

Vinca major control in an endangered plant population on Santa Cruz Island, California



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Channel Islands Restoration

Project Collaborators:

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– U.S. Geological Survey

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– Channel Islands Restoration

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Sea-cliff bedstraw

Galium buxifolium

Rubiaceae (Madder Family)



Distribution



Pt. Conception

Santa Barbara

Ventura

San Miguel

Santa Cruz

Anacapa

Los Angeles Metropolitan Area

Santa Rosa

Santa Barbara

Santa Catalina

San Nicolas

San Clemente

PACIFIC OCEAN

San Diego
Metropolitan Area

A satellite-style map showing the Northern Channel Islands. The islands are depicted as small, irregularly shaped landmasses in shades of green and brown, scattered across a dark blue sea. A semi-transparent grey rectangular box is positioned at the top center of the image, containing the word "Distribution" in a white, sans-serif font. At the bottom center, the text "Northern Channel Islands" is written in a red, italicized serif font.

Distribution

Northern Channel Islands

Distribution

San Miguel

Santa Rosa

Santa Cruz

Anacapa



Distribution

5

populations



San Miguel

Last collected
1930



Santa Rosa

21 populations



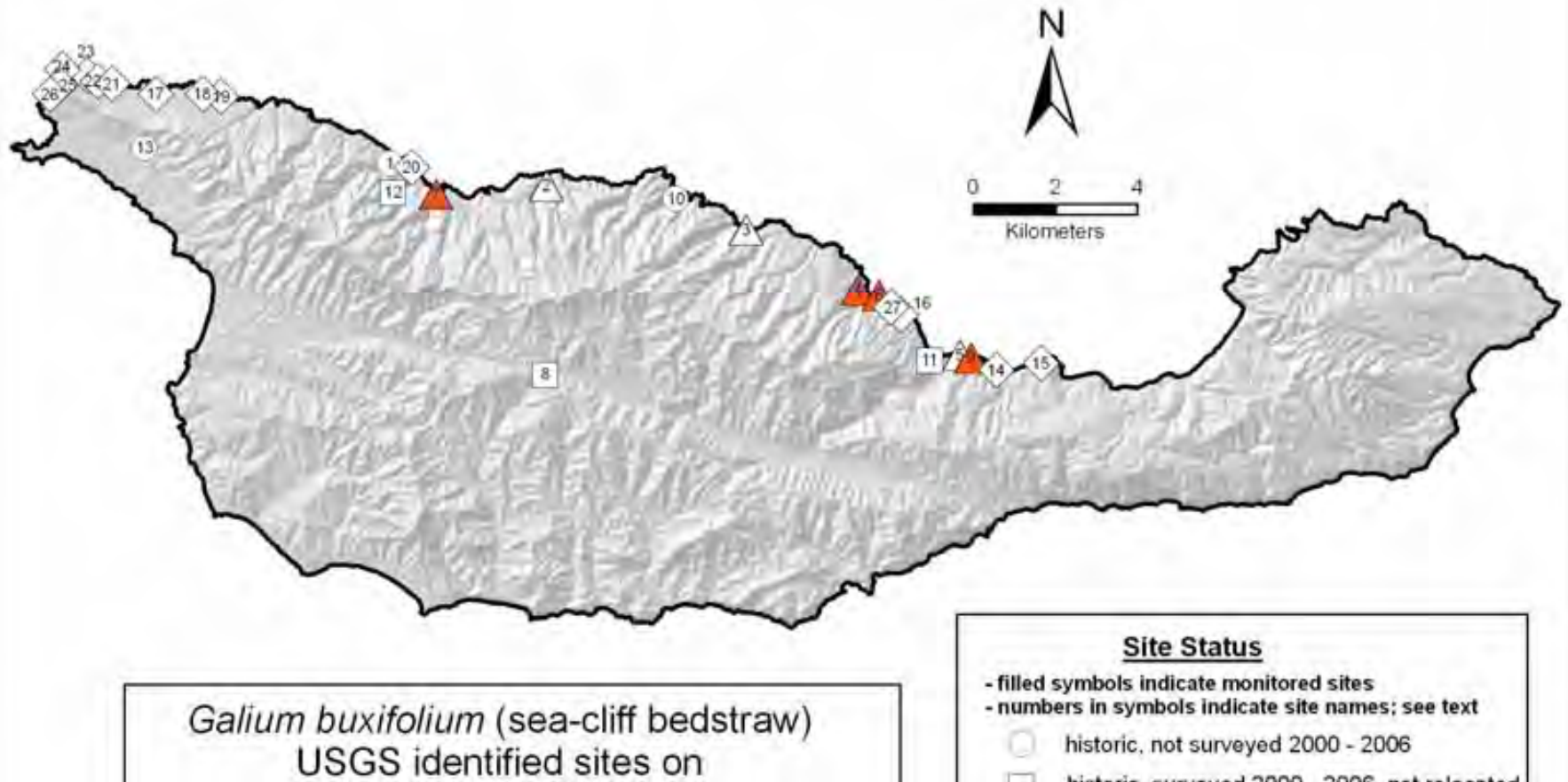
Santa Cruz



Anacapa

26 total confirmed populations

Santa Cruz Island Distribution



- Seven of 13 historic populations confirmed by recent site surveys
- There are 14 newly discovered populations
- A total of 21 populations with confirmed historic or new records
