Principles of Invasive Plant Management

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“What is a weed?... 

...A plant whose virtues have not yet been discovered.”

- Ralph Waldo Emerson
(1803-1882)
What is an Invasive Plant?

- Non-native (can be regional)
- Impairs the ability of native California ecosystems to function
  - Threatens native plants and wildlife, including endangered species
  - May cause economic losses
- “Unfair advantage” makes it spread easily and difficult to control
  - Natural predators are absent
How Many Invasive Plants are in California?

Source: Joe DiTomaso, UC Davis

- Invasive species (+/- 200) = 19%
- Native CA species (4,844) = 81%
- Naturalized non-native species (1,152) not invasive

Source: Joe DiTomaso, UC Davis
The Cal-IPC Inventory

The California Invasive Plant Inventory categorizes plants that threaten the state's natural areas. The list includes plants that currently cause damage in California (invasive plants) as well as "Watch" plants that are a high risk of becoming invasive in California in the future (designated with an asterisk (*) after their scientific name). For more information, click on Inventory Details below.

- Approximately 225 plants
- Categorized as
  - High
  - Moderate
  - Limited
  - Alert
- Watch List approximately 85 plants

Click the latin name to see the full Plant Assessment Form or Risk Assessment for any plant. For the plant profile and links to more information about that plant, click the icon in the right column. To sort the list, click on a column heading. To customize which plants are shown, use the Region and/or Habitat filters below.

See a map of Jepson regions here.
How Did They Get Here?

Source: DiTomaso, UC Davis

- Ornamental trade
- Seed contaminant
- Aquarium dump
- Forage, feed, erosion control
- Unknown
**THE INVASION CURVE**

- **PREVENTION**
  - Species absent
  - Small number of localized populations; eradication possible

- **ERADICATION**
  - Rapid increase in distribution and abundance; eradication unlikely

- **CONTAINMENT**
  - Public awareness typically begins

- **RESOURCE PROTECTION & LONG-TERM MANAGEMENT**
  - Invasive species widespread and abundant; long-term management aimed at population suppression and resource protection

**TIME →**

**CONTROL COSTS →**

**AREA INFESTED →**
How Fast Do They Spread?

Partial info from Maddox and Mayfield 1985
Know Your Enemy

» Annuals
» Biennials
» Perennials
» Woody plants

By learning more about weed biology you will be better equipped to plan and implement effective weed control projects.
Know the Distribution of Your Species

• Inventory and map the infestation
• Early detection only happens if you survey
  ▪ the sooner you control them the more time and money you save!
• Consult Weed Mapper
  ▪ calweedmapper.cal-ipc.org
• Consult WHIPPET
  ▪ whippet.cal-ipc.org
What can we do about it?

Conceptual Model of Strategic and Adaptive Invasive Plant Management

- Review conservation targets and goals
- Compile list of non-native plants (established and potential)
- Review species characteristics: ecology, feasibility of control, socio-political concerns
- Identify priority species: which non-native plants should be a focus of our limited resources?
- Identify priority areas: where should invasive plant management efforts be focused?
- Assess the distribution and abundance of priority invasive plants in priority areas OR model future potential distribution
- Identify and document optimal strategies for priority species and areas. Identify thresholds for management action
- Develop SMART objectives: what are the expected results of our strategies? (Specific, Measurable, Achievable, Results-oriented, Time-bound)
- Implement strategies
- Track strategy implementation: what actions were taken, where, and when
- Monitor: are we achieving our objectives?
How do you get funding???

Where?
- Funding Sources

How?
- Grant Applications

The Pitch?
- Funder Values

No money?
- Use Volunteers
Policy and Agency Context

- **Federal**
  - **United States Department of Agriculture, Natural Resources Conservation Service**
    - Federal Noxious Weed List
      - 112 species

- **State**
  - **California Department of Food and Agriculture**
    - Section 4500, California Noxious Weed List
    - CDFA Pest Plant Rating List, AKA Encycloweedia
      - Approximately 250 species

- **Local**
  - **Weed Management Areas**
Do I really need a permit?

CEQA

CESA

HELP!

NPDES

NEPA

ESA

401

404

1600
Communicate what you’re doing!

- Consider your audience
- Craft your message
- Controversy
- Share your learning moments
- Share all the expert knowledge you have gained!
What tools are available?

- **Manual/Mechanical**
  - Hand pulling, hoeing
  - Tillage, mowing

- **Cultural**
  - Grazing
  - Prescribed burning

- **Biological**
  - St. Johnswort beetle

- **Chemical**
  - Herbicide

- **Integrated approaches**
  - Combined methods
  - Revegetation
Look for Advice

- Take More Field Courses
- Consult the Web
  - www.cal-ipc.org
  - wric.ucdavis.edu
  - www.invasive.org
  - More resources listed on Cal-IPC Website
- Ask an expert
  - Weed Management Areas
  - UC Cooperative Extension
  - Field course instructors
- Experiment!
California Invasive Plant Council
Protects California’s environment and economy from invasive plants

www.cal-ipc.org
Thank you!

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