Road(sides) to Recovery:

Controlling weed spread by removing invasive plants along Dispersal corridors

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Introduction

• Catalina Habitat Improvement and Restoration Program (CHIRP)
  – Responsible for mapping, prioritizing, removal, and monitoring of nonnative plant species on Catalina Island since 2002
    • Island-wide map created, species prioritized
    • Top priority weeds treated- 34 scheduled for eradication
    • Eradication program success made expansion possible
    • Began roadside weed removal project in 2009
Roadside Project Background

• **Scope**: all roads/trails on CIC property- 10,155 acres
  – Roads- 223 miles with 200 ft buffer
  – Trails- 37 miles with 20 ft buffer

• **The crew**: staff, volunteer, and contract labor
  – American Conservation Experience (ACE)
    – 6 person crew January-June (33,838 hours since 2009)
  – AmeriCorps NCCC
    – 11 person crew 1-2 days/week November- June
  – Alternative Spring Break, Sierra Club, etc.
  – Overseen by CIC supervisors
Roadside Project Background

- **Why roadsides?**
  - Weed seed dispersal vector
  - Each grading can move seed 55-275 yards
  - Vehicles, hikers, and animals transport seed in mud
  - Good access
  - High percentage of satellite populations
  - First step towards eradication
    - ✓ Stop weeds from spreading (**containment**)
    - ✓ Create isolated populations (**reduction**)
  - Eliminate populations watershed by watershed (**eradication**)
Increasing elevation

Wildland Dispersal

Parent

Roadside Dispersal

Parent

Increasing elevation
<table>
<thead>
<tr>
<th>Target Species</th>
<th>Treatment: Manual</th>
<th>Treatment: Chemical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fennel (<em>Foeniculum vulgare</em>)</td>
<td>Shovel/pulaski</td>
<td>Foliar Garlon 4/Glyphosate</td>
</tr>
<tr>
<td>Harding grass (<em>Phalaris aquatica</em>)</td>
<td>N/A</td>
<td>Foliar Fusilade/Glyphosate</td>
</tr>
<tr>
<td>Tree tobacco (<em>Nicotiana glauca</em>)</td>
<td>Shovel/weed wrench</td>
<td>Cut stump Glyphosate</td>
</tr>
<tr>
<td>Russian thistle (<em>Salsola tragus</em>)</td>
<td>N/A</td>
<td>Foliar Glyphosate</td>
</tr>
<tr>
<td>Rice grass (<em>Piptatherum miliaceum</em>)</td>
<td></td>
<td>Foliar Fusilade/Glyphosate</td>
</tr>
<tr>
<td>Flax leafed broom (<em>Genista linifolia</em>)</td>
<td></td>
<td>Cut stump Glyphosate</td>
</tr>
<tr>
<td>Italian thistle (<em>Carduus pynocephalus</em>)</td>
<td></td>
<td>Foliar Glyphosate/Milestone</td>
</tr>
<tr>
<td>Veldt grass (<em>Ehrharta calycina</em>)</td>
<td>Hand pull</td>
<td>Foliar Glyphosate/Fusilade</td>
</tr>
<tr>
<td>Sweet Pea (<em>Lathyrus spp.</em>)</td>
<td>Hand pull</td>
<td>N/A</td>
</tr>
<tr>
<td>Statice (<em>Limonium sinuatum</em>)</td>
<td>Hand pull</td>
<td>N/A</td>
</tr>
<tr>
<td>Geranium (<em>Pelargonium x hortorum</em>)</td>
<td>Hand pull</td>
<td>Foliar Glyphosate</td>
</tr>
<tr>
<td>Milk thistle (<em>Silybum marianum</em>)</td>
<td>Hand pull</td>
<td>Drill &amp; squirt Glyphosate</td>
</tr>
<tr>
<td>Horehound (<em>Marrubium vulgare</em>)</td>
<td>Hand pull/shovel</td>
<td>Foliar Garlon 4/Glyphosate</td>
</tr>
<tr>
<td>Mock orange (<em>Pittosporum undulatum</em>)</td>
<td>Grub and bag</td>
<td>N/A</td>
</tr>
<tr>
<td>Bridal creeper (<em>Asparagus asparagoides</em>)</td>
<td>Grub and bag</td>
<td>Foliar Glyphosate</td>
</tr>
<tr>
<td>English ivy (<em>Hedera helix</em>)</td>
<td>Grub and bag</td>
<td>Foliar Garlon 4</td>
</tr>
<tr>
<td>Orchard grass (<em>Dactylis glomerata</em>)</td>
<td>Grub and bag</td>
<td></td>
</tr>
<tr>
<td>Periwinkle (<em>Vinca major</em>)</td>
<td>Grub and bag</td>
<td></td>
</tr>
</tbody>
</table>

Species Addressed
Field Tools/Techniques

Chemical:
- Truck mounted spray rigs
- Backpack sprayers

Mechanical:
- Hand digging
- Mowing
Methods

• Map
  – Presence/absence prior to project start
  – Refined into general cover class as project progresses
    • Light- weeds inside buffer but not outside
    • Medium- weeds inside buffer and scattered outside
    • Heavy- large populations inside and outside buffer

• Plan
  – Project area protocol dependent on cover class

• Treat
  – Mechanical & Chemical methods
    • Manual removal and mowing as site prep
    • Spray rig and backpack application of Glyphosate Pro IV, Rodeo, Garlon 4, Fusilade II, and Milestone

\[
\begin{align*}
223 \text{ miles of road} & \quad 85 \text{ spray days per year} \\
3 \text{ spray rigs} & \quad = .88 \text{ miles/rig/day}
\end{align*}
\]
Survey with herbicide backpacks

Area with dense invasives → Treat with spray rigs only

Area with only thistle species

Area with grass and broadleaf weeds

Riparian Y

Riparian N

Milestone .12% conc.

Rodeo 2% conc.

Garlon 4 .5% conc.

Glyphosate Pro 4 2% conc.

Fusilade II .6% conc.

Area with light to no invasives → Survey with herbicide backpacks

Area with moderate density of invasives → Backpack sprayers supported by rigs

Riparian Y

Riparian N

Riparian Y

Riparian N

Riparian Y

Riparian N

Riparian Y

Riparian N

Riparian N
Bulrush Canyon in Detail

1 day with Spray Rig

Spray Rig continues down road

Backpacks in drainage supported by Spray Rig

1 day with Spray Rig

Backpack Survey

0 30 60 120 Yards
The Future

Take on large populations in upper areas of watersheds (reduction)

Pilot fennel eradication on channel side drainage

Eradication goal with enough long-term support
Challenges and Lessons

- Monthly crew turnover
- Road and weather conditions
- Remote treatment locations
- Seasonal phenology

- Communication with satellite crews is vital
- Thorough mapping required
- Partnerships HUGELY important
- Site prep with mowing *vitally* important for efficacy and worker safety in dense areas
- QA/QC must be done
- Thorough training a MUST
Thank You

• Roadside film crew
(vimeo.com/13427885)