

Controlling Invasive Arundo and Tamarisk on the Salinas River

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San Benito County Weed Management Area meeting
December 8, 2021

Outline

- Background on Salinas River
- History of Arundo Control Program
- Program approach and methods
 - Progress to-date
 - Lessons learned
 - Questions

Salinas River (the “Upside-down River”)

- 175 miles long, 92 miles in Monterey County
- Flows south -> north, underground
- Altered hydrology: reservoir releases in summer months lead to increased vegetation growth



Salinas River: *Arundo donax* invasion

- Planted for erosion control, bank stabilization
- Cal-IPC mapped arundo in Salinas River watershed in 2011: 1470 infested acres
- Rapid recovery and expansion since end of drought



Salinas River: Arundo impacts

- Increased flood risk
- Poor quality habitat
- Arundo high water use increased impacts of drought



Salinas River Arundo Control Program: History

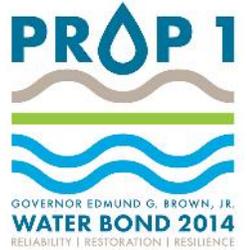
Program History

- Monterey County Agricultural Commissioner began program, sprayed scattered patches of arundo and tamarisk in southern part of county in 2008 and 2009
- 2011-2014, RCD of Monterey County developed large-scale program with consultant Jason Giessow (Dendra, Inc.)
- Program permits
 - CEQA Mitigated Negative Declaration
 - CDFW Streambed Alteration Agreement (1600)
 - USFWS Technical Assistance Letter
 - NOAA/NMFS Technical Assistance Letter
 - SWRCB NPDES permit
 - ACOE consultation

Salinas River Arundo Control Program: Funding

Grants and other Funding

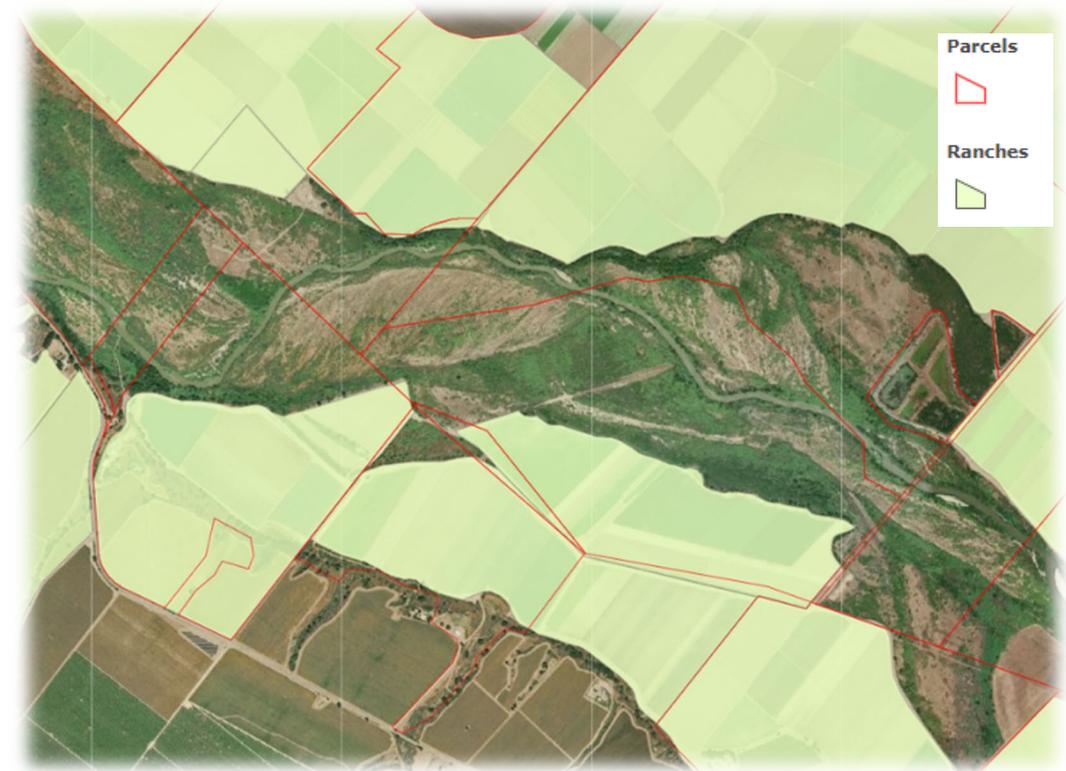
- Wildlife Conservation Board
 - \$1.1 million, 2014-2019, Habitat Conservation Fund
 - ~150 acres
 - \$3.3 million, 2016-2021, Prop 1 Streamflow Enhancement Program
 - ~350 acres
 - \$2.9 million, 2019-2023, Prop 1 Streamflow Enhancement Program
 - ~275 acres
- USDA Natural Resources Conservation Service (NRCS)
 - \$1.8 million, 2018-2023, Regional Conservation Partnership Program
- California Dept. of Food and Agriculture
 - \$60,000, 2019-2020, Noxious Weed Grant Program
- Monterey County Agricultural Commissioner
 - >\$400,000, 2014-2020
- Cost-share agreements and donations— private and public
 - \$162,000, 2019-2024



