Invasive Plant Management:
Prioritization, Inventory, and Monitoring

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U. S. Fish and Wildlife Service
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Inventory and Monitoring Program
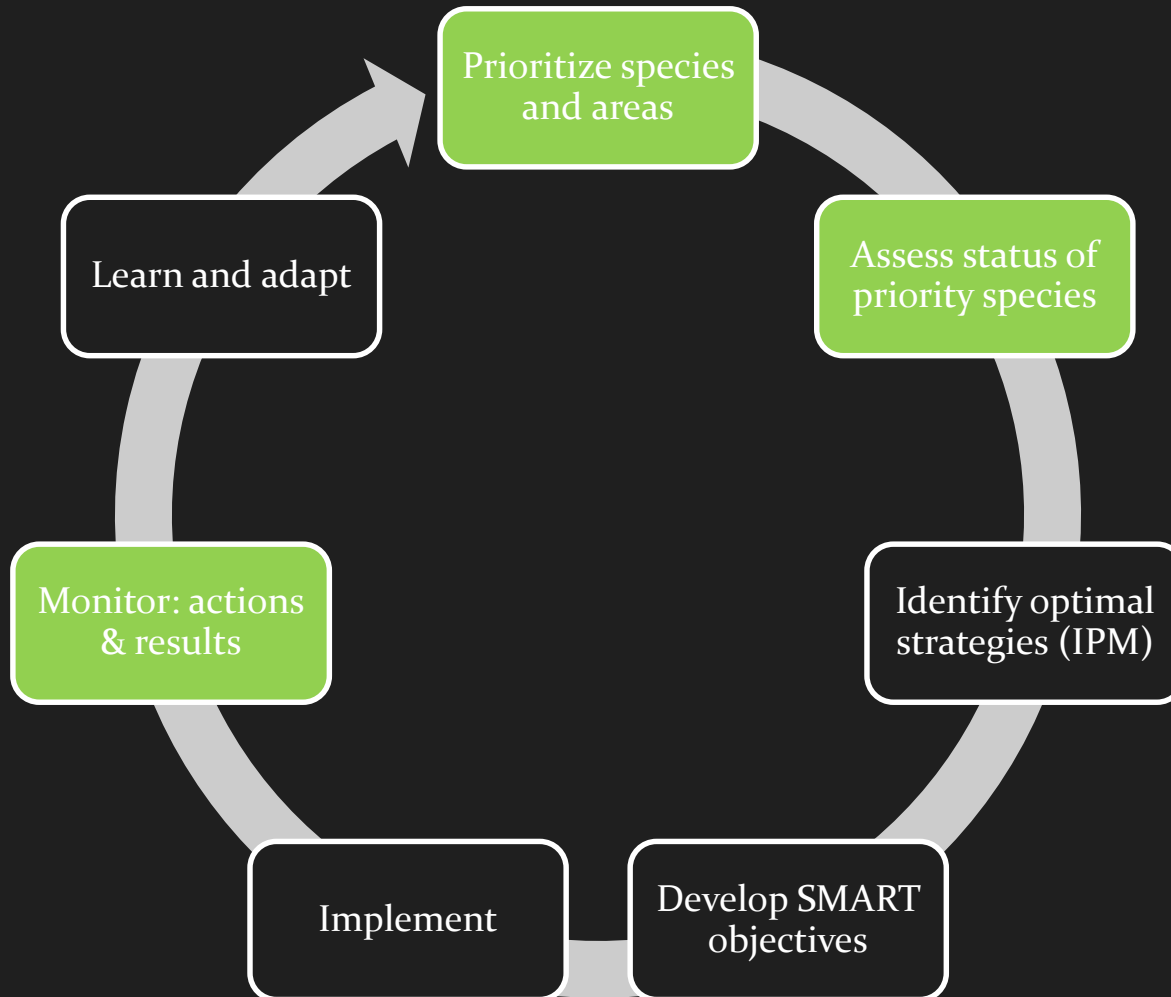Giselle_block@fws.gov

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

- http://www.cal-ipc.org/ip/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

- http://calweedmapper.cal-ipc.org/

Invasive Plant Inventory and Early Detection Tool (IPIEDT)

What is the 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, site-specific 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-inventory-and-early-detection-prioritization-tool

Inventory and Monitoring of Invasive Plants

Why is it important?
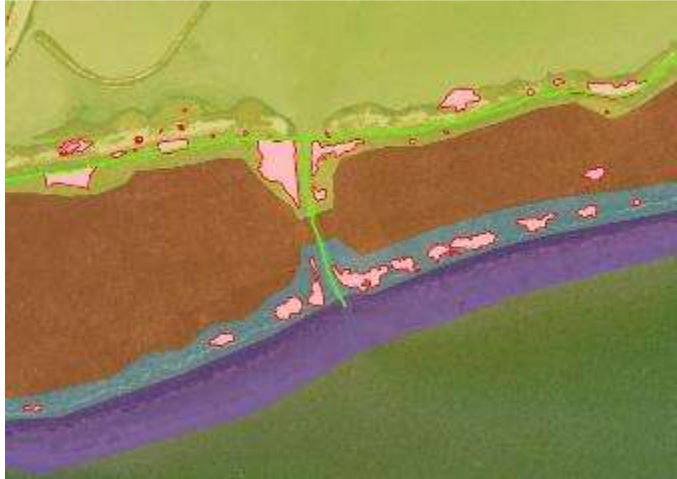
- How much? Where?

