Planning For Invasion

Laying the Foundation for a Comprehensive Invasive Plant Plan.

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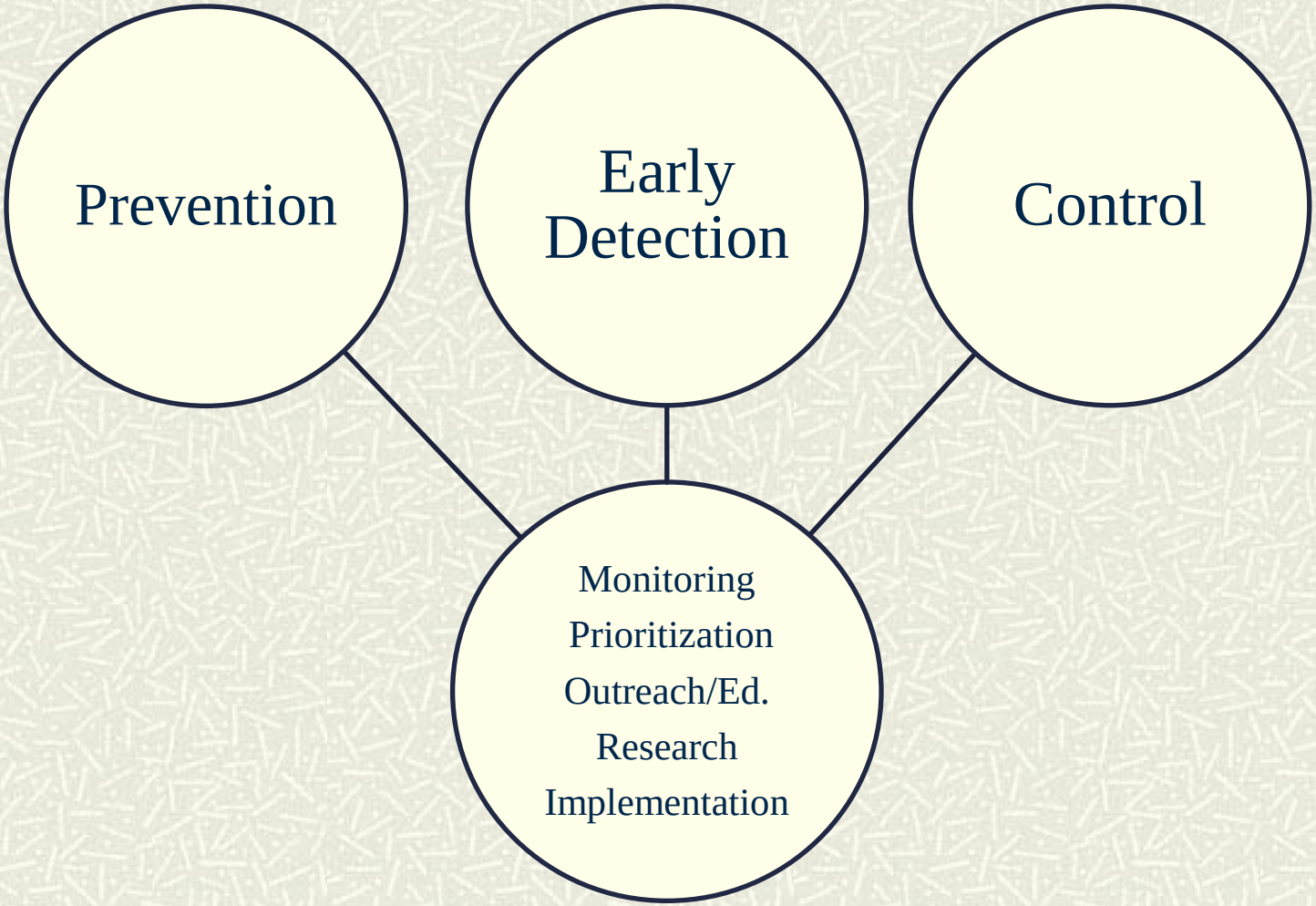
Pinnacles National Park