- Numbers range from 1 to about 200 plants each
- Area occupied ranges from 1 to 8,000 square meters

Habitats



- Cliff faces
- Refugia
- Dominated by remnant native shrubby vegetation
- Formerly more widespread on terraces above cliffs

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Pelican Bay



2005 5 26 14:

Pelican Bay 1913 - 1937



Pelican Bay Today



The Problem:

Greater periwinkle (*Vinca major*)

1. *Galium* and the *Vinca* appear to be spreading from the cliff face upslope onto a series of natural outcrops, and rock walls and benches
2. Native scrub community appears to be recovering at the site
3. *Vinca* appears to be moving into the native scrub where it displaces small plants, including small *Galium*.

Problem Resolution

1. Reduce *Vinca* cover and encourage *Galium* spread to sites away from *Vinca* for self-sustaining population
2. Develop and demonstrate a methodology for control of an invasive weed within the habitat of an endangered plant

Project Objectives

- *Vinca* control on all but vertical cliff face
- Natural native plant community expansion
- *Galium* expansion beyond current boundaries (no planting)



Project Design

A scenic landscape photograph of a rocky, vegetated hillside. In the foreground, there are various green and yellowish plants growing on a rocky outcrop. The middle ground shows a dense forest of trees and shrubs covering a slope. In the background, a stream or river flows through a valley, surrounded by more trees and hills under a bright sky.

Multi-year effort in collaboration - USGS,
NPS, TNC, USFWS, CIR

Treat *Vinca*

Maintenance

Monitor:

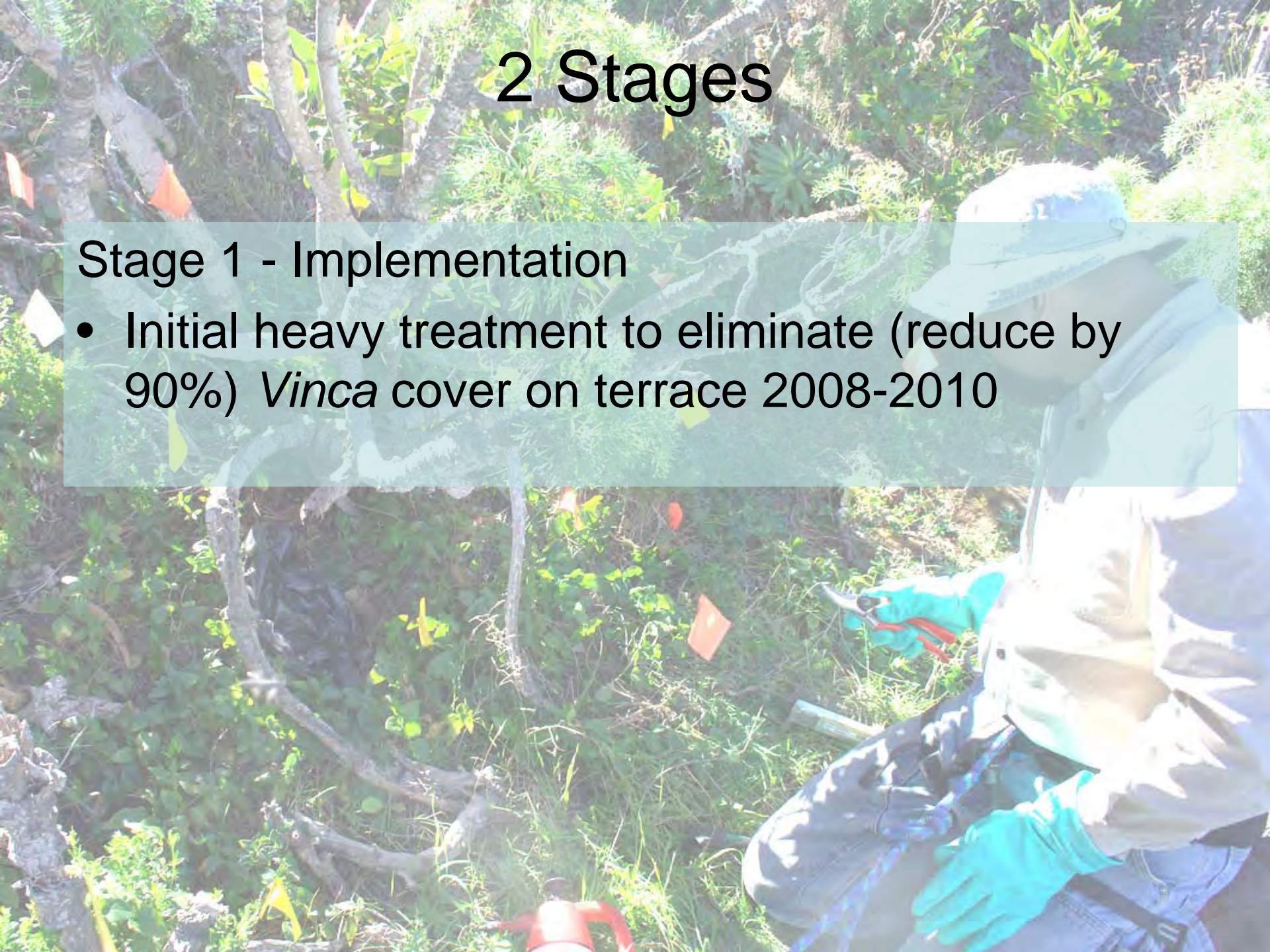
- Treatment success
- Effects on native community and *Galium*

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2 Stages

Stage 1 - Implementation

- Initial heavy treatment to eliminate (reduce by 90%) *Vinca* cover on terrace 2008-2010



2 Stages

Stage 2 – Maintenance

- Long-term maintenance to allow native expansion beyond 2010



Monitor effectiveness

- Galium demography
- *Vinca* cover
- Plant community composition



Risks:

- Incomplete *Vinca* kill and wasted effort
- Unintended *Galium* mortality
- Habitat damage
- Human safety

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
Stage 1 - Implementation

- Development phase (dates/techniques)
- Collect data on size-class structure
Galium, Vinca cover, native plant community
- Collect and bank seed as insurance against loss
- USFWS funding/permitting
- Develop rappelling techniques for safety


Techniques

 Anchor Point

 Rebar stakes

 Belayer location

 Safety lines

 Work area









Hand-removal Vs. Herbicide Treatment



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Both ends of the flag inserted in ground



Galium plant separated from Vinca











Treated *Vinca*

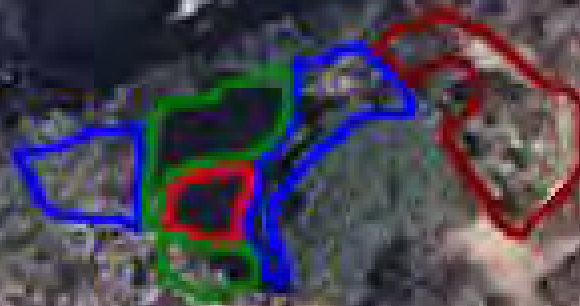


Galium



Initial Treatment

- 2/1/09 - 2/2/09
- 5/13/09
- 5/20/09 - 5/21/09
- 5/27/09



Results!

