Effective use of low-dose herbicide application to control weed seedlings in a restoration context

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Acknowledgements

- Orange County Transportation Authority: funding
- Orange County Parks: landowner support
- IRC Team: feedback and support

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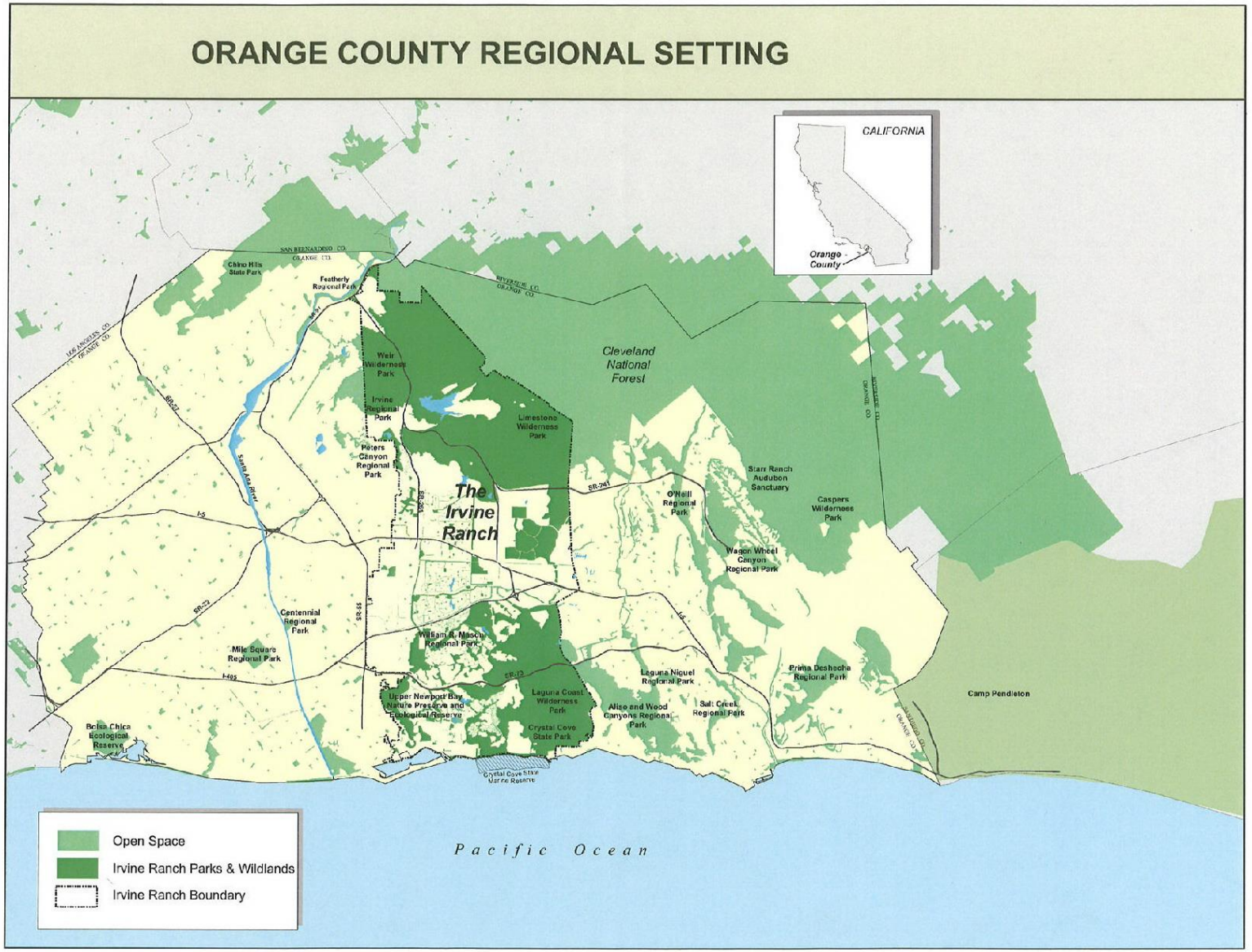
OC GO

OCparks

Irvine Ranch Open Space

- Irvine Ranch Conservancy (IRC) manages ~35,000 acres of conservation lands owned by OC Parks, Cities of Irvine, Newport Beach
- Some areas degraded by intensive cattle ranching, wildfires, invasive species
- Restoration program attempts to restore habitat at an ecologically meaningful scale



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The Problem

- Large restoration projects require efficient weed control methods
- Not all methods selectively target weeds
- Selective methods can be very time consuming
- Many methods target weeds late in the growing season

