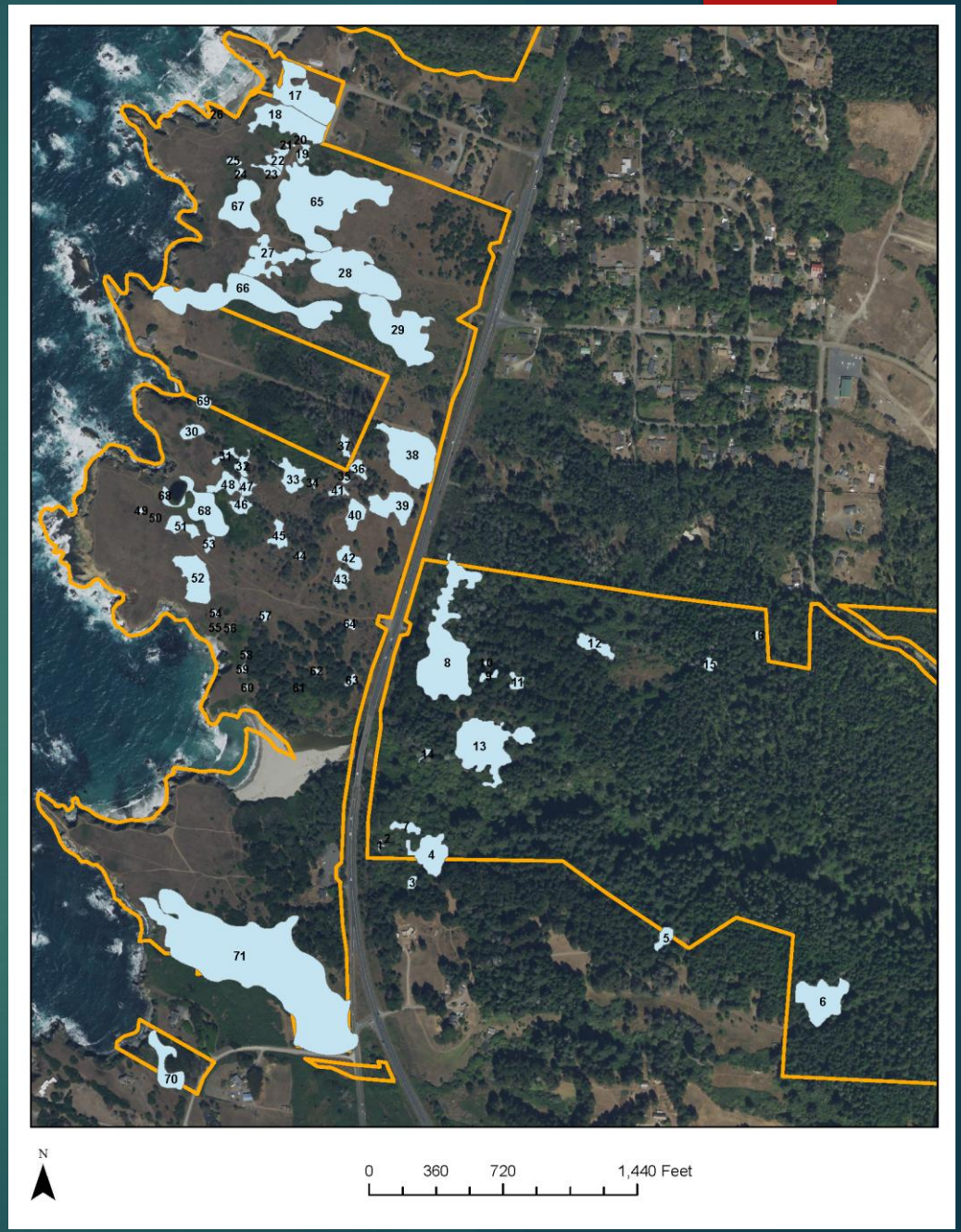
Gorse (*Ulex europaeus*)

- Introduced as a hedgerow plant in Caspar in late 1800's from Wales
- Legume; modifies sensitive soils
- Forms impenetrable thickets with 3" spines and intertwined roots
- Stump sprouts
- Seed banks for 26 years or more
  - Fire causes seed flush
- High concentration of volatile oils and dead biomass within stand = high fire risk