  What areas are 'clean'?

  Where are invasion edges?

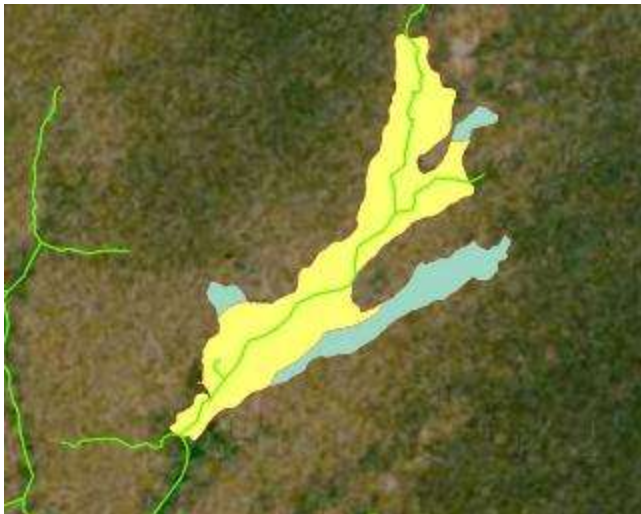 *Invasion 'hot spots' Why?*

- 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

Take Home Messages

Taylor methods to survey objectives and environment

No single method can serve all needs

Draft method>test> adjust

Go slow to go fast!

Document methods

Data collection: Who, what, when, where, how

Data management

Data analysis

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

Data Collection Method?

Factors to consider:

Survey Objectives

Size of Area

Species detectability, abundance, phenology

Accessibility

Resolution

Sensitive resources
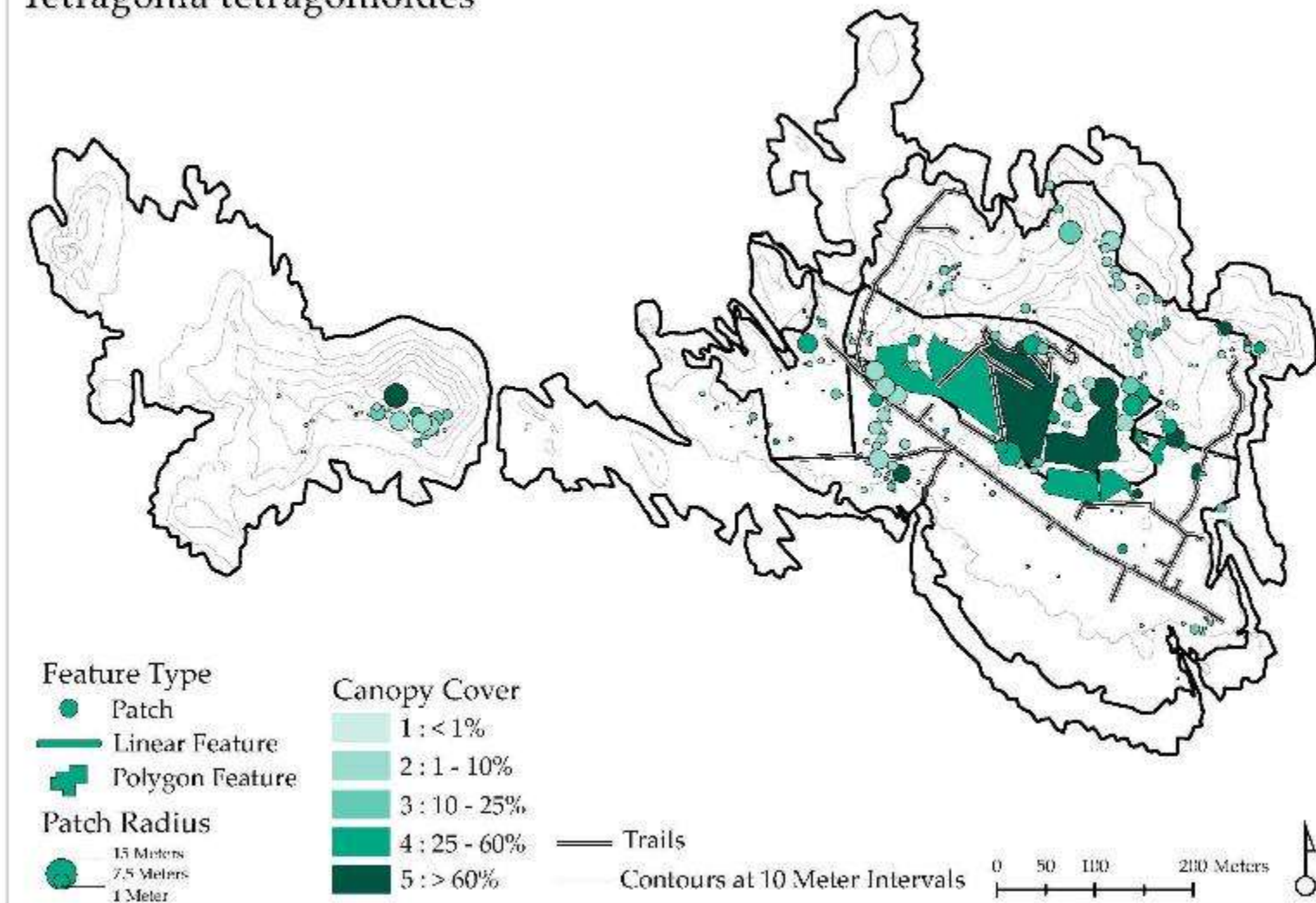
Expertise

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

Southeast Farallon Island Non-Native Plant Inventory
Tetragonia tetragonioides

Feature Type
- Patch
- Linear Feature
- Polygon Feature

Patch Radius
- 15 Meters
- 7.5 Meters
- 1 Meter

Canopy Cover
- 1 : < 1%
- 2 : 1 - 10%
- 3 : 10 - 25%
- 4 : 25 - 60%
- 5 : > 60%

Trails

Contours at 10 Meter Intervals

0   50   100   200 Meters

Mapping: grid cells

European Beachgrass (Ammophila arenaria)

- Field or aerial

- Good for mid-high infestation levels, large scales

- Cost: varies

- Pros: rapid assessment approach

- Cons: not appropriate for early detection
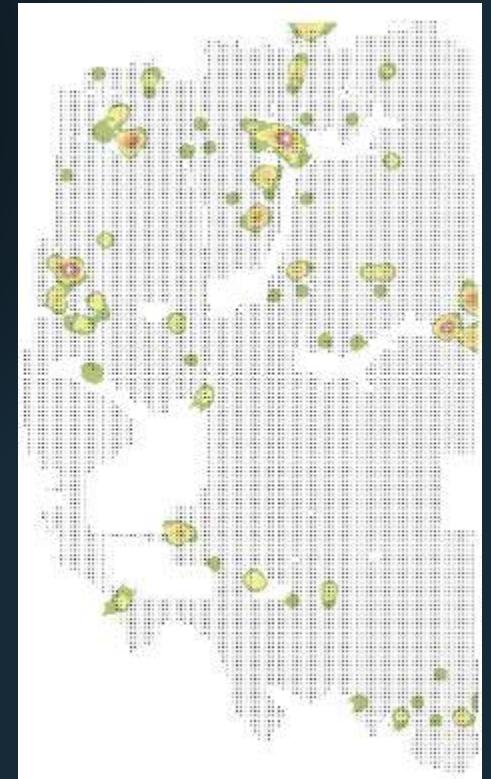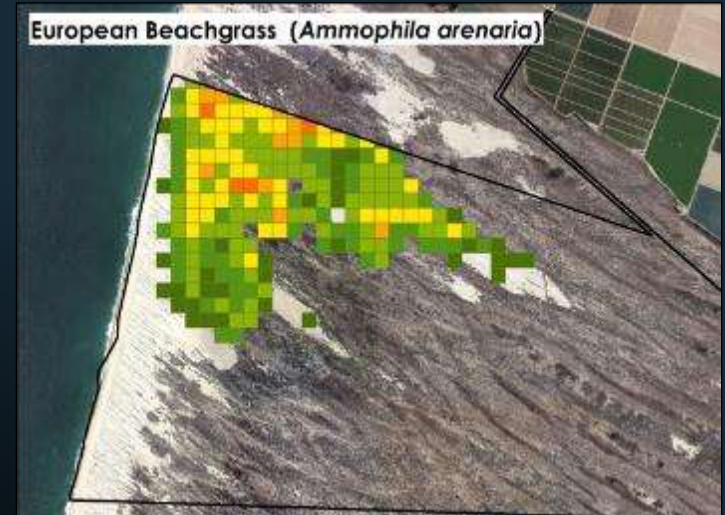
Cell phone mapping

Calflora observer smart phone application

http://www.calflora.org/entry/applications2.html#smart phone

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 or fixed objects

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!

http://www.calflora.org/add/pofaq.html

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

► Requires spatially-referenced data on invasive plant populations

http://whippet.cal-ipc.org/pages/view/guide