

Athel Tree (*Tamarix aphylla*)
Invasion Threat to the Colorado
River

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Supervisory Restoration Ecologist
National Park Service
Lake Mead Exotic Plant Management Team

NPS Exotic Plant Management Team

- Regional travelling crew
- Multiple parks
- Interagency partnerships
- USFWS, BLM, BOR
- USFS
- SNWA
- Clark County, NV



Lake Mead EPMT



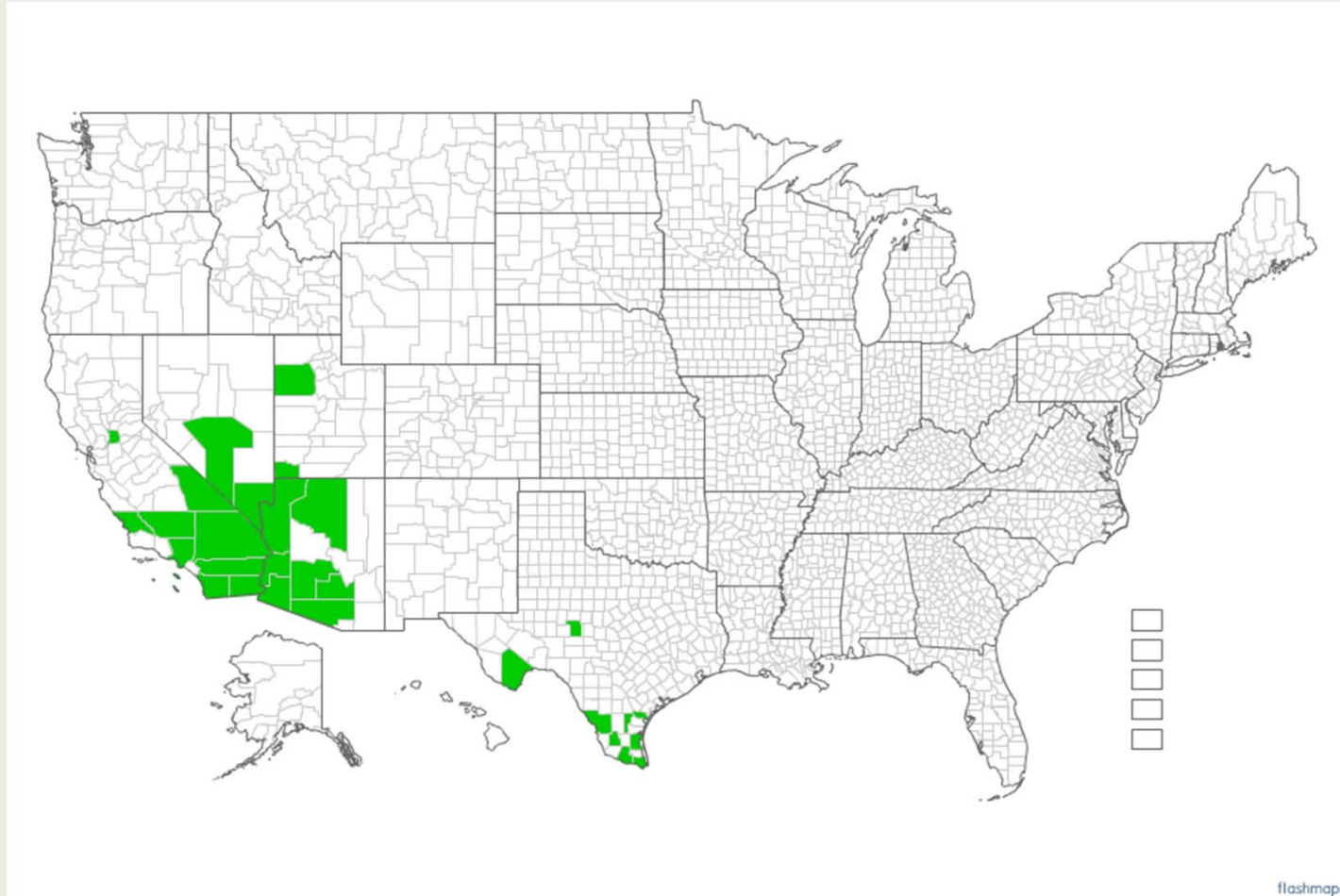
Athel: *Tamarix aphylla*

- Large evergreen tree (up to 10 meters)
- Ornamental
- Shade and Windbreaks
- Railroad corridors
- Exotic from North Africa/Middle East
- Introduced in USA 1911 (Baum 1967)
- Presumed sterile, non invasive