Jug Handle State Park

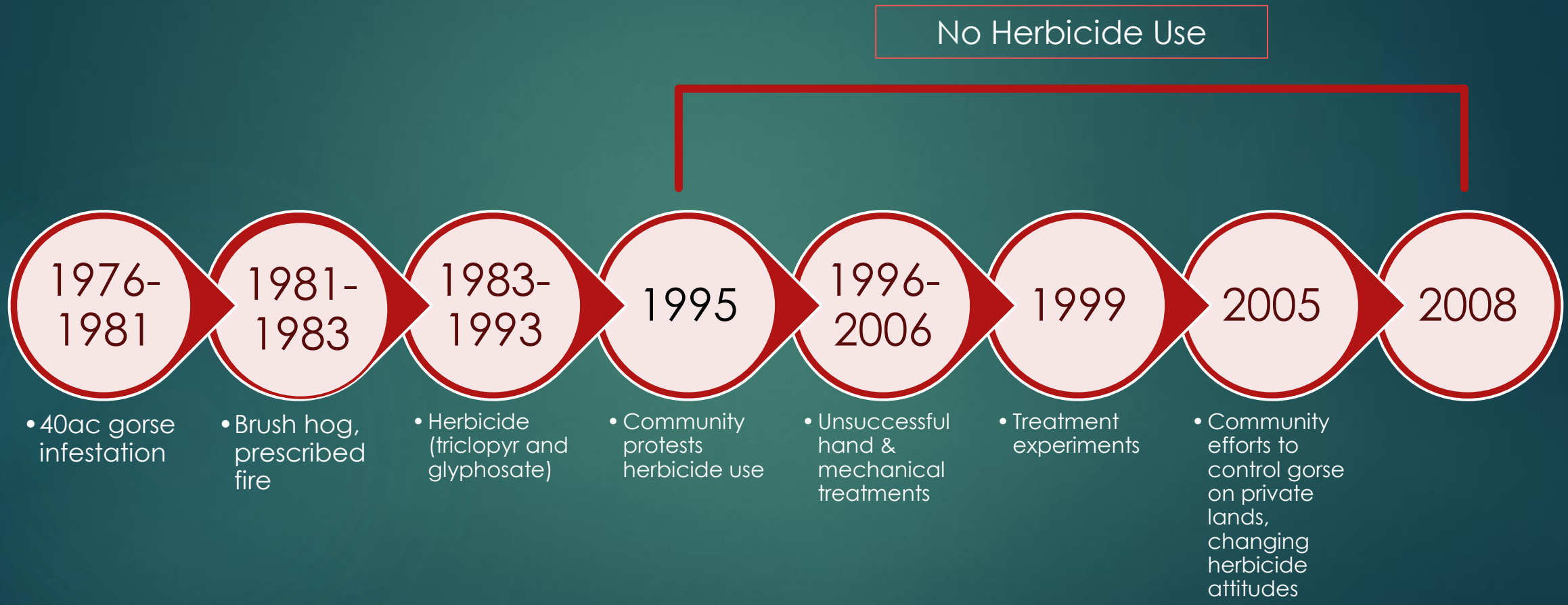
- Approximately 40acres of gorse infestation in park
- Active management since 1976
- Every technique in the book:
  - manual removal, mechanical mastication, tarping, discing, broadcast fire, pile burning, steam, vinegar, salt water, corn gluten, lime, cut stump herbicide, foliar herbicide, pull roots, and others
- *What works?* **<u>Combination of techniques (IPM) and frequent re-treatment intervals</u>**