Salinas River Arundo Control Program: Permissions

Landowner Agreements

- ~350 parcels adjacent to or intersecting Salinas River
- Mostly private agricultural land, often farmed by tenant
- 10 year access agreements
 - First five years- RCD treatment
 - Last five years- landowner/tenant treatment
- 41 agreements signed



Salinas River Arundo Control Program: Strategy

- Upstream to downstream treatment
- Mow large stands to reduce biomass
- Small stands – spray only
- Treat with herbicide for multiple years



Biomass Reduction Mow in Year 1 (fall)





Just after fall mowing



Summer after mowing

Initial herbicide treatment

Spray in Year 2 (summer/fall)

- Glyphosate (aquatic approved- Roundup Custom, AquaNeat)
 - 1.5% in power sprayers
 - 5% in backpacks



Before initial spray



98% decrease in cane density



After initial spray





Herbicide re-treatment Spray in Year 3, etc. (summer/fall)

- Glyphosate (3.75%) + imazapyr (1.25%)
(aquatic approved- Polaris, Habitat)



Cut stump treatment

- Needed in limited cases



Mower hazards



Avoiding overspray into water



Organic field

Cut stump treatment methods

- Cut canes, fill with herbicide
- Experimented with different herbicide concentrations:
 - 50% Roundup Custom
 - 25% Roundup Custom
 - 5% Roundup Custom, 1% Polaris
 - 5% Roundup Custom
 - All performed well!

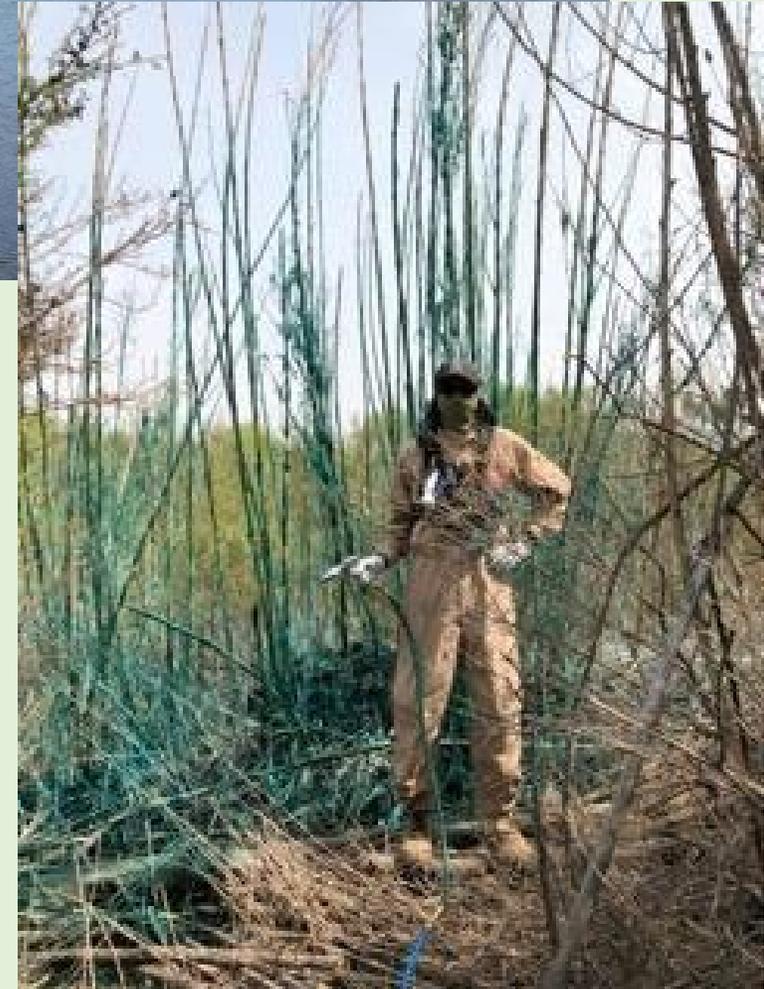




Upper watershed treatment (south of King City)

