SALT CEDAR ESTABLISHMENT IN THE LOWER RIO GRANDE VALLEY

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Biology of saltcedar

Tamarix aphylla, Tamarix chinensis, Tamarix gallica, Tamaris parviflora, Tamarix ramosissima

- Deciduous and evergreen species
- Deciduous shrubs grow 10-30 feet tall and form dense thickets
- Evergreen tree grows 50 feet tall
- Can produce up to 600,000 seeds per plant each year
- Typically flower March through September, producing small white or pink flowers in dense masses on its stem tips.
- Primary root can reach depths of 90 ft or more, after reaching water table, horizontal roots develop and spread up to 150 feet laterally

Biology of saltcedar

Tamarix aphylla, Tamarix chinensis, Tamarix gallica, Tamaris parviflora, Tamarix ramosissima

- Plant can grow between 6 – 9 feet in a season if favorable conditions exist
- Plants can produce seed in first season of growth
- Commonly establishes on floodplains, salt flats, wetlands, and along streams, rivers, and drainage washes

Biology of saltcedar

Biology of saltcedar

Tamarix aphylla leaf structure

Tamarix ramosissima leaf structure

Biological and Ecological Impacts

- Rapidly colonize riparian and sub-irrigated areas
- Outcompetes native vegetation for sunlight, moisture, and nutrients, disrupting the structure and stability of native plant communities
- Degrades native wildlife habitat
- Foliage and flowers provide little food value for native wildlife species
- Concentrates salts in its leaves and accumulation of leaf litter increases the salinity of surface soil
- Long distance spread is through wind and water seed dispersal, can spread vegetatively

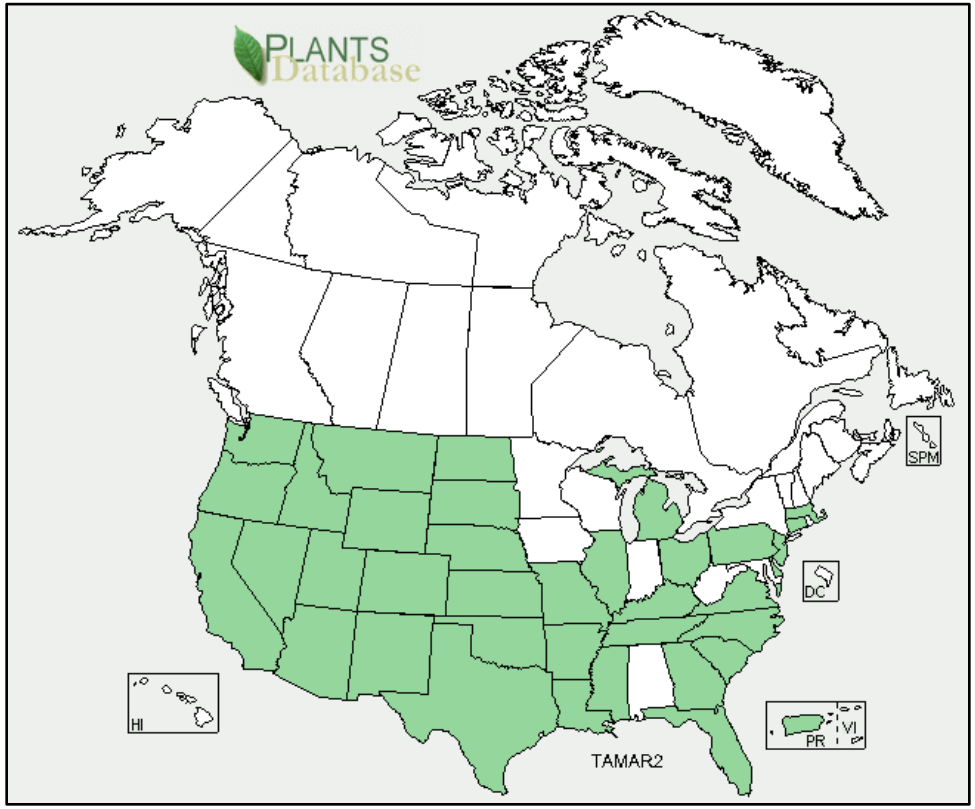
Biological and Ecological Impacts

- Interfere with natural aquatic systems
- Widens the floodplain and increases sediment deposition by clogging stream channels
- Monopolizes limited sources of moisture, uses approximately 30% more water than native tree species
- Increases the frequency, intensity, and effects of fires and floods

