

## SALT CEDAR

### *Tamarix ramosissima*

#### Life History/Identification:

Saltcedar, or tamarisk, is a deciduous shrub or small tree native to Western Europe, the Mediterranean, North Africa, northeast China, and India. It is a long-lived plant that generally grows to be between six and thirty feet tall. The branches are smooth, flexible, slender, and break off easily. The leaves are small and scaly, and saltcedar has the ability to drop its leaves to withstand lengthy periods of drought. In young plants, the bark is smooth but it becomes furrowed as the plant matures. The root system of tamarisk is extensive, and is largely responsible for its competitiveness and survival under stress. Initially, the primary root grows steadily downward with little branching until it reaches the water table. Once the water table is reached, secondary root branching becomes profuse. Adventitious roots develop from submerged stems allowing the expansion of saltcedar communities to occur quickly through vegetative reproduction. Seedlings mature rapidly and produce small, white or pinkish flowers by the end of their first year of growth. The flowers, in turn, produce many three to five valved fruits that usually have a tuft of hair on the end to aid in wind dispersal.

Seeds can also be carried and deposited along sandbars and riverbanks by water. A single saltcedar plant can produce as many as 600,000 seeds per year. The seeds remain viable for only a short period of time and require saturated soils to germinate and survive the seedling stage. Therefore, the plant is usually found along flood plains, river and stream banks, salt flats, and irrigation ditches. The genus *Tamarix* contains many species (as many as 54 species are formally recognized), which makes the taxonomy of the plant confusing. Field identification is also extremely difficult because various species are often differentiated on minute morphological details.

#### Northern Arizona Localities:

Known locations of the plant include at least two substantial populations in the Verde River drainage and its tributaries and in the Kanab Creek drainage. Isolated *Tamarix* trees occur along the various major highways in Northern Arizona including I-40 (west of Williams and in the Rio de Flag), I-17 (Camp Verde), and U.S. Highway 64 (East Boundary of Tusayan Ranger District). *Tamarisk* trees can be found in other areas of the Coconino, Kaibab and Prescott National Forests along drainages and dry washes.

#### Origin & Impacts:

*Tamarisk* was introduced into the United States in the early 1800's, from Eurasia. Some were introduced for their ornamental value, others for planting in windbreaks or to stabilize eroding stream banks. Soon after its introduction, saltcedar escaped into the wild and has taken advantage of the human alterations of riparian systems to expand its range. Saltcedar displaces native vegetation, such as willows and cottonwoods, in riparian ecosystems, and is generally less valuable to wildlife than the native communities that it replaces. Dense stands of tamarisk have caused local flooding by impeding water flow at high water stages. It also decreases the available water to other plants by having deep roots that can tap into ground water more efficiently than native plants. Saltcedar trees need large

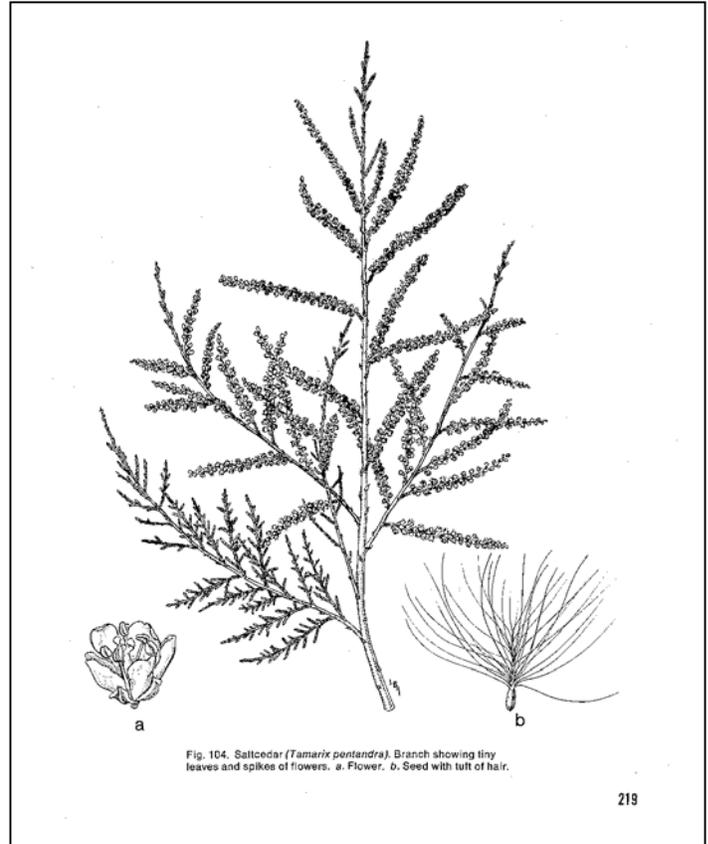


Fig. 104. Saltcedar (*Tamarix pentandra*). Branch showing tiny leaves and spikes of flowers. a. Flower. b. Seed with tuft of hair.

amounts of water to grow, thus the presence of a dense stand of trees can actually lower the local water table. A secondary effect of tamarisk invasion is the increased frequency of fire in impacted areas. Areas with this species are more prone to fire because tamarisk contributes to a heavy fuel load on the ground beneath them. The fire tolerance of saltcedar coupled with the fire intolerance of many native shrubs effectively leads to saltcedar dominance in a relatively short period of time.

### **Control:**

Warning: The Southwestern willow flycatcher is known to nest in stands of tamarisk in several locations in Northern Arizona. This songbird is listed as endangered under the Endangered Species Act and is also a Region 3 Sensitive Species. Any actions to control saltcedar should include consideration and appropriate action for this species of bird.

#### **Cultural Control:**

Prevention is the most effective and least expensive method of control. Once saltcedar is established, there are many biological traits of this plant that make it extremely difficult to manage. Integrated control using several methods is needed to successfully eradicate this riparian pest. Do not use saltcedar as a windbreak or for erosion control; consult with an expert of native plants and use a species that is well adapted to the environment in which it is being used. Re-vegetation with native species such as cottonwoods and willows should be encouraged where possible. However, re-vegetation alone will not succeed against saltcedar unless it is combined with other methods of control.

#### **Mechanical Control:**

Mechanical control of this plant usually involves cutting the stems with hand tools such as clippers or axes, or using chainsaws to cut larger trees. Heavy equipment such as bulldozers can be used to remove saltcedar from an area, but this method can be detrimental to existing native plants in the area and may damage the existing seedbed, which would allow them to regenerate. Re-vegetation is recommended when heavy equipment is used. Burning does not effectively control tamarisk if it is used as the only method of control. In fact, saltcedar re-sprouts prolifically from the root crown and rhizomes after a fire, and fires seem to encourage flowering. Flooding can control tamarisk on lakeshores or reservoirs if the root crown of the plant is submerged for three months or more.

**Chemical Control** *(Noted here are chemical control techniques that have been used in other areas. Always check with weed specialists or chemical suppliers before treatment to ensure correct dosage and application. Mention of these products does not imply endorsement by the USDA Forest Service, Northern Arizona Weed Council or The Nature Conservancy.):*

Although 2,4-D, dicamba, and triclopyr ester have been used to control tamarisk, some of the best results are achieved with Remedy™ and Garlon 4™. Both herbicides are mixed at one part chemical to three parts vegetable oil. Using a backpack sprayer, the solution is applied to the bottom two feet of the saltcedar tree when it is actively growing from May through September. Herbicide can also be injected into the bark or painted onto small stumps after cutting to minimize exposure.

**Biological Control** *(No exotic species should be introduced into an ecosystem without extensive research into the long-term effects. Mention of the species below does not imply appropriateness for use in Northern Arizona.):*

Two insects, a leafhopper and a scale insect, are known to feed almost exclusively on saltcedar. However, the feeding action of these two insects is not enough to effectively control populations of this invasive species. The saltcedar leaf beetle has been shown to feed exclusively on Tamarix spp. and effectively defoliate the tree. The use of this bio-control will lead to control of a population but will never eradicate it. The presence of beavers in riparian systems is also somewhat beneficial. When beavers dam a stream it slows down water movement and creates a more mesic bank environment that supports native riparian vegetation. Ultimately, beavers do not reduce population numbers of saltcedar; they may keep them in a better state of