Treatment via land and canoe in 2016, 2019, and 2020

- Spray only
- Scattered clumps of arundo, more tamarisk and tree tobacco
- Glyphosate (1.5%) + imazapyr (1%) (aquatic approved)



Tamarisk treatment

Other recommended methods:

- Cut stump with 50% triclopyr (Garlon, Pathfinder)
- Imazapyr (Habitat, Polaris) – foliar application with 1-5% or cut stump with 10%
- *Glyphosate alone is not recommended because salts reduce efficacy



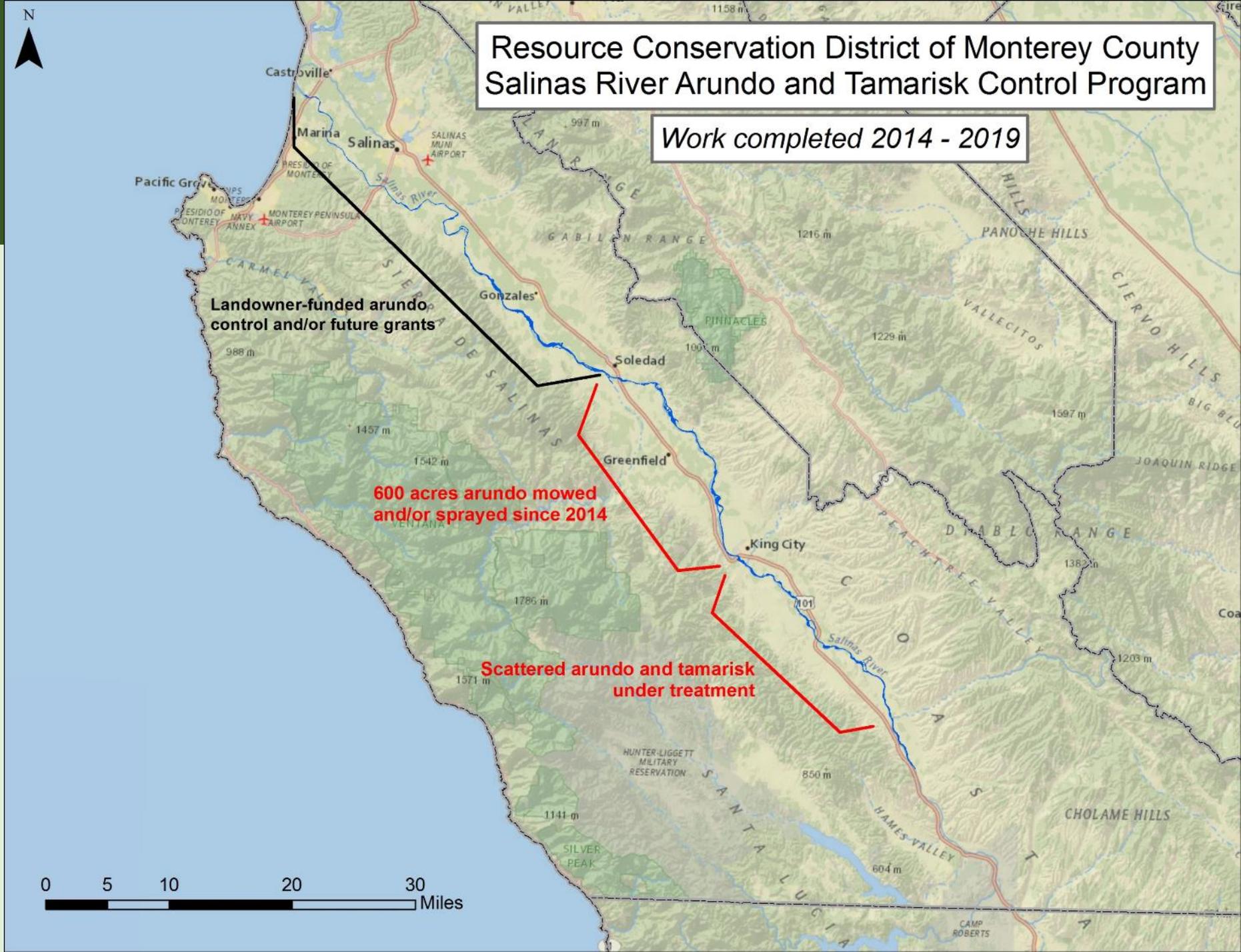
Biological surveys and monitoring

- Pre-activity surveys by contracted biologists
 - Avian surveys prior to September 1
 - Buffers around burrows, woodrat nests, other sensitive habitats
 - Flag wetlands
 - Mark hazards
- On-site biological monitoring by RCD staff
 - Morning sweep of work site
 - Work closely with work crews to ensure permit compliance
 - On-the-ground contacts
- Water sampling



