Integrating Prescribed Fire and Grass Specific Herbicides: A Strategy for Annual Wildflower Restoration

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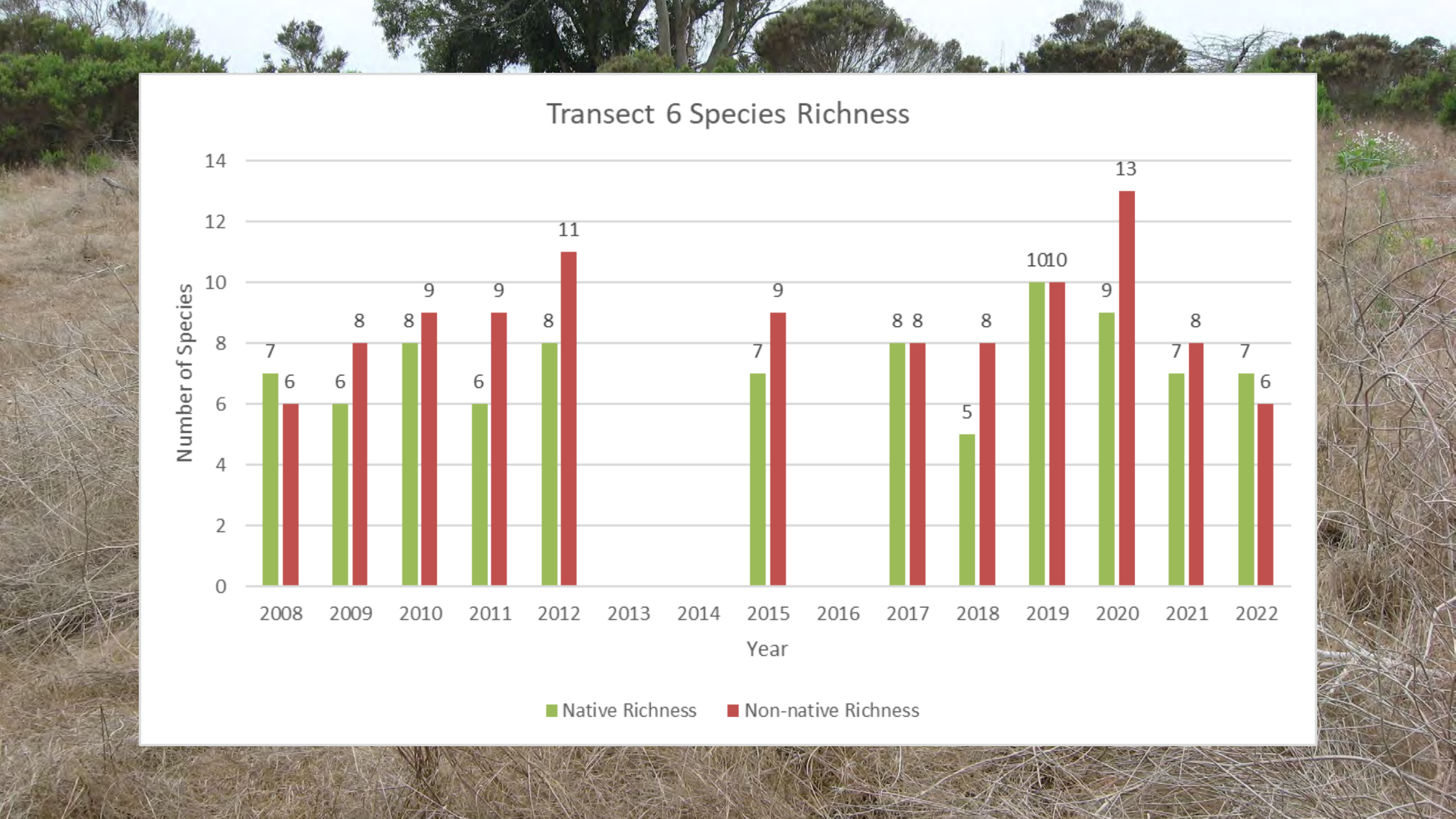
Transect 6 Vegetation Cover
120.00
100.00
80.00
60.00
40.00
20.00
0.00
Average Percent Cover
35
30
25
20
15
10
5
0
Precipitation (in)
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Axis Title
Native Cover
Non-native Cover
Bare-Thatch
Rainfall


Transect 6 Species Richness
Number of Species
Year
Native Richness
Non-native Richness
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
7
6
6
8
8
9
6
9
8
11
7
9
8
8
5
8
10
10
9
13
7
8
7
6