US Athel Distribution

Source: USDA Plants Database



Athel ID

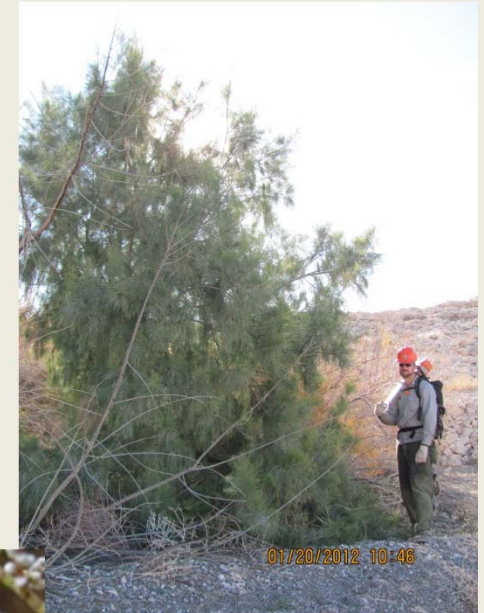
Leaves: Needle like cylindrical segments 1-2mm long, drooping

Flower: Tiny white-pink, w/o stalks, 30-40mm long spikes on the end of branches

Fruit: Bell shaped with a hairy tuft, containing numerous small cylindrical seeds with w/ tuft of fine hairs

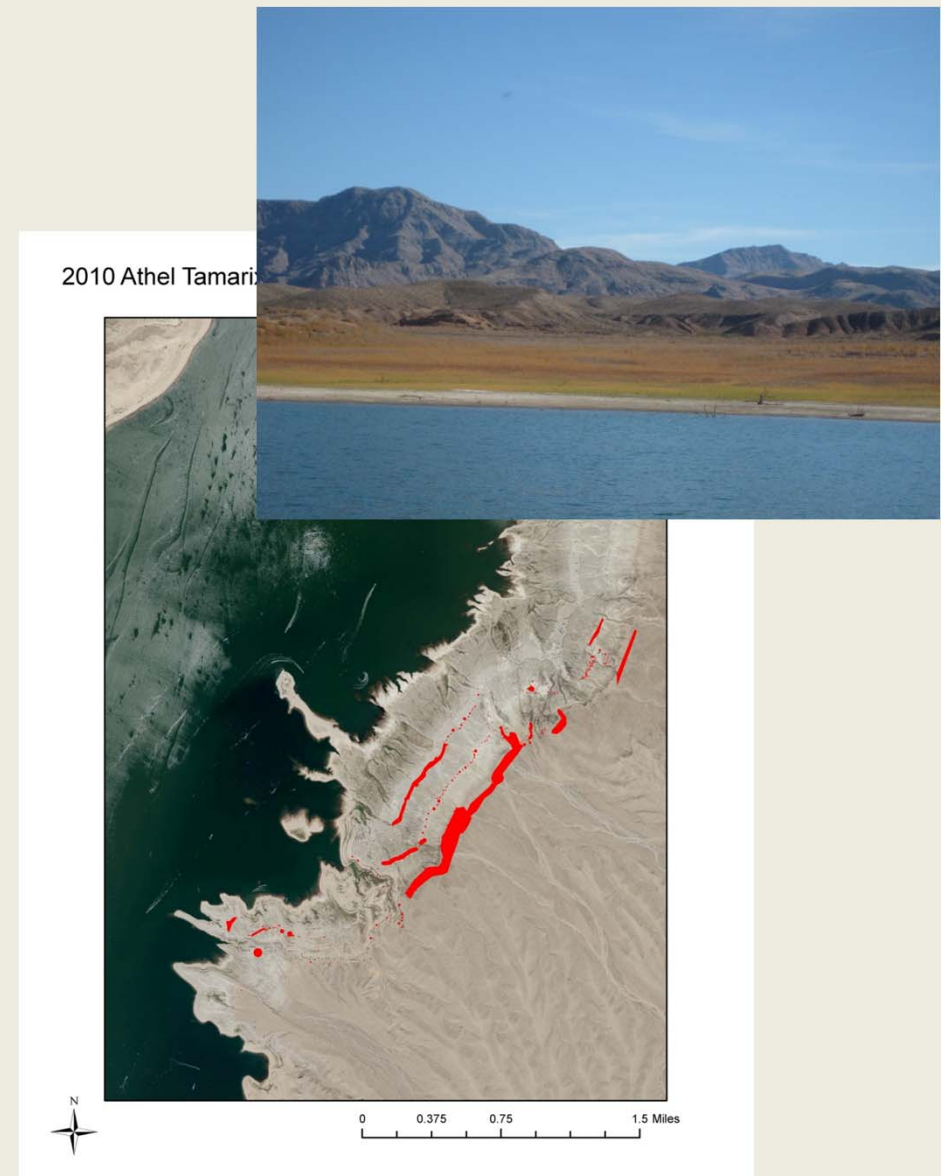
Bark: Young: light grey trunks and stems
Mature trees have thick, rough, furrowed, dark grey, black and reddish