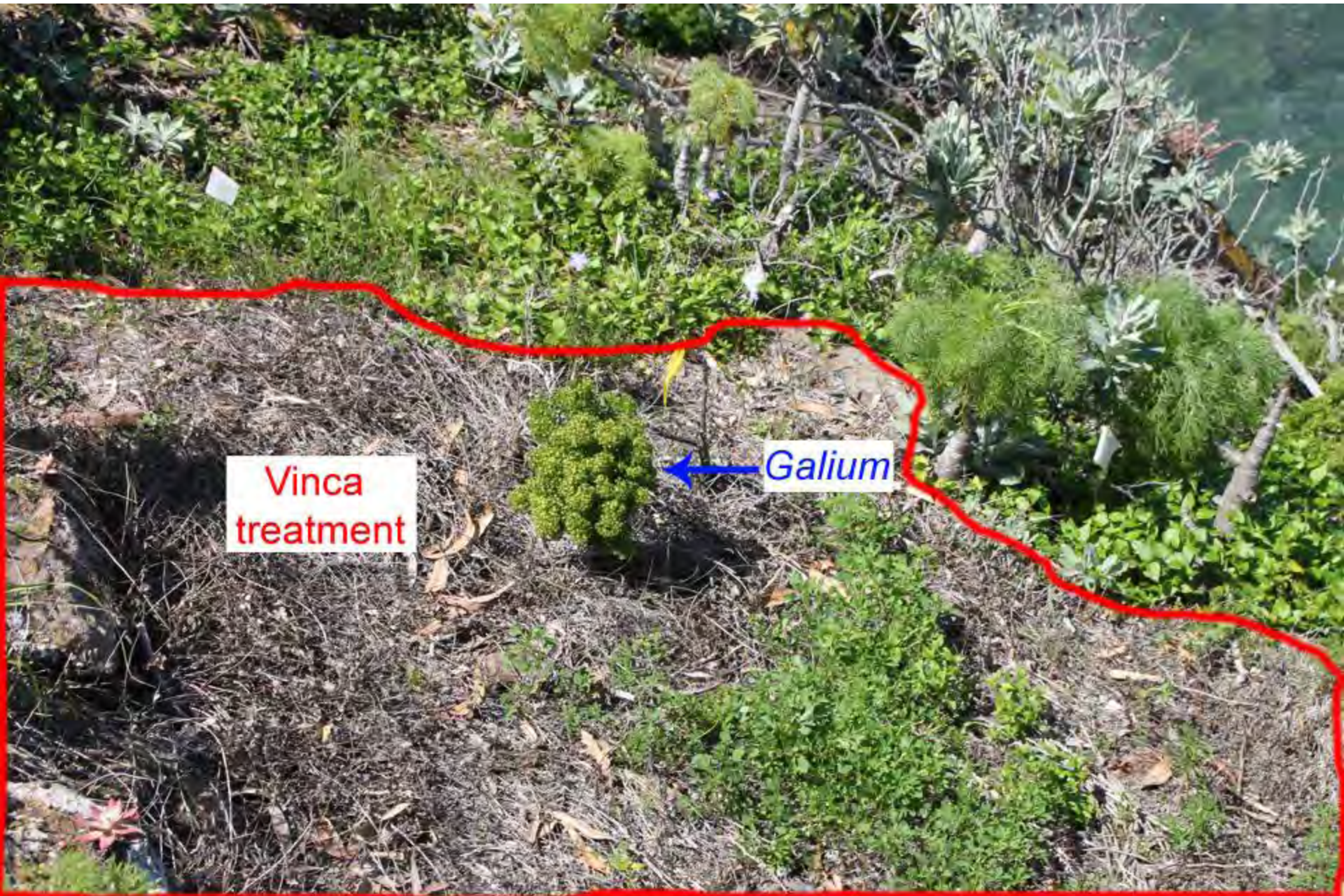


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Vinca
treatment

Galium



























Galium

Vinca



Galium

Monitoring Results

