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### Why Walk When You Can Fly: Systematic Aerial Weed Survey of Santa Cruz Island, California

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Objective 1- Survey the entire island

Objective 2- Map incipient populations / individual plants

Objective 3- Map 55 species

Objective 4- Survey duration <6 months</p>

# Aerial and Ground Mapping Tracks



"its [helicopter] just another tool, like a truck..." Kelly Walker

Туре

Ground

Helicopter



### **Data Collection**

Trimble Geo XT GPS

Point data collected
Mapper and date

- Species
- Area
- Cover
- Age class
- Primary habitat invaded
- Secondary habitat invaded
- Number of plants
- Relation to populations
- General comments



### Aerial Survey



Santa Cruz Island live-forever (Dudleya nesiotica)

Census (not a sample)
Detect multiple species
Detect species of all sizes
Accurate
Fast
Weed dispersal free
No impact to habitat

## Perspective

30 feet



### Salt cedar- 10 feet tall

### Pampas grass- 4 feet tall



### **Mullein-3 inches tall**

### **Population Locations**



- SCI\_Invasive\_Plants\_Points
  - SCI\_Invasive\_Plants\_Lines
    - Fennel Density
    - Min im al 2.5%
    - Moderate 5 10%
    - Severe > 10%

### **Herbaceous Species**

Diskle Peak



a Peak 1775

Nts 22167

#### Spp\_Common

- Agerian ivy
- Freu eed
- Geranium
- Iberycess
- Hotte ntot fig.
- Mission cattus
- Perivinkle
- Poison herrio de
- Red valerian
- Sea fig.
- Sea rocket.
- Sherhorte nette
- Slender leaf iceptan
- Tumbleweed
- Drystaline ideplant
- Himalayan blackberry
- New Zealand spinach
- Fennel

#### Lines\_Herbs

#### Spp\_Common

- Fennel
- Fireu eed
- Mulien
- Eco redicet
- Tumbleweed



### **Thistle Species**



#### Thistles

#### Species

- Bull thistle
- Italian thistle
- Milkthistle
- Star thistle

### **Grass Species**



Rice grass

畿



### **Shrub Species**



#### Shrubs

- Spp\_Common
- 🔺 🐘 French broom
- 🔺 Spanish broom
- St Catherines lace
- 🔺 🛛 Tamorix
- Tree tobacco





# Mapping Stats

- 96 square miles surveyed
- **5** mappers
- 55 species mapped
- 5,944 populations recorded
- 41 days
- 2,081 miles flown
- 579 miles walked
- ~20 seconds to map each population
- 1 new invasive plant species recorded for the Island



# Take Home Message

- Helicopter aerial survey is ideal for mapping multiple species over large landscapes
- Quick
- Accurate
- See more
- No weed dispersal
- No impact to vegetation
- Collect multiple attributes



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□ Mappers:

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