Invasive Plan Components

Early Detection	Prevention	Control
Monitoring	Prioritization	Research
	Outreach and Education	

Invasive Plan Components



Invas ts

Pr

Control

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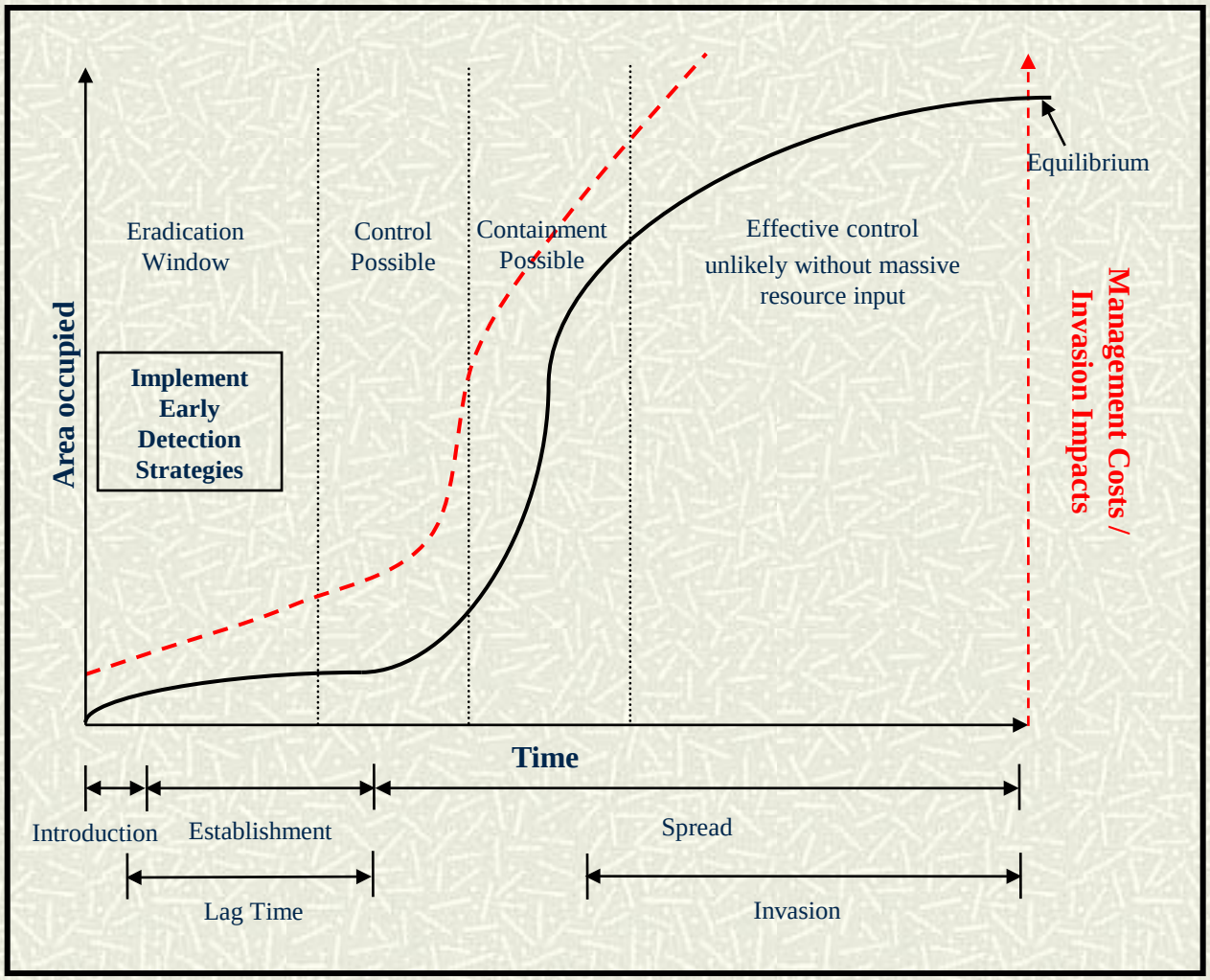
Control

Control

Tend to jump straight into control measures when planning.