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Low-Dose Application

- Application of herbicides at a lower concentration
- Use in areas where annual weeds are interspersed with native perennial species
- Apply to early germinating annuals at the seedling stage

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Low-Dose Application

- Low-dose application can weed seedlings while leaving established natives unharmed
- Generally this is due to the dosage and timing of application
- Purple needlegrass (*Stipa pulchra*) was shown to be tolerant of low-dose fluazifop application (Bell et al., 2013)
- Fluazifop - 0.2-0.25 qt/acre

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Field Trial

- Established native grassland restoration
- Increasing non-native grass cover, decreasing native forb cover
- Goals:
  - Decrease non-native grass cover
  - Increase native forb cover
  - Enhance bunchgrass vigor
- Two treatment methods:
  - Low-dose treatment
  - Mowing treatment

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Mowing Treatment

- Mowing with weed whips (before annual grass seed-set)

Low-Dose Treatment

- Step 1 – clear thatch

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12/11/2019


01/17/2020


02/19/2020


02/27/2020


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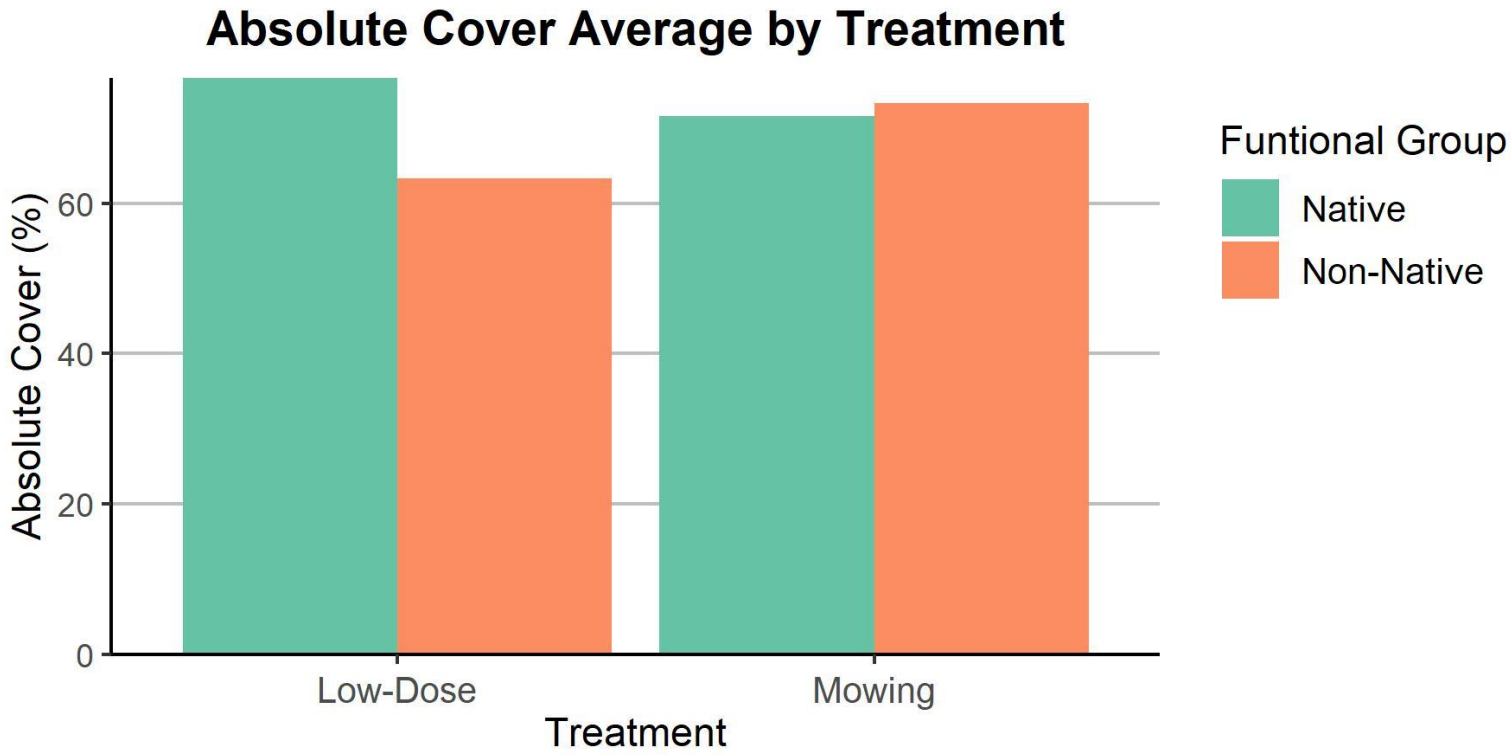
Results

- Absolute native and non-native cover was similar across both treatments
- Overall non-native cover was too high