Appearance: "Pine tree", light green, greyish color



Reproducing from Seed at Lake Mead

- Detected in 1999 by E. Powell
- Established during high water in 1983/84
- 2002 Survey estimated 11,000 individuals along shoreline
- Also invasive on Finke River in Australia



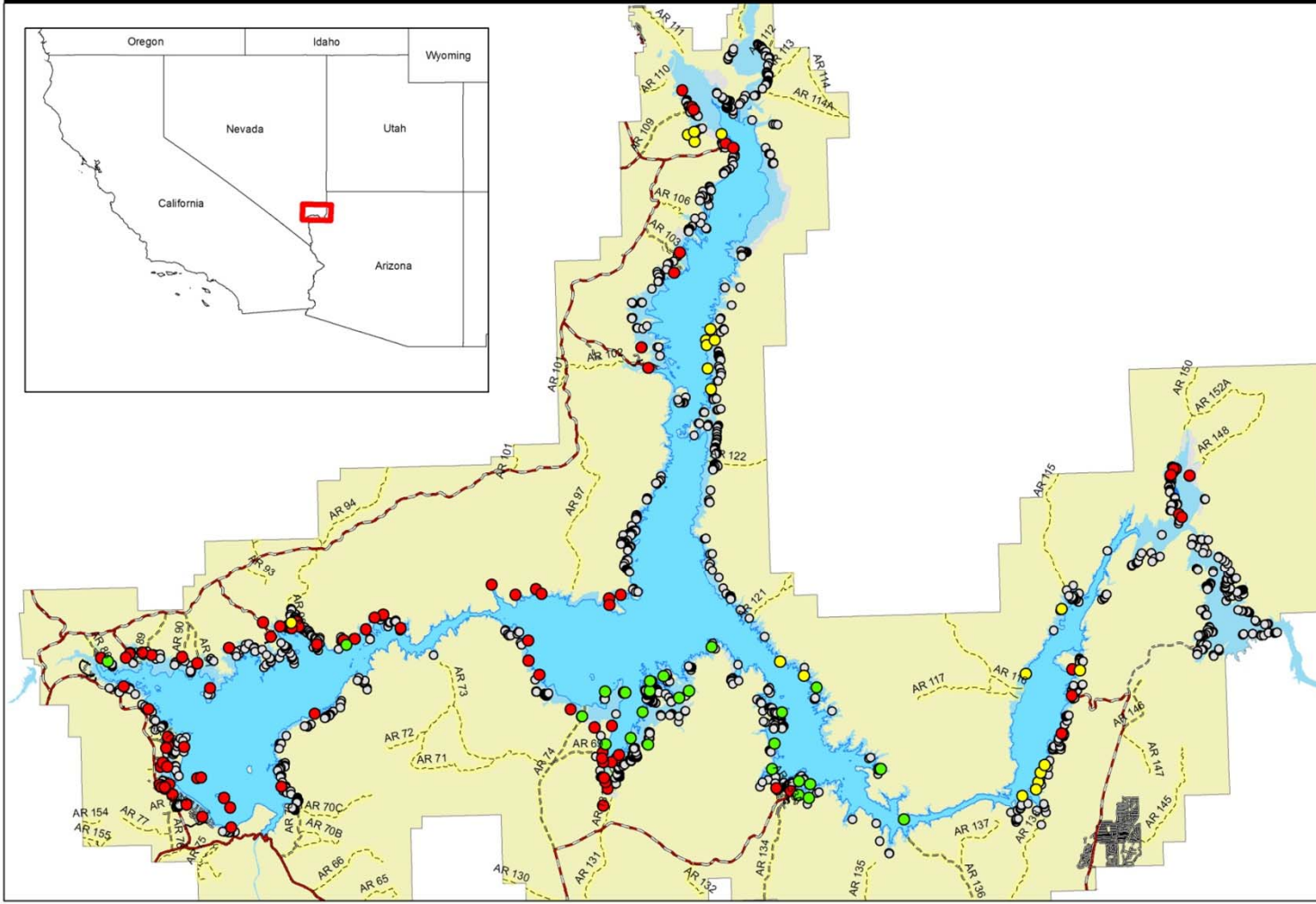
Lake Mead Athel Research

- L. Walker, P. Barnes and E. Powell. UNLV. *Tamarix Aphylla*: A newly Invasive Tree in Southern NV, Western North American Naturalist 66(2), 2006
 - Documented seed viability average of 21% (in lab only) from parent samples, highly variable from (0-66%)
 - Viability is short lived, just a few days
 - Potential seeds 250,000-500,000/tree in one season
 - Discovered hybridization b/w *T. aphylla* and *T. ramosissima*
