Vinca major control in an endangered plant population on Santa Cruz Island, California
| **Presenter** - Ken Owen  
**Channel Islands Restoration**  
**Project Collaborators:**  
Kathryn McEachern, Katie Chess  
- U.S. Geological Survey  
Ken Niessen – La Luna Biological Consulting  
David Chang – County of Santa Barbara Agricultural Commissioner’s Office  
Karen Flagg – Growing Solutions  
Ken Owen, Kevin Thompson  
- Channel Islands Restoration  
Lyndal Laughrin – Santa Cruz Island Reserve  
Mary Root – U.S. Fish and Wildlife Service |
Sea-cliff bedstraw

Galium buxifolium

Rubiaceae (Madder Family)

Dieter Wilken photos
Distribution

- Pt. Conception
- Santa Barbara
- Ventura
- San Miguel
- Santa Cruz
- Santa Rosa
- Anacapa
- Los Angeles Metropolitan Area
- San Nicholas Island
- Santa Catalina
- San Clemente
- San Diego Metropolitan Area

Pacific Ocean
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

26 total confirmed populations
Anacapa
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
Pelican Bay
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

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

Treat Vinca

Maintenance

Monitor:

• Treatment success
• Effects on native community and Galium
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
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
Both ends of the flag inserted in ground

Galium plant separated from Vinca
Initial Treatment

- 2/1/09 - 2/2/09
- 5/13/09
- 5/20/09 - 5/21/09
- 5/27/09
Results!
Monitoring Results

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