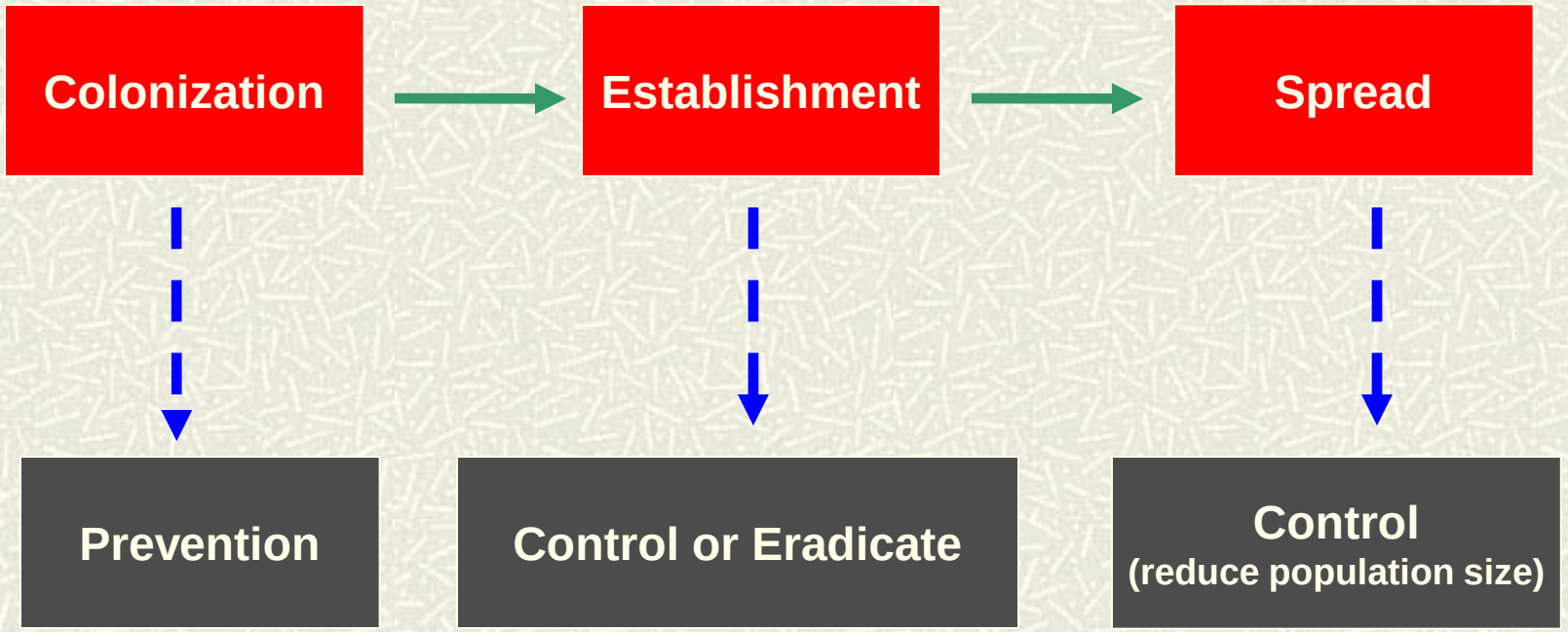
- Sense of urgency
- No $$$ or time for planning
- We already know what needs to be done

Stages of Invasion



(after Chippendale 1991, Naylor 2000, and McNeely 2001)

Stages of Invasion



Where to Start?

Many things you can do before you initiate a formal planning process.