 - J. Gaskin and P. Shafroth, 2005, confirmed hybrids

Lake Mead NRA Athel Eradication Program

Survey and Treatments: 2001-2006

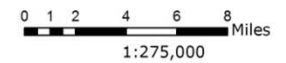
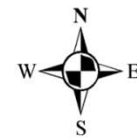
National Park Service
U.S. Department of the Interior



Legend

- 2006 Athel Treatments
- 2005 Athel Treatments
- 2004 Athel Treatments
- 2001 Athel survey
- US route
- Secondary highway
- Major road
- Local road
- Maintained unpaved road
- 4WD road
- shoreline survey areas
- Approved backcountry road
- Lake Mead Current Level
- Lake Mead-Historic
- Lake Mead boundary
- shoreline survey polylines

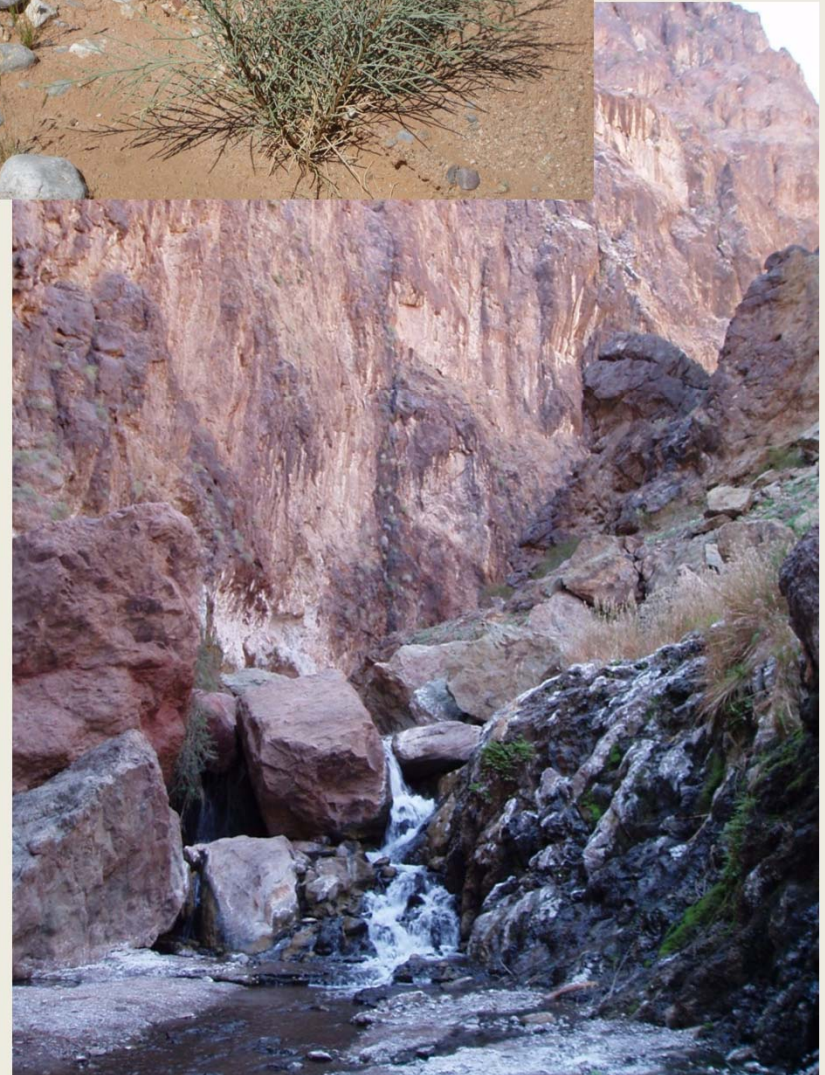
Lake Mead NRA
Natural Resource Management