Prescribed Fire at Campus Lagoon
30.08.2006

Prescribed Fire at Campus Lagoon

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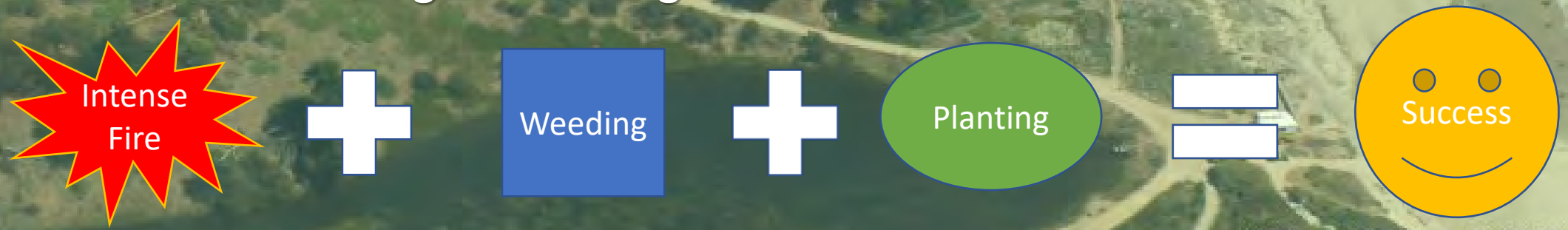
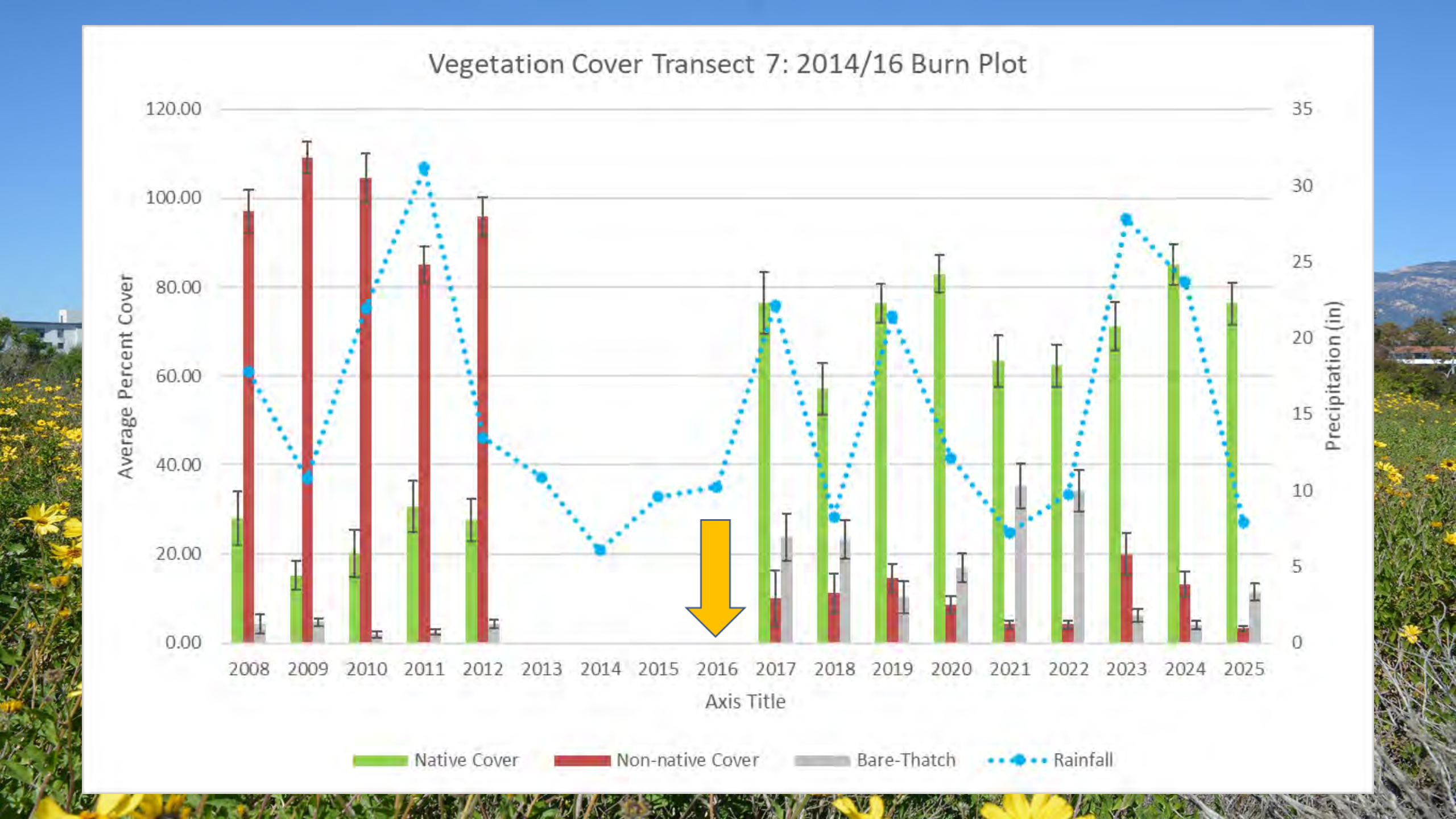