Salinas River Arundo Control Program: Progress

- Eight work seasons since 2014
- ~850 acres mowed/sprayed San Ardo-Soledad
- Total: Treated almost all arundo along 50 rivermiles

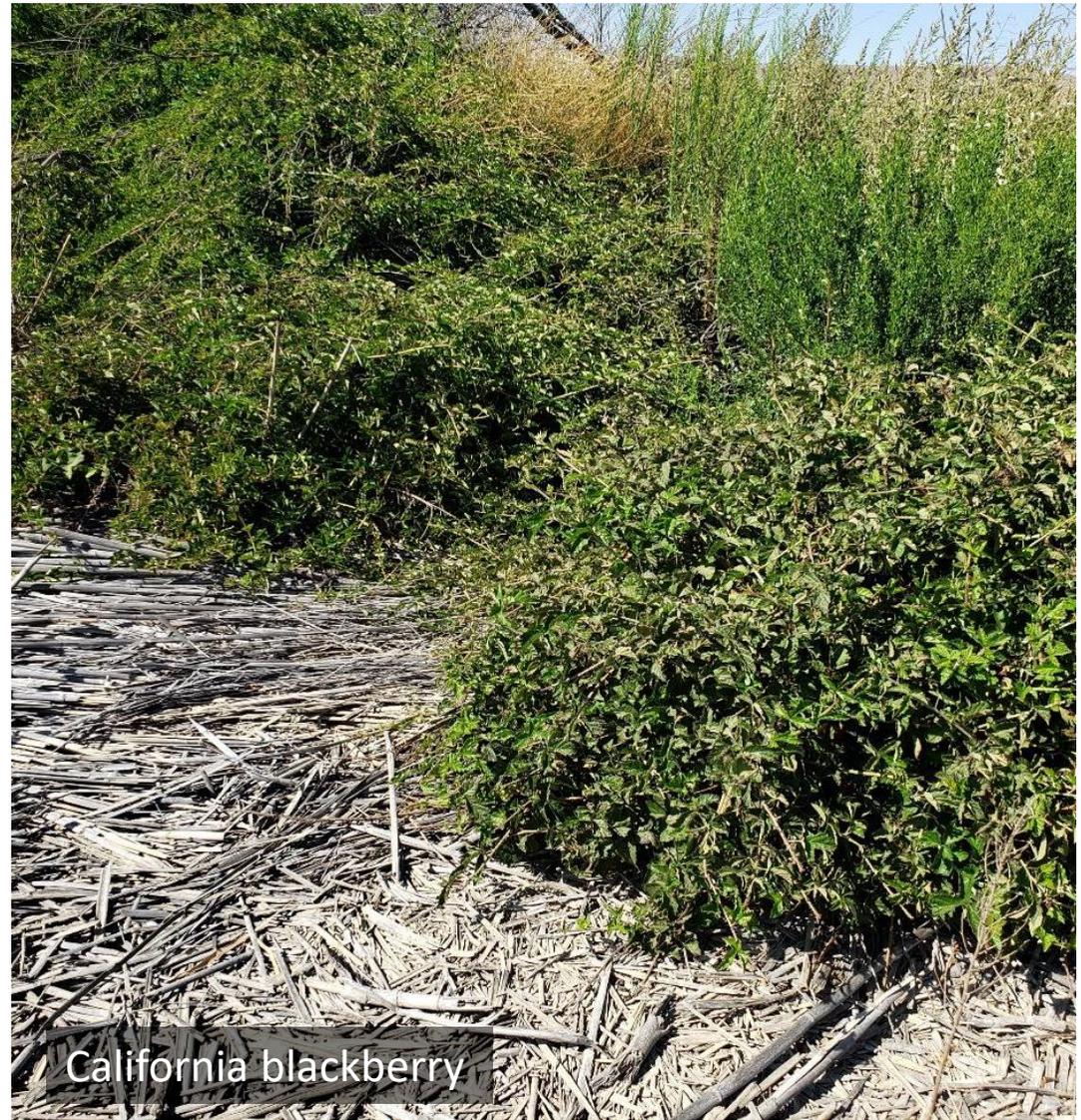


Lessons Learned

Treatment Efficacy

- First herbicide treatments – dramatic results!
- But hard to eradicate...
- Continued spot treatment needed but hard to get funding
- Observation: Herbicide treatment seems more effective on healthy (unstressed) arundo, and unmowed arundo