Created By: Josh Hoines (702)-293-8913

Alert!

- Found athel seedlings at two remote springs within Lake Mead NRA
- Sugarloaf Spring, AZ (2002), near Hoover Dam
- Tassi Wash, AZ (2010), near Grand Wash
- Several miles away from seed source



What We Don't Want



From Here



To Here

Ecological Concerns

- Similar to deciduous salt cedar
- Larger bio-mass
- Water/resource consumption
- Salty duff layer, exclusion of native plants
- Wildfire hazard



Other Invasive Athel Observations

- Sacramento Wash/
Colorado River, Havasu
NWR, AZ
- Kelso Wash, CA
(NPS/BLM)
- Gila River, AZ
- Baja, Mexico?



Early Detection Rapid Response

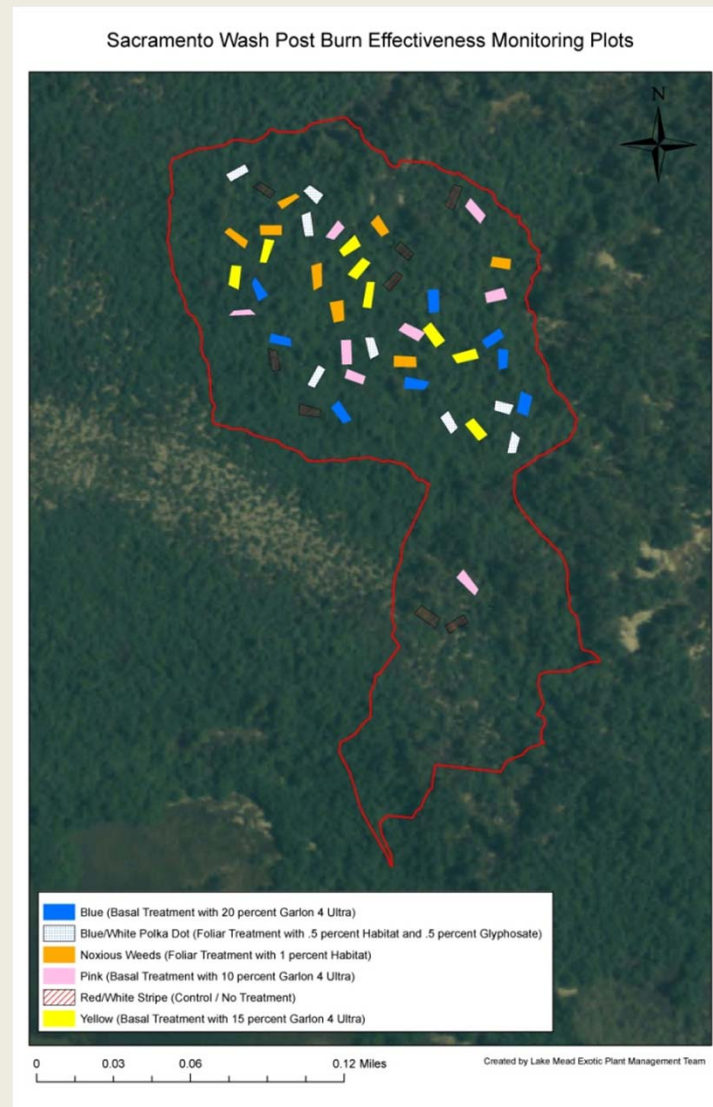
- Most cost effective
- Spread potential is high
- Bio-control beetle prefers salt cedar
- Current populations are isolated