- *Artemisia californica*
- *Eriogonum parvifolium*
- *Encelia californica*
- *Acmispon glaber*
- *Diplacus longiflorus*


Vegetation Cover Transect 7: 2014/16 Burn Plot
120.00
100.00
80.00
60.00
40.00
20.00
0.00
Average Percent Cover
35
30
25
20
15
10
5
0
Precipitation (in)
2008
2009
2010
2011
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2024
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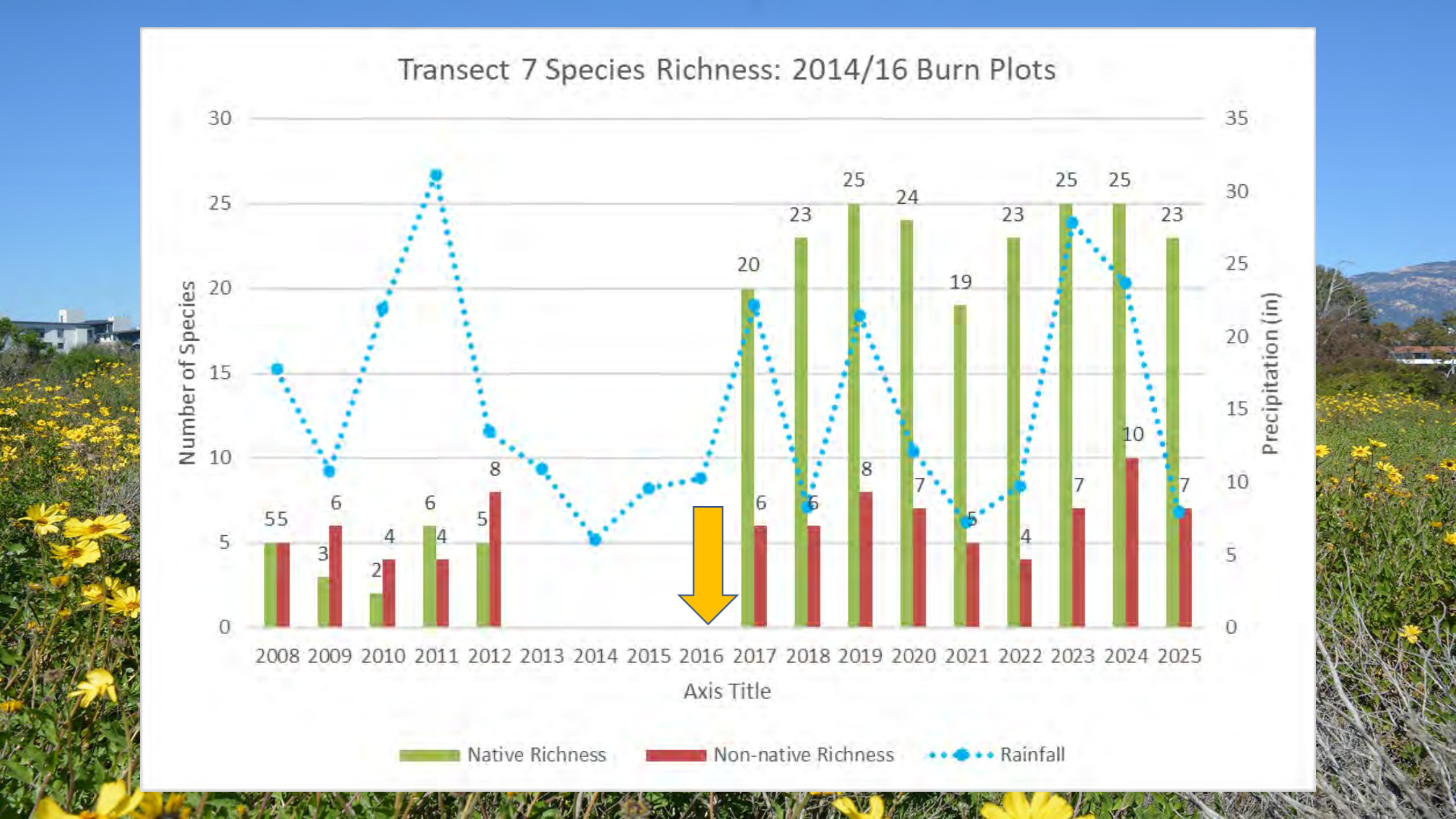
Bare-Thatch
Rainfall