Biological and Ecological Impacts

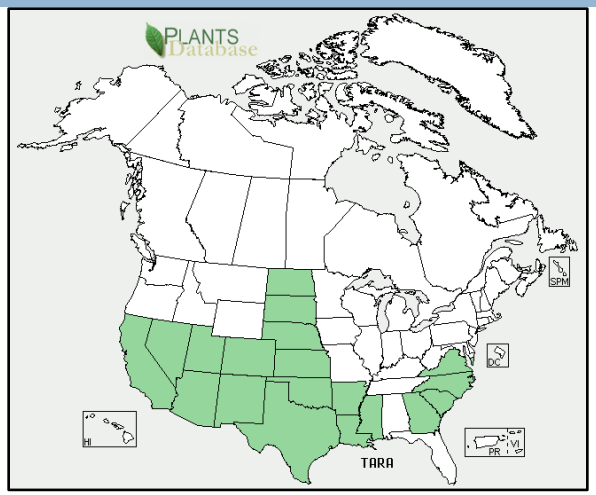
- High water use, the water table often declines in areas dominated by mature saltcedar
- Disrupts riparian areas by reducing stream flow, increasing sedimentation, and increasing the area inundated during floods
- Annual estimates for water usage of an acre of dense saltcedar is 1 to 4 acre-feet of water on the Pecos River in Texas through evapotranspiration
- Along the Rio Grande, saltcedar hinders access for border protection personnel and for recreation

Distribution of Salt Cedar



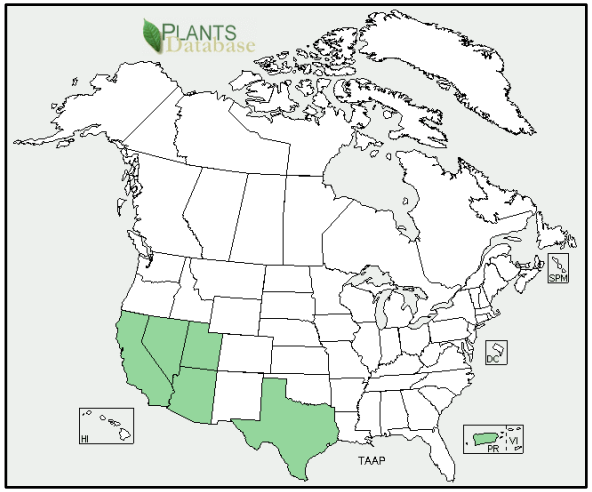
Range of 11 saltcedar species in United States

USDA Plants Database



Range of *Tamarix ramosissima* in United States

USDA Plants Database



Range of *Tamarix aphylla* in United States

USDA Plants Database

Introduction of salt cedar into U.S.

- Introduced as an ornamental shrub in the eastern U.S.
- Planted to reduce soil loss (erosion) in the southwestern U.S.
- Used as shade and windbreak tree.

Establishment in the LRGV

- Multiple species were present throughout the LRGV

  Tamarix aphylla, Tamarix ramosissima, Tamarix chinensis
- Spread of saltcedar was very low prior to 2010
- Trees were restricted to small populations and as ornamentals
- Rapid spread and establishment was a result of tropical weather and flooding during 2010

Establishment in the LRGV

Level of spread

- Acres treated on US Fish and Wildlife Service owned lands show that saltcedar populations exponentially increased post flood.
- Site 1, 120 acres, Starr County:
  - 1 mature saltcedar tree prior to 2010 flood
  - 8,892 saltcedar trees removed post 2010 flood
- Site 2, 640 acres, Hidalgo County:
  - 1 mature saltcedar tree prior to 2010 flood
  - 78,628 saltcedar trees removed post 2010 flood

Strategy

- Include plans for prevention, containment, and control
- Must address the following types of riparian areas separately:
  - Areas not infested
  - Areas with light infestations
  - Areas with special considerations
  - Areas with extensive infestations
- Entire river system must be addressed

Strategy

- Areas not yet infested
  - Priority to prevent these sites from infestation
  - Prevent upstream seed sources
  - Maintain or improve health of existing native plant communities
- Areas with light infestations
  - Reduce upstream seed sources
  - Control or eradicate population
- Areas of special concern
  - Identify riparian areas or wetlands that have a special focus
  - Preserve or enhance unique attributes of the site
- Areas with extensive infestations
  - Remove dense or monotypic stands
  - Restore desirable plant species

Management Technique

Control Treatment	Cost per Acre	Percent Control
Individual Plant Treatments		
Manual removal (Immature Plants)	$5,000	95-100
Mechanical grubbing	$40-$300	97-99
Low-volume herbicide application	$30-$60	80-95
Cut-stump herbicide application	$1600-$2500	60-80
Ground-based foliar herbicide	$40-$300	97-99
Large scale control		
Mechanical	$700	97-99
Airplane Herbicide-Burn	$300	93
Herbicide Herbicide-Burn	$240	89
Airplane Herbicide-Shred	$400	97-99
Helicopter Herbicide-Shred	$510	97-99
Airplane Herbicide-Burn-Mechanical	$380	97-99
Helicopter Herbicide-Burn-Mechanical	$490	97-99

Estimated cost per acre and expected percent of control for individual and large scale control methods. Strategy for Long-Term Management of Exotic Trees in Riparian Areas for New Mexico's Five River Systems. US Forest Service.

Management Technique

- No method will provide 100% control throughout an entire ecosystem.
- Follow-up treatments will be needed for many years to achieve desired results.
- As new techniques become available, decision makers will need to exercise managerial flexibility to adopt these new methods.
- Select appropriate technique
  - Infestation density
  - Management objectives
  - Environmental concerns
  - Costs
  - Social considerations