Sacramento Wash Post Fire Rehab



USFWS/USGS/NPS Joint Research



Biological Control

- Beetle prefers salt cedar over athel (DeLoach and Tracy)
- Some recent foraging/defoliation on athel on the Rio Grande, TX (refer to DeLoach and Tracy)



Athel Control Methods



Cut Stump/Herbicide

- Ester Triclopyr @ 20% mixed with Basal Oil



- Imazapyr @ 8-12 oz per gallon



Frill Cut/Hack & Squirt/Girdle

- Ester Triclopyr @ 20% mixed with Basal Oil



- Imazapyr @ 8-12 oz per gallon



Low Volume Basal Spray

- Ester Triclopyr @
20% mixed with
Basal Oil



Foliar

- 1% Imazapyr with
>.5% MSO
- .5% Glyphosate and
.5% Imazapyr w/
>.5% MSO



Mechanical

- Uproot with Heavy Equipment
- Hydro-ax
- Extract and grind



Effective Control Methods

- Expect 80-90% mortality from initial treatments
- Basal spray or foliar resprouts/follow up treatments for complete kill



Accomplishments

- >75,000 Athel Trees
- >13,000 Hybrids
- Lake Mead Shoreline



How about a CWMA for the LCR!?

- Lower Colorado River Cooperative Weed Management Area
- NV, AZ and CA
- Local, State, Fed, Private, Organizations
- Increases funding eligibility
- Awareness, priorities, work together

Acknowledgements

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- **Nevada Conservation Corp/ Great Basin Institute** (Project implementation)
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Recent Projects



Watershed Exotic Invasive Species

- Tamarisk
- Russian Olive
- Russian Knapweed
- Perennial Pepperweed
- Camelthorn
- Arundo
- Fountain Grass
- Ravenna Grass
- Athel tamarix
- Tree tobacco
- Palm Trees



Ravenna Grass: *Saccharum ravennae*

- Perennial bunchgrass
- Not widespread
- Isolated patches
- Lake Powell, Lees Ferry, Upper Grand Canyon
- Moapa NWR, NV
- Littlefield/I-15, AZ
- EDRR



Tree Tobacco: *Nicotiana glauca*

- Small tree, clonal suckers
- Isolated small patches
- Las Vegas Wash, Lake Mead, Havasu NWR
Sacramento Wash
- Southern latitude
- Santa Cruz River
- LCR