Transect 7 Species Richness: 2014/16 Burn Plots
Number of Species
Precipitation (in)
Axis Title
2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025
55 3 6 2 4 6 4 5 8 20 6 23 6 25 8 24 7 19 5 23 4 25 7 25 10 23 7
Native Richness
Non-native Richness
Rainfall



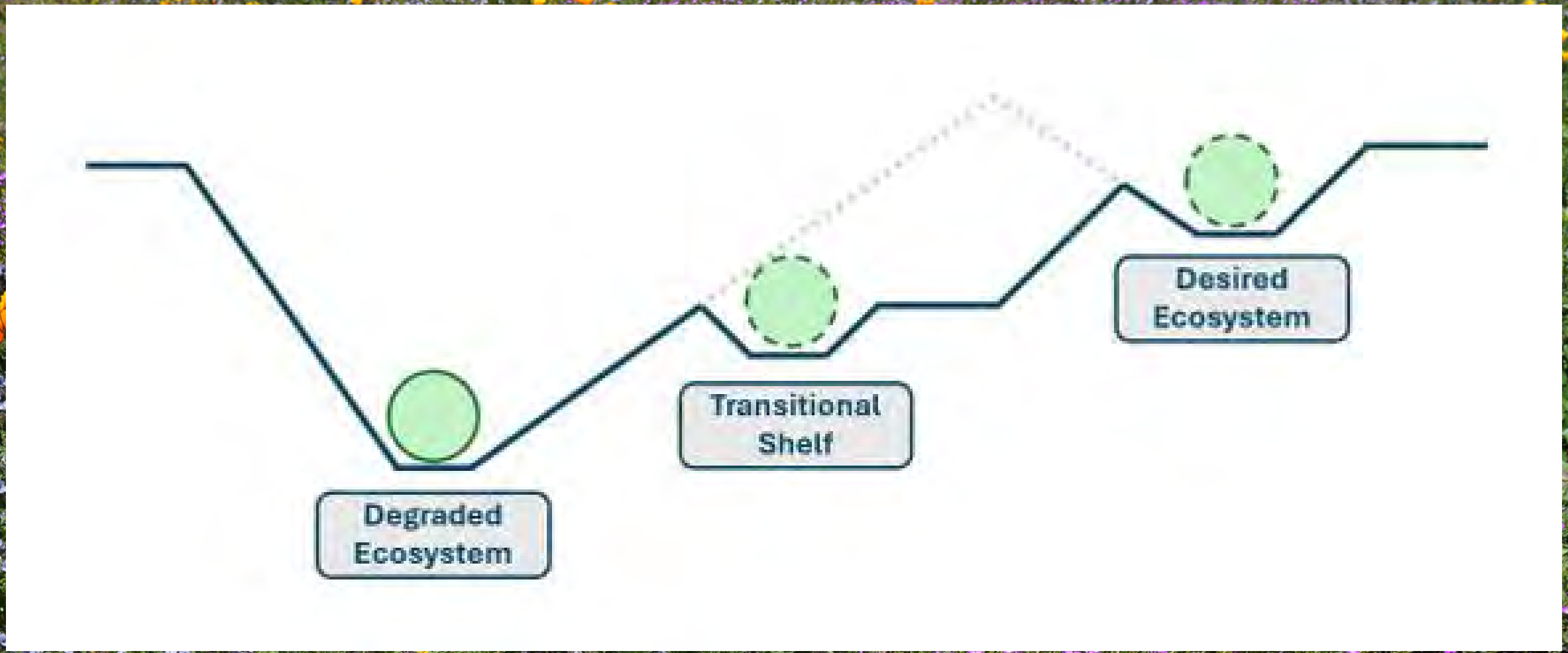











Degraded Ecosystem
Transitional Shelf
Desired Ecosystem


Erodium botrys


Vicia sativa


Lysimachia arvensis


Sonchus oleraceus

Bringing back the wildflowers

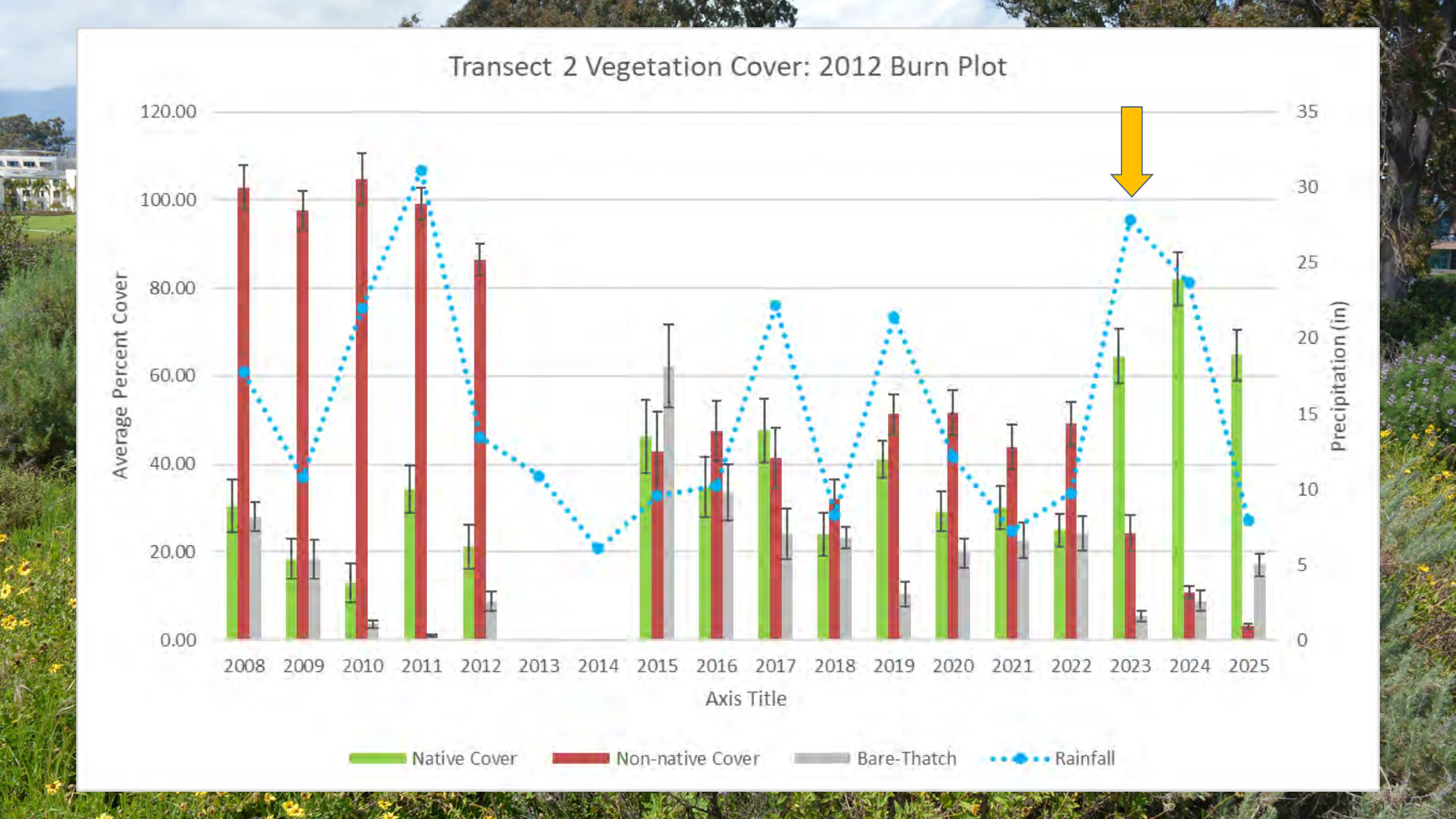
November 14, 2019

Paul Aigner, restoration director of McLaughlin Natural Reserve, admires the native wildflowers that have returned thanks to his campaign to knock back invasive weeds at the reserve. Image credit: Lobsang Wangdu/NRS

By Kathleen Wong, UC Natural Reserve System

- Invasive grasses (Goat Grass Italian Rye) invading Serpentine forb lands
- Combo of burning, grass-specific herbicide and hand-pulling has achieved high levels of success
- Given up on eradication, manage different areas to different levels of success
- Found no harm to pollinators, only effect was the increase in the availability of native annuals which benefits native pollinators

Aigner, P.A. and Woerly, R.J. 2011. Herbicides and mowing to control barb goatgrass (*Aegilops triuncialis*) and restore native plants in serpentine grasslands. *Invasive Plant Science and Management* 4(4):448–457.