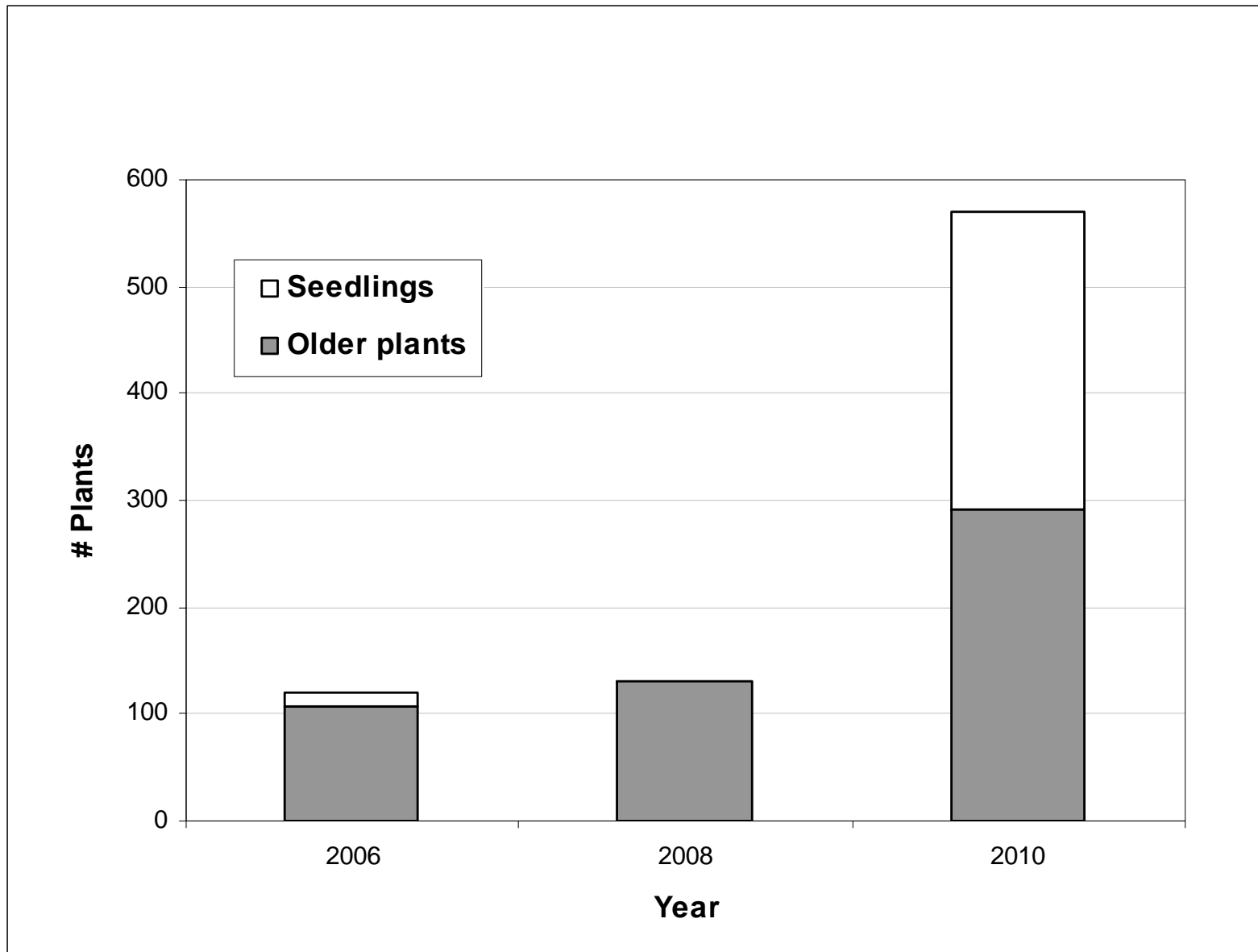
- Data prior vs data post
- *Galium* occupied area
- Number of *Galium*
- *Galium* stage structure
- *Vinca* kill rate
- *Vinca* cover
- Plant community composition (relevés)

