### Invasive Plant Management: Prioritization, Inventory, and Monitoring



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# Learning Objectives

## Prioritization

- Why its important
- Factors to consider when prioritizing species and areas
- Tools and resources

## Inventory and monitoring

- Why its important
- Factors to consider when choosing a mapping method
- Common mapping methods

## Strategic and Adaptive Invasive Plant Management



# When you have **many** potential invasive threats and limited resources .....Prioritize!

"As resources for managing invasive plants are limited, the need to evaluate and rank non-native species (and areas) is a primary concern before expensive management is attempted, so that the most threatening species may be addressed first"

Source: Invasiveness Ranking System for Non-Native Plants of Alaska



# **Species Ranking Criteria**

Invasiveness/General Ecological Impacts

Existing larger landscape risk assessment

Site-specific Invasive Species Status and Habitat Suitability

- Species Proximity
- Current/Potential Abundance
- Habitat Suitability/Likelihood of further spread

**Ecological Impacts** 

Site-specific current or potential impacts to natural resources

Larger Landscape Importance

Noxious or other regulatory or larger landscape designation

# Area Ranking Criteria

Define areas: management units, watersheds, Landcover/veg types, ecosystems



- Importance to conservation targets
- Ecological integrity
- Innate resistance
- Pathways and vectors
- Level of disturbance
- Perceived infestation level

## **Resources and Tools**

#### **Cal-IPC Inventory**

Categorizes >200 non-native invasive plants that threaten the state's wildlands. Categorization is based on an assessment of the ecological impacts of each plant

www.cal-ipc.org/plants/inventory/

#### CalWeedMapper

Create maps and reports of invasive plant distribution

 Identify management opportunities in a county, WMA or region; maintains up-to-date species distribution data statewide

calweedmapper.cal-ipc.org/

Invasive Plant Inventory and Early Detection Tool (IPIEDT)

- Objective and transparent decision tool.. which non-native plant species should be a focus of management and where
- Integrates existing invasive species risk assessments, sitespecific characteristics, and local knowledge
- Can be used at a variety of locations and scales
- Microsoft Access database and associated guide

https://catalog.data.gov/dataset/an-invasive-plant-inventoryand-early-detection-prioritization-tool



## WHIPPET, WHIPPET Good!

Spatial tool for prioritizing weed infestations for eradication based on potential impact, potential spread, and feasibility of control

Web App is California-only and Cal-IPC-listed species
 Desktop version requires spatially-referenced data on invasive plant populations

Web App & Desktop version: whippet.cal-ipc.org User Guide: whippet.cal-ipc.org/pages/view/guide

## Inventory and Monitoring of Invasive Plants

## Why is it important?

• How much? Where?

What areas are 'clean'?

Where are invasion edges?



Invasion 'hot spots' Why?
Where should I focus my limited management resources?

- How much will management cost?
- What does success look like? (objectives)



#### **Environmental relationships**

What is triggering establishment or spread?



#### **Modeling Future Spread**

Where should early detection or surveillance efforts be focused?

# Invasive Plant Inventory and Early Detection Methods

## Minimum Mapping Attributes

- WHAT: Plant name (scientific)
- WHEN: Collection date
- WHERE: spatial coordinates
- WHO: Collector/observer
- Size/Amount\*
  - Patch size
  - Abundance: count, % cover, cover class

\*optional

## **Data Collection Method?**

#### Factors to consider:

Survey Objectives Size of Area Species detectability, abundance, phenology Accessibility Resolution Sensitive resources Expertise Available resources

# Mapping: points, lines & polygons

- Map individual plants or patches
- Field or aerial
- Good for early detection, low-mod infestation levels
- Pros: high resolution
- Cons: time/cost intensive, not appropriate for widespread and abundant species



# Mapping: grid cells

- Field or aerial
- Good for mid-high infestation levels, large scales
- Cost: varies
- Pros: rapid assessment approach
- Cons: not appropriate for early detection





## Cell phone mapping

### Calflora observer smart phone application

www.calflora.org/entry/applications2.html#smartphone



Species name, date, and location of over 10,000 California native and non-native plant taxa. You can also add a photograph to a report, and share it with others later to confirm identification.

## **Remote Methods**

Cameras/sensors deployed on aerial vehicles

#### **Pros:**

- Survey large areas
- Survey difficult to access areas



#### **Cons:**

- Inability to detect vegetation growing beneath tree canopies
- Data processing expertise
- Limited ability to detect small plants, small patches or rare species (although this may change)



#### Share your Data!