Transect 2 Vegetation Cover: 2012 Burn Plot
120.00
100.00
80.00
60.00
40.00
20.00
0.00
Average Percent Cover
35
30
25
20
15
10
5
0
Precipitation (in)
2008
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Axis Title
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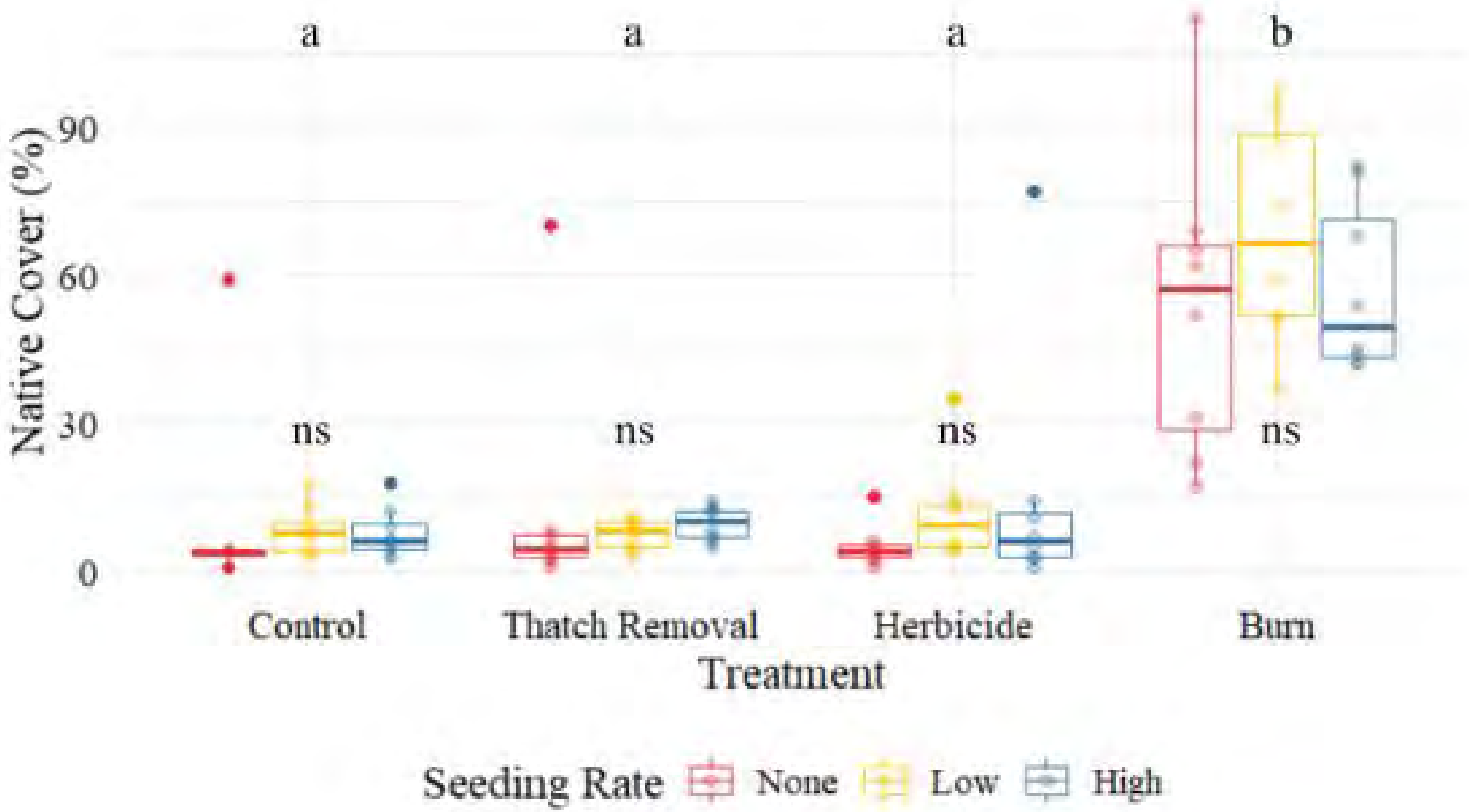
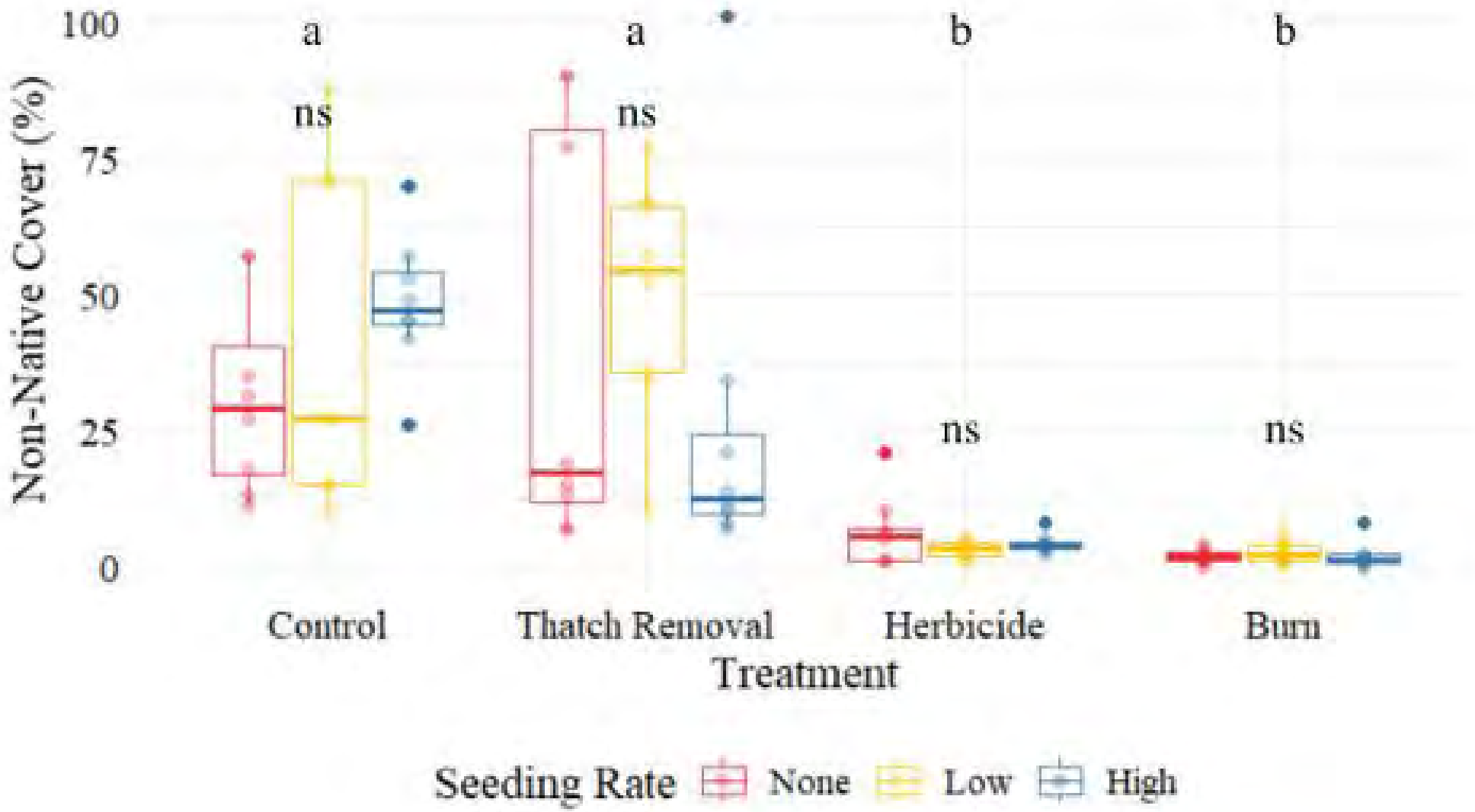
Lagoon Field Treatments