2005 5 26

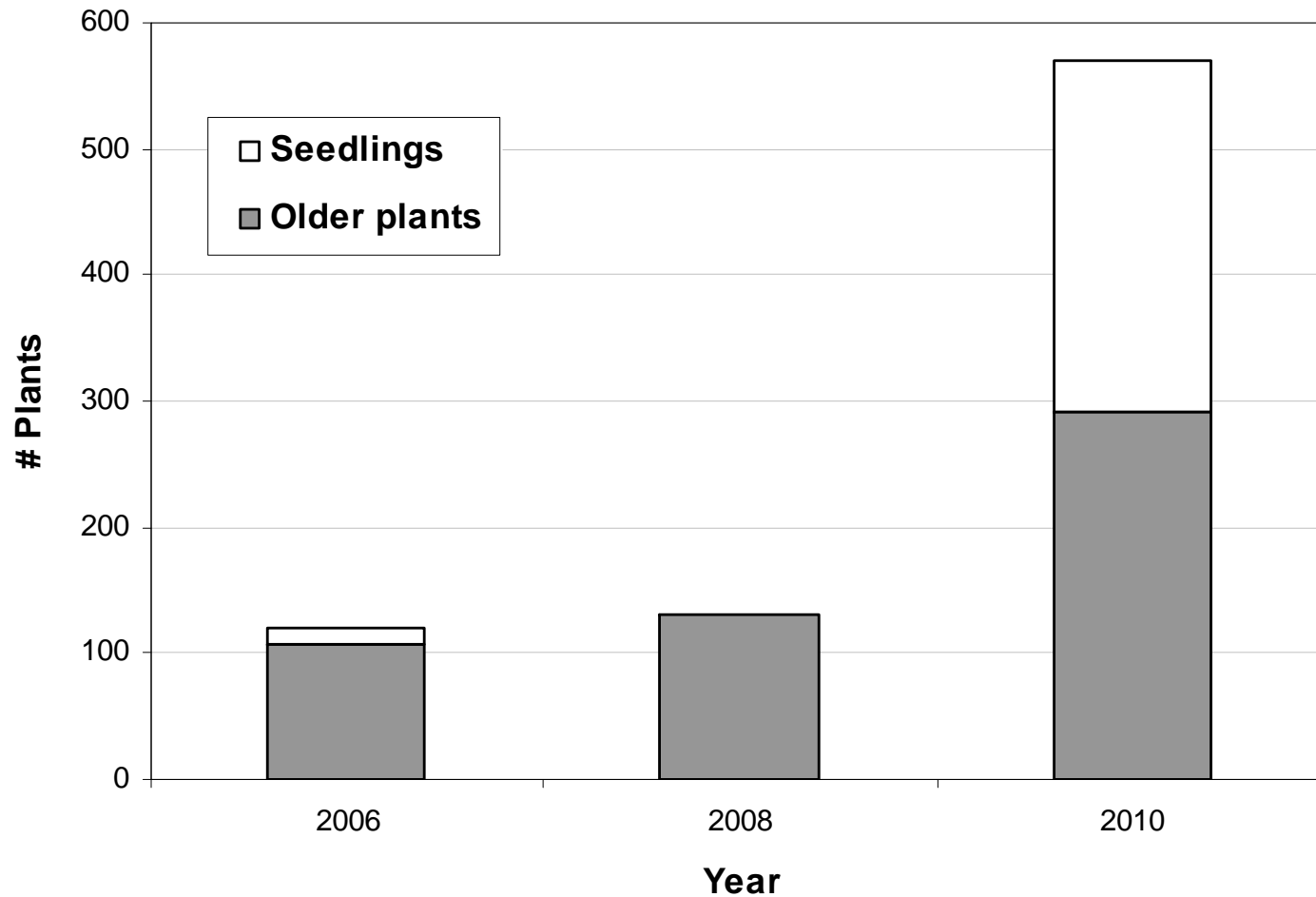


Conclusions thus far

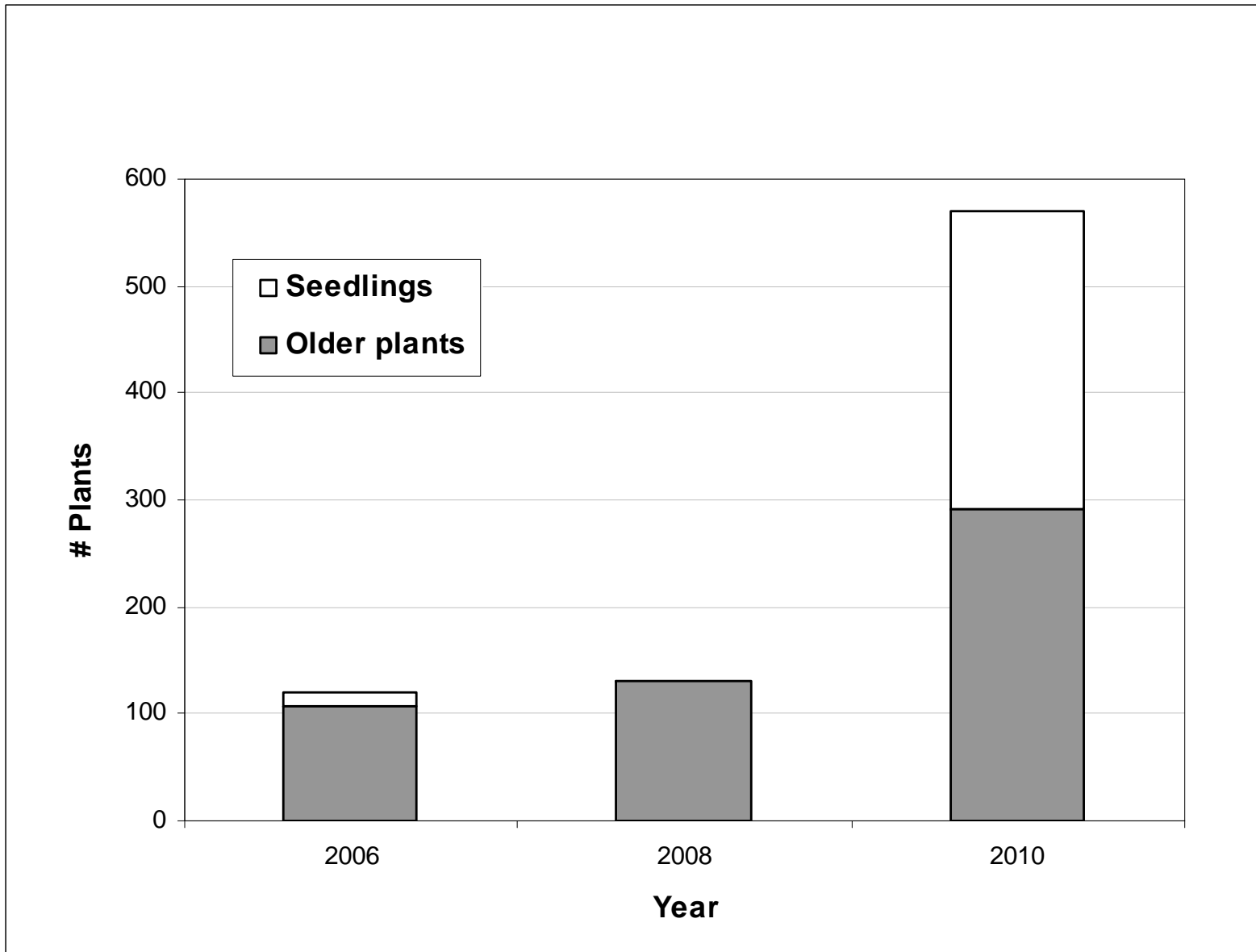
- Successful initial stage
- *Vinca* kill 95% (techniques work)
- Minimal habitat damage
- *Galium* kill minimal (no net loss)
- *Galium* recruitment evident



In 2010 there was a huge increase to 292 established plants; about 75% of those appeared to have germinated in 2009 across both treated and non-treated areas.



12 new seedlings in 2006, to 277 seedlings in 2010.