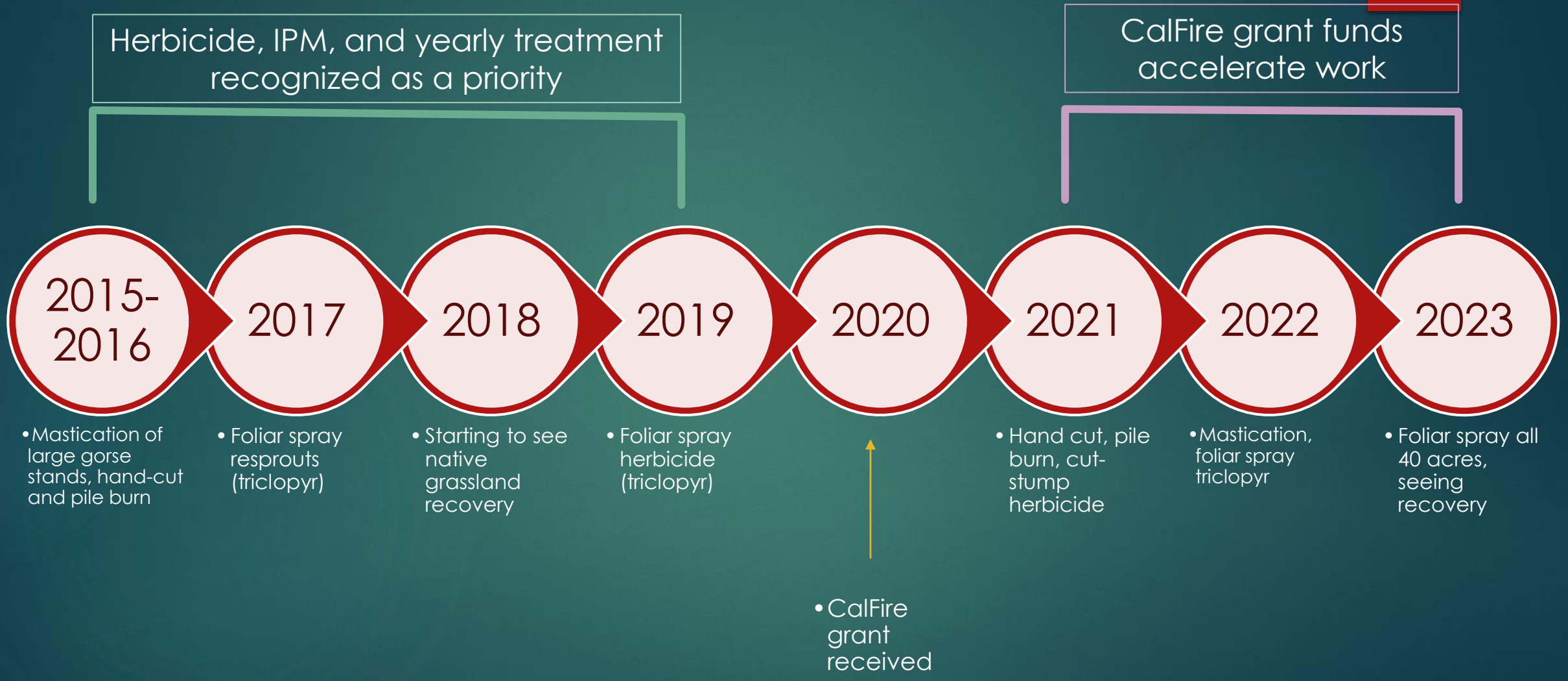
Methods

- True Integrated Pest Management!
- Following Oregon State Parks Gorse control strategy
  - Mechanical mastication
  - Manual removal
    - pile and burn biomass
  - Herbicide
    - Triclopyr herbicide (combination Garlon 3A and 4U) at 2.0 and 2.5% concentration