Robertson, Aidan. *Maximizing California Native Wildflower Establishment in Invasive Annual Grassland Restoration.* Bachelor's Thesis UCSB 2025



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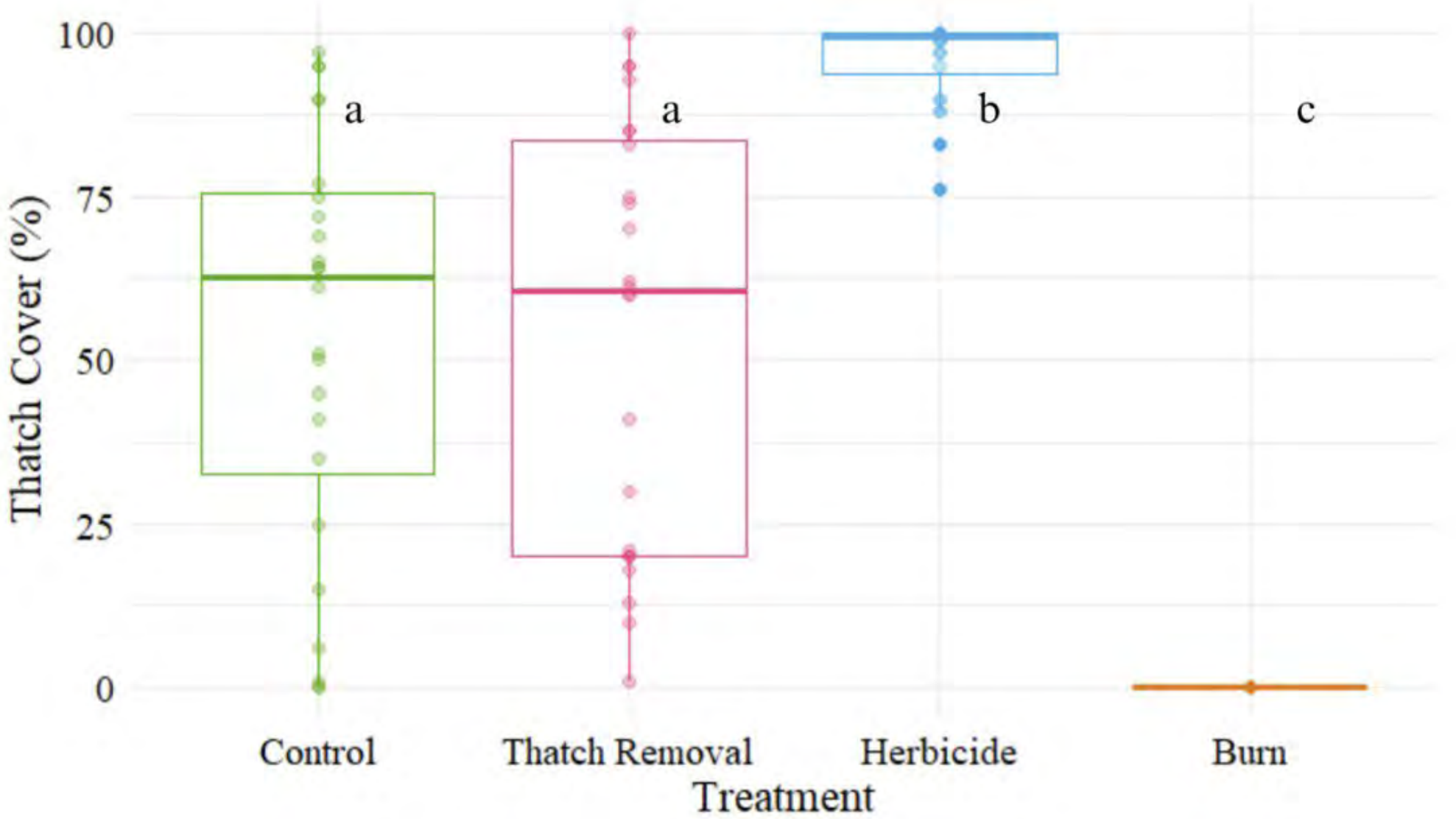

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Lagoon Island Burn Plots
The Cheadle Center has conducted 9 prescribed burns on lagoon isalnd since 2009, using fire as a tool to control non-native, inasive grasses and rstore native coastal sage scrub and wildflwer meadows.
Legend
2009 Burn Plot
2011 Burn Plot
2012 Burn Plot
2014 Burn Plot
2016 Burn Plot
2018 Burn Plot
2020 Burn Plot
2022 Burn Plot
2024 Burn Plot
N
700 ft
Google Earth


Thank you!
Special thanks to Lisa Stratton, Darwin Richardson, Scott Tomkinson, Lauren Dykeman, Evan Hobson, the UCSB Coastal Fund and all staff and students who have helped to steward the lagoon!