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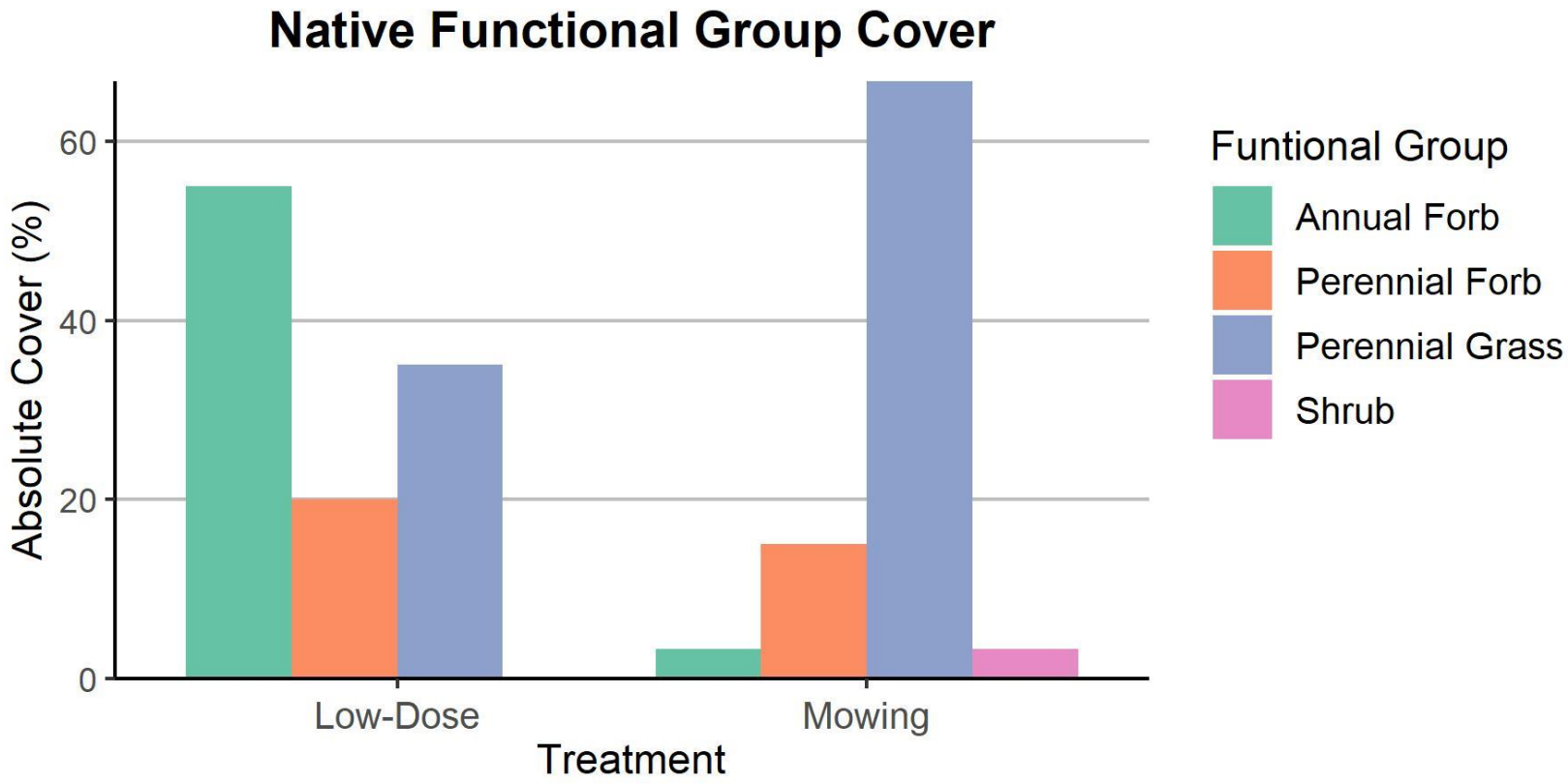
Results

- Low-dose treatment seemed to favor native forb establishment
- Mowing treatment seemed to favor native perennial grasses



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Lessons learned

- Low-dose treatment
  - May create space for broadleaf weeds
  - More intensive that we thought
- Mowing
  - Does not seem to enhance native forb cover
  - One mowing event was not enough
- Combination of methods may be necessary

Benefits

- Improved efficiency?
- Limiting competition
- Reduce the amount of weed control needed later in the season (sometimes)
- Increased native forb establishment

Considerations

- Precise calibration
- Proper equipment
- Precise timing
- Check the label and talk to your PCA
- Avoid herbicide resistance
- Environmental and site-specific factors

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