Plant Community Recovery



Plant Community Recovery



Poison hemlock

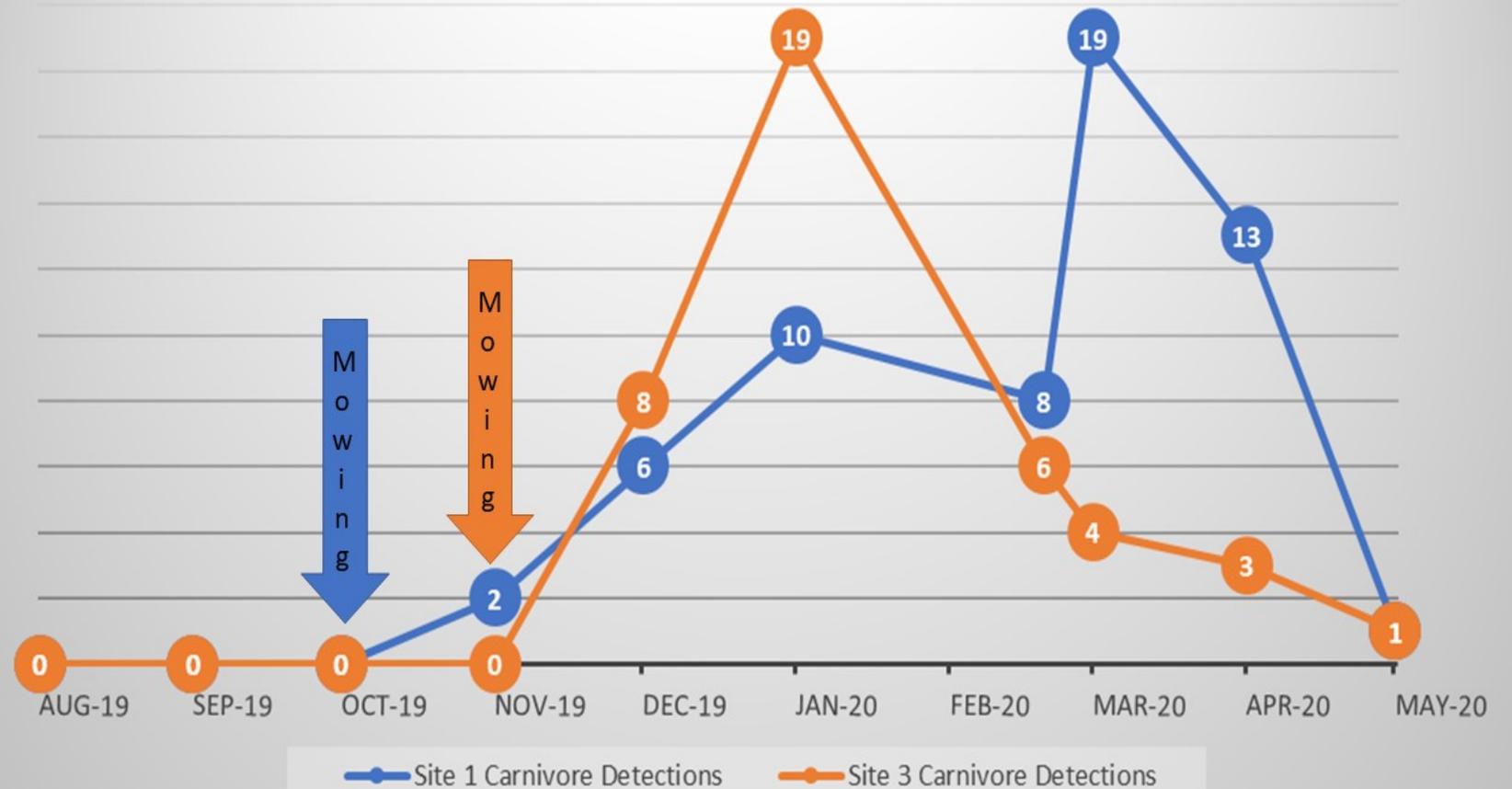


Perennial pepperweed



Large Wildlife

Carnivore Detections Recorded in Treated Sites 1 & 3





STEALTH CAM 08:18 08/20/19 59F



STEALTH CAM 11:50 10/07/19 91°F SITE3ATREATED



STEALTH CAM 01:37 06/15/20 50F SITE4BCONTROL



STEALTH CAM 05:33 10/02/19 27F



STEALTH CAM 10:22 12/23/19 46F SITE4BCONTROL

Questions?

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