- Assessments
- Prioritization
- Management objectives
- Implementation Strategies

Status of Invasives

- Map populations
- Develop a map of site sections
  - can be watershed, use, political, topographic, vegetation based
- Use existing data
- Conduct directed surveys
- Identify information gaps
- Talk to staff / partners / researchers

Prioritization

- Prioritize what?
  - Vectors
  - Potential new invaders
  - Sites
  - Species/populations
- Ranking
- Helps with determining what **NOT** to do
- Tools out there to help with this

Goals and Objectives

- What/how much?
- Where?
- When?
- Example:

" 75% reduction in nastyweed abundance in all sites below 1500 meters by 2014; Complete eradication of all nastyweed populations above 1500 meters by 2011."

"Survey all road edges once every three years"

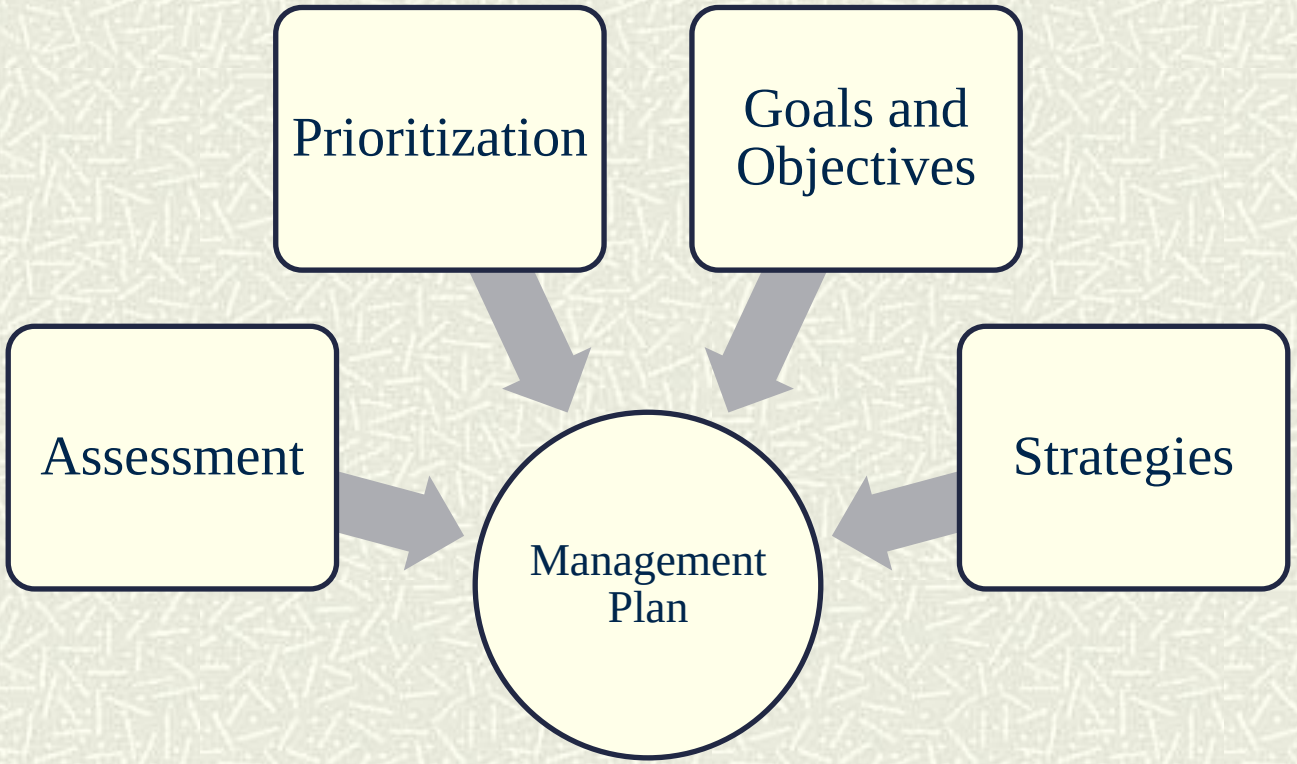
Goals and Objectives

- Mission
- Land management goals
  - Desired conditions and barriers to these conditions – aligned with mission.
  - Doesn't have to include HOW.
- Invasive plant management objectives
  - Measureable objectives that must be met in order to reach desired conditions

