Invasive Species Removal Techniques

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Riparian Restoration and Tamarisk Beetle Workshop
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NPS Exotic Plant Management Teams

[Map showing geographical regions of the United States with labels such as 'Park Units', 'EPM'Ts', and 'Regions'.]
• Regional travelling crew
• Support Multiple NPS Units
• Interagency partnerships
• USFWS, BLM, BOR, DOD
• US Forest Service-AZ, NV
• Southern Nevada Water Authority
• Clark County, NV
Tamarisk: *Tamarix ramosissima*

- Salt cedar
- Deciduous tamarix
- From Glenwood Springs, CO to the Gulf of Mexico
- Main stem and all tributaries of the Colorado and Rio Grande Rivers
- Site Control
- Wind dispersed seeds
- Fire, flood, drought and salt tolerant
Control Methods

• Cut Stump
• Low Volume Basal Spray
• Foliar
• Heavy Equipment
• Manual: Hand-Pulling and Digging
• Biological Control (Tamarisk Leaf Beetle)
• Target mortality 75-100%, results vary
Cut Stump
Cut Stump
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Stump Spraying
Cut Stump Herbicide Options

• 20%-33% Ester Triclopyr (Garlon 4 Ultra, others) mixed with basal oil (JLB Improved Oil Plus, others) beware of volatility

• 8-12 ounces of Imazapyr/gallon of water (Habitat, Polaris, others)
Factors Affecting Treatment Efficacy

- Full Coverage of the Stump
  - Cut Surface & Sides
- Time After Cutting
- Weather
  - Precipitation Events
  - High Temperatures (volatilization)

- Don’t start something you can’t finish!
- Treat What You Cut
- Human Element
Slash Mitigation

- Lop and scatter
- Pile (degrade or burn)
- Haul/Disposal
- Fire wood
- Chip
Pile on site
Haul off site/Firewood
Unique Slash Mitigation
Chipper/Mulch
Hack and Squirt

- Hand Tools – Axes, Hatchets, Machetes
- Hacks are not continuous around trunk
- Triclopyr, Imazapyr, Glyphosate
- Reduced slash handling
- May need to remove limbs to access trunk (handsaw or chainsaw)
- Standing dead trees provide benefits to wildlife
- Effective on Russian olive, Ailanthus
Girdling

- Hand Tools – Axes, Hatchets, Machetes
- Hacks are continuous around trunk
- Triclopyr, Imazapyr, Glyphosate
- Reduced slash handling
- Standing dead trees provide benefits to wildlife
- Effective on Athel
Low Volume Basal Spray
Low Volume Basal Spray

• Re-sprouts
• Smaller diameter trees (<6 inches, smooth bark)
• 20-33% Ester Triclopyr add remaining amount of basal oil
• Spray base of stems 6-18 inches in height
• No cutting or hacking
• Penetrates through bark into cambium
• Beware of volatility (avoid summer heat)
Low Volume Basal Spray
Post Fire Treatments
Low Volume Basal Spray 20% Ester
Triclopyr w/80% basal oil
Low Volume Basal Spray
Burned Area Rehab Post Fire Treatments
Foliar Treatment

- Glyphosate, Imazapyr, Triclopyr, Others
- Low concentration formulas/refer to label
- Top of tree and at least two sides (>70% tree canopy coverage)
- Need more water than other methods
- Drift
- Efficient with good access (UTV/Truck tank sprayer)
- Backpack to Aerial (Helicopter)
- High density seedlings
- Dense cover of small trees
Foliar Treatments
Tree Gun Nozzle Sprayer
Mechanical/Heavy Equipment

• Tree extraction, uproot plants with excavator/clam shell bucket
• Hydro-ax, grinder
• Bulldozer
• Access limitations
• Ground disturbance
Hydro Ax/Grinder
Equipment Types
Tamarisk Biological Control

- Secondary invaders, on site or adjacent, survey, monitor and treat
- Multiple defoliations for multiple years
- Site restoration:
  - soil type
  - hydrology
  - objectives
Arundo donax

- Foliar treat with imazapyr or glyphosate
- Cut-Stump
- Slash Mitigation
- Chainsaws, Brushesaws, Hand Saws
Perennial Bunchgrasses  
Buffelgrass and Fountain Grass

- Foliar Treatment with Herbicide
  - Glyphosate
  - Imazapyr

- Ideal when plant is green and actively growing

- Ensure full coverage of herbicide
Buffelgrass
Fountain Grass
Data Management

- NAISMA Weed Mapping Standards
- Infested acres (cover)
- Gross Infested Area
- Survey
- Treatments
Site Recovery/Restoration

• Passive
• Active
• Site Potential
  – Soil/moisture
  – Hydrology
  – Post treatment WX Precip/Floods
• Grazers/beavers
Monitoring and Retreatment

• Plan on it/Build it in
• Re-sprouts and seedlings
• Take good data on methods and herbicide used
• Keep records
• Share data
Thank You

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