Tree Tobacco

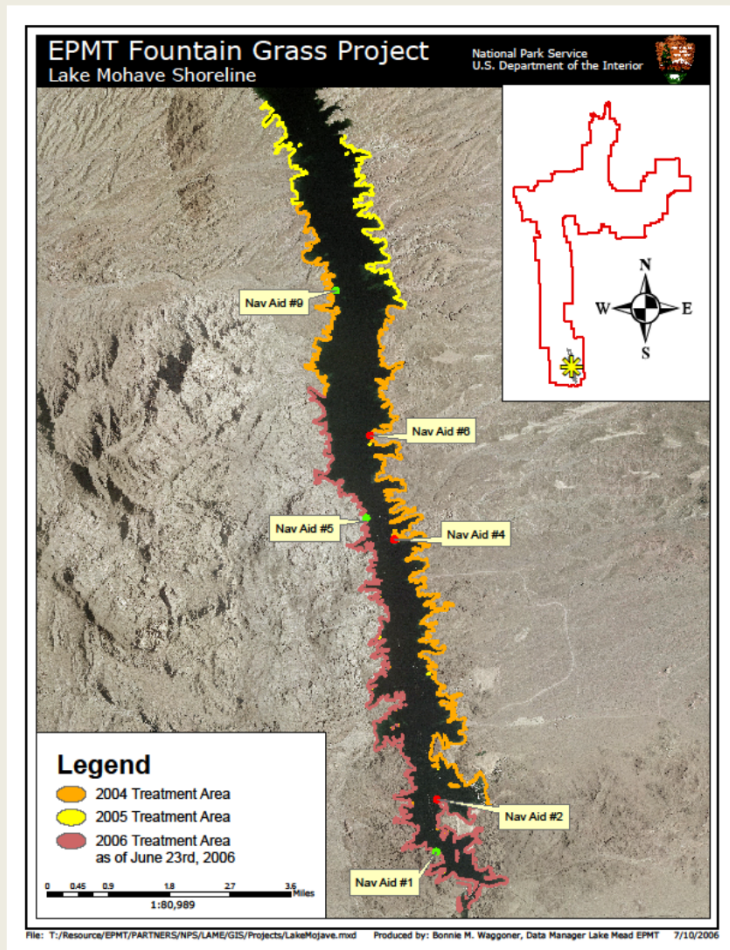


Fountain Grass: *Pennisetum setaceum*

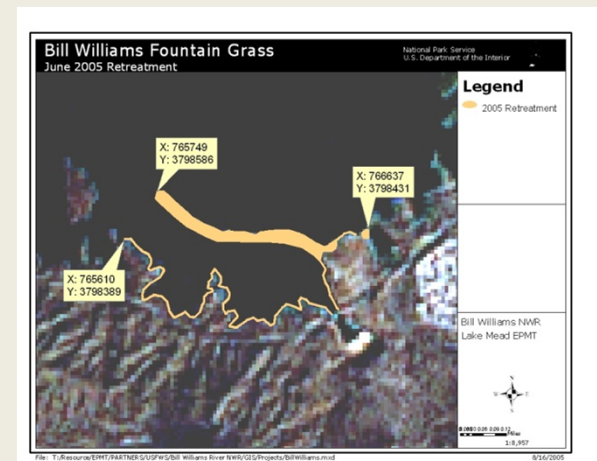
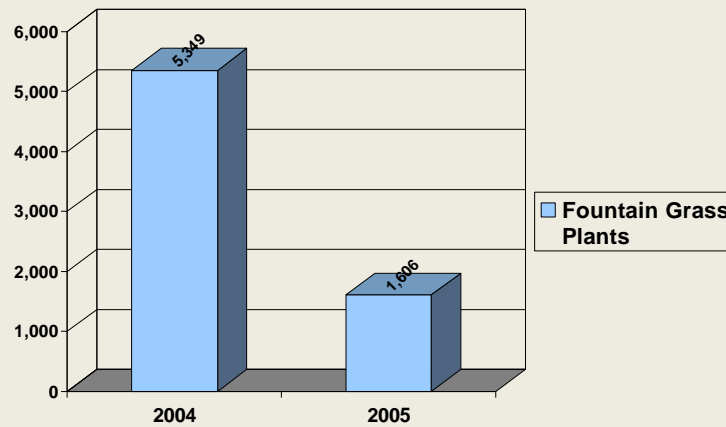
- Perennial bunch grass
- Ornamental
- Wind dispersed seed spreads similar to tamarisk
- Laughlin, NV, Lake Mohave, Bill Williams NWR, Big Bend, NV
- NV Noxious Weed



Lake Mohave Fountain Grass



Fountain Grass Bill Williams Confluence



Giant Reed: *Arundo donax*

- Perennial grass
- *Phragmites* on steroids
- Large rhizomes
- Patches that converge
- Monotypic
- LCR, Virgin River, LV Wash
- S Cal Coastal Rivers, Rio Grande



Topock Arundo



Palm Trees: *Washingtonia sp.*, *Phoenix sp.*

- Fan Palms
- Date Palms
- Isolated trees along LCR
- Moapa NWR, Warm Springs, NV, Death Valley



Tamarisk Biological Control Strategic Response

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

