



YOSEMITE NATIONAL PARK

Parkwide Invasive Plant Management Plan and Environmental Assessment





WHAT ARE INVASIVE PLANTS?

- Not native to ecosystem (alien, exotic)
- Impact economy and / or environment
- Not all non-natives are invasive





ENVIRONMENTAL IMPACTS

- Crowd out native plants & animals
- Cause species extinctions
- Change fire frequency & intensity
- Hybridize with native species
- Increase erosion





INVASIVE PLANTS IN YOSEMITE

- 150 non-native species in park
 - 25-30 considered invasive
- Primarily in lower elevations
- Developed and disturbed areas
 - El Portal
 - Wawona
 - Foresta
 - Yosemite Valley
 - Hetch Hetchy





YELLOW STAR-THISTLE

- 15 million acres in California
- 20,000+ acres each year





HIMALAYAN BLACKBERRY

- Invades meadows and creeks
- Dense, spiny brambles





SPOTTED KNAPWEED

- Millions of acres in Montana, Idaho and Washington
- Log cabin kit in Foresta





ONGOING EFFORTS: YOSEMITE

- Reduction of yellow star-thistle and other invasive populations
 - volunteers and work crews
 - community involvement
- Early detection along road corridors
- Heavy equipment inspections



MANAGEMENT PLAN / EA

Components:

- Early detection and prevention
- Prioritization of efforts
- Determine appropriate techniques
- Education & collaboration
- Monitoring & research



EARLY DETECTION & CONTROL

- Low impact & cost effective
 - maintain ecosystems – not restoration
- Target high priority areas
 - roads
 - construction zones
 - developed areas
- Heavy equipment inspections



PRIORITIZATION

Establish Criteria

- Species threat
- Location in park
- Feasibility of control



CONTROL TECHNIQUES

Some examples are:

- Mechanical Removal
- Fire
- Chemical
- Biological Control



CONTROL: MECHANICAL

Hand pulling, tilling, mowing

- Benefits

- selective

- Disadvantages

- labor intensive
- disturbs ground





CONTROL: FIRE

Prescribed burning & flaming

- Benefits

- cover larger areas
- reduce biomass

- Disadvantages

- stimulate resprouting & germination
- air quality
- risk of spread



CONTROL: CHEMICAL

Herbicide Use

- Benefits
 - can be effective initial treatment
 - effective against trees and shrubs
- Disadvantages
 - can affect non-target species
 - cost (training, equipment, herbicide)
 - potential toxicity

CONTROL: BIOLOGICAL



Introduce an herbivore or pathogen

- Benefits

- continue to work for many years
- proven effective at treating large infestations

- Disadvantages

- potential threat to non-target plants
- introduces another exotic species



MANAGEMENT PLAN / EA

- ✓ Early detection and prevention
- ✓ Prioritization of control efforts
- ✓ Determine appropriate techniques
 - Education & collaboration
 - Monitoring & research



EDUCATION & COLLABORATION

- Educate and inform visitors and public
 - wildflower & weed walks
 - notification of proposed actions
- Collaborate with nearby land agencies & land managers
 - weed management areas
 - Sierra San Joaquin Noxious Weed Alliance



MONITORING & RESEARCH

- Effectiveness of control techniques
 - conduct experiments
 - adaptive management
- Promote partnerships with research institutions
 - invasive species and ecosystem function
 - biodiversity and invasion
 - invasion at high elevations



CONCLUSION

- With your help in this plan, the National Park Service can make informed and effective decisions about how to deal with invasive species in Yosemite National Park



HOW DID THEY GET HERE?

- **Intentional introduction**
 - ornamentals
 - agriculture
 - forage for domesticated animals
 - erosion control/revegetation
- **Accidental introduction**
 - contaminated seed mixtures
 - transported soil (cars, construction equipment, boots)