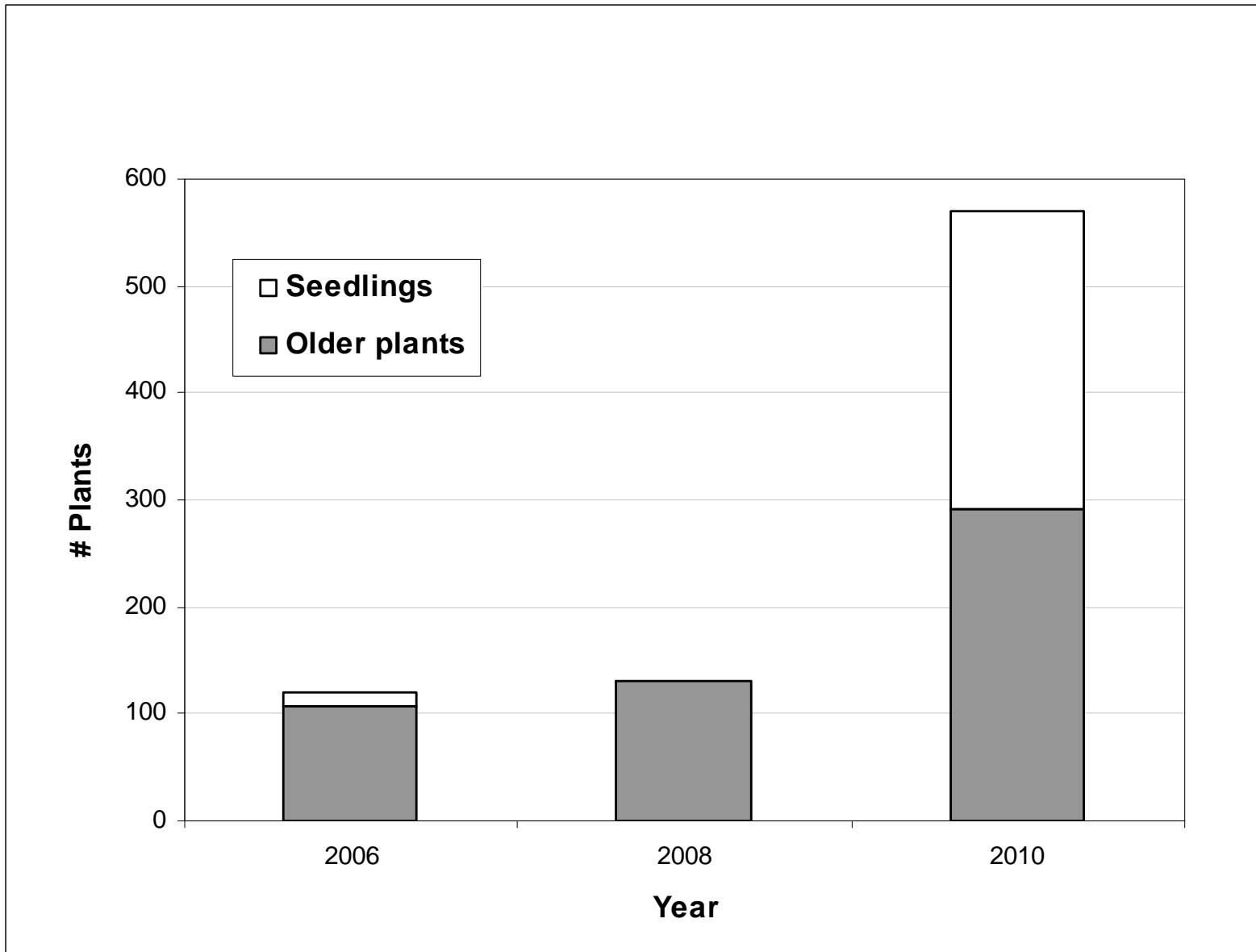


Established *Galium* plants and seedlings:

2006: 119

2008: 131

2010: 506



Is this to do solely the project?





Challenges

- Work setting – access and safety
- Accessing Vinca plants
- Weather and herbicide application window
- Protecting Galium from herbicide
- Limiting habitat damage
- Vinca is tenacious!

Stage 2 - Maintenance

- Continue effects monitoring
- Vinca control – cliff face distribution
- Look for natural expansion over several years
- Assist expansion if necessary in future project