Management Strategies (HOW)

- Prevention/Containment
  - BMPs
- Early Detection and Eradication
  - Survey plan / response plan
- Control/ Large-Scale Population Reduction
  - herbicide
  - mechanical
  - Biological
- Limitations (waterways, listed species)

Management Plan



Management Plan

Species	Zone/Site	Infested Acres	Infestation Stage	Long-Term Objectives
Nastyweed (*Spinaria enmysockii)* 	Bear Campground	2	Control	Reduce to maintenance levels (<10 plants/acre)
	Wilderness Area	0	Prevention / Early Detection	Prevent new populations from becoming established in wilderness areas.
	Vernal Pool Meadow	0.2	Control (early stages)	Eradicate nastyweed from meadow.

Avoidance Measures

- Criteria based
- These will vary greatly from site to site.
- May require dialogue/consultation with public, USFWS, Tribes, NGOs etc.

Management Plan (criteria based)

Species	Zone	Acres	Control Tools	Long-Term Objectives
Nastyweed (*Spinaria enmysockii)* 	Upland Sites	2	Foliar application using goophosate 3% Hand tools OK Livestock OK (requires grazing plan)	Reduce to maintenance levels
	Archeological Sites	15 estimated (scattered)	Limited ground disturbance. Contact Archeologist if ground disturbance is need. Herbicide OK.	Prevent new populations from becoming established in wilderness areas.
	< 20m from waterways	0.2	Aquatic formulation Herbicide OK. Ground disturbance OK.	Eradicate nastyweed from meadow

Avoidance Measures

Proposed Activities	Red-legged frog (CRLF)		Tiger Salamander	
	Dry Season 4/16-10/15	Wet Season 10/16-4/15	Dry Season 4/16-10/15	Wet Season 10/16-4/15
• Broadcast herbicide application (Milestone) • Off-road heavy equipment mowing/scraping • Prescribed Fire • Solarization (plastic sheet - edges buried)	>30m from habitat	>100m from habitat	>670m from breeding habitat	>670m from breeding habitat
• Spot spraying	>30m from habitat	>100m from habitat	If <670m, then keep >0.5m from rodent burrow; if >670m, no avoidance measures	>670m from breeding habitat
• Hand-pulling non-native plants • Pig Fence Removal	No avoidance measures	No avoidance if 1-2 individuals on foot; if >2 individuals, keep >10m from habitat edge	No avoidance measures	No avoidance if 1-2 individuals on foot; if >2 individuals, keep >10m from habitat edge
• Brushcutting/weedwacking • Brush clearing • Grazing	>30m from habitat	>100m from habitat	No avoidance measures	>670m from breeding habitat
• Revegetation (planting/seeding native plants) • Installing fence posts (wood & metal t-posts)	No avoidance measures	>10m from edge of water	No avoidance measures	>150m from breeding habitat
• Solarization (plastic sheet - edges not buried)	>500m from habitat	>1000m from habitat	>670m from breeding habitat	>2100m from breeding site
• Mulching	Not directly within habitat	Not directly within habitat	Not directly within habitat	>150m from breeding habitat
• Flaming	No avoidance measures	No avoidance if 1-2 individuals on foot; if >2 individuals, keep >10m from habitat edge	No avoidance measures	If <670m, keep >0.5m from rodent burrow and keep >10m from breeding habitat

Incorporate Flexibility

- How will you address new species?
  - Programmatic -- Criteria based
- How to address new tools?
  - Example - Milestone (aminopyralid). Some agencies cannot use since it is not addressed in their environmental compliance.
- Criteria based approach
- Management Plan → Implementation Plan

Environmental Compliance / Permitting

- The tools required for control will be a major factor in determining the level of compliance & permitting required.
- You now have a lot of information to develop alternatives and some analysis of environmental consequences.

Benefits of Planning

- Assist with funding.
- Articulate your instincts
- Helps keep you on track with the less in-your-face goals (e.g. prevention / early detection).

Questions?