The Way-back Machine: Historical efforts in Jug Handle

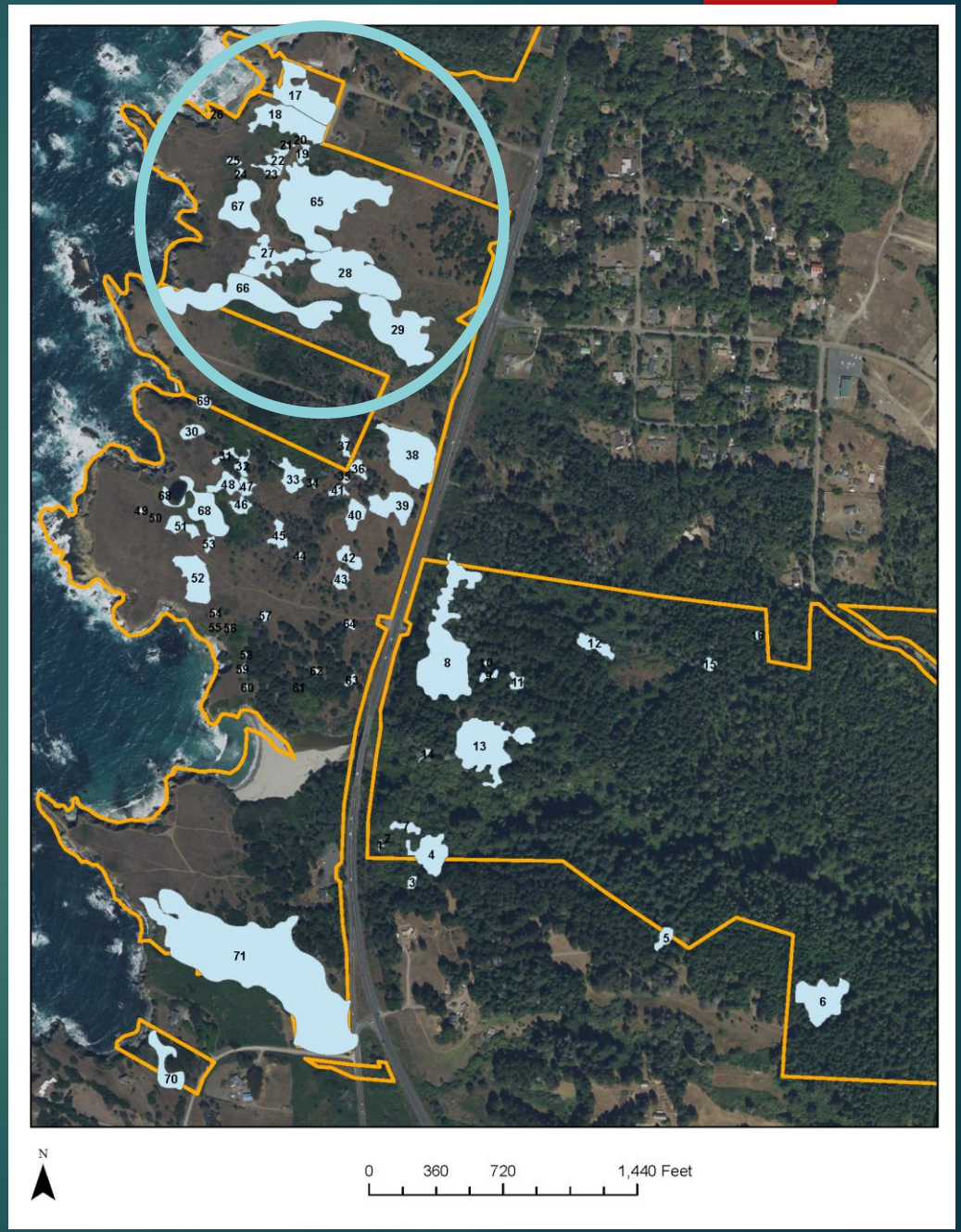


CalFire Fuels Grant and IPM



Coastal Prairie

- More complex
- More rare plants
- More riparian zones
- Higher visibility area
- More difficulty burning and spraying, due to winds



1999 Coastal Prairie


2014

2015-2016 Mastication

- A happy accident
- Treated 10ac of solid gorse in one week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-H and 1-H (Southeast corner facing West)

Forest

- Larger patches
- Never been treated
- Succession issues? / Meadow maintenance

But what does it *cost*?

Year	2018	2019	2020	2021	2022	2023
Herbicide Amount (gal)	40	6.3	4.16	15.2	45.4	26.5
Herbicide Percent	2.5%	2.5%	2.5%	2.0%	2.0%	2.0%
%cover of gorse			50-100%	50-100%	25-50%	1-15%
Hrs / Acr Contractor				**9.12**	**4.63**	**3.91**
Hrs/ Acre DPR				**3.28**	**19.89**	**25.96**

Lessons Learned

- Recovery is slow and gorse is forever
- Even taking one year off can set the program back
- Show-and-tell herbicide education with the public
- True integrated pest management
- Contractors are not exactly a hands-off solution
- Secondary invaders
  - Radish, Himalayan blackberries

Goats don't work

Where do we go from here?

- Mowing at 5" to prevent soil disturbance
- Treatment *every* year to hit maintenance levels
- Revegetation, even in areas that still have 5-10% infestation
  - Willows in riparian areas
  - Sitka spruce in forested areas
  - Native grasses (Calimagrostis) in prairie

THANK YOU!

CA State Parks Gorse infestation

- **Gorse (*Ulex europaeus*) eradication in a coastal park unit**
- Taylor Groves[1], Terra Fuller[1]. [1]California State Parks, Sonoma-Mendocino Coast District.
taylor.groves@parks.ca.gov
- Gorse (*Ulex europaeus*) is a highly invasive legume species that has infested over 70 acres of sensitive coast redwood, Mendocino pygmy cypress, and wetland habitats at Jug Handle State Park in Mendocino, California. Gorse was first introduced as a hedgerow in Northern California in the 1800's but has quickly become a major invader. In coastal park units like Jug Handle State Park, gorse is especially problematic due to its unsuitability as wildlife habitat, its fuel source potential, and its ability to modify sensitive coastal soil chemistry. California State Parks has been treating gorse since 1976 with limited success due to lack of follow-up funding. However, in 2016, grant money from CalFire for fuel mitigation provided the opportunity to use integrated pest management to treat gorse. Using this funding, State Parks treated 35 acres of coastal headland, seasonal wetland, and forest using a combination of hand removal, pile burning, and mechanical mastication. Foliar herbicide treatment with 2% triclopyr was used as follow-up treatment on all 70 acres of infestation, using aquatic-safe formulations when appropriate around wetland features. Native plant recovery following this intensive treatment is visually apparent. Lessons learned from this project include re-treatment intervals and the effectiveness of treatment combinations to address a widespread invasive species. Ongoing work will include addressing secondary invaders like nonnative grasses, and potential planting efforts in wetland and conifer-dominated sites to control re-infestation

Citations

- Zouhar, Kris. 2005. Ulex europaeus. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: https://www.fs.usda.gov/database/feis/plants/shrub/uleeur/all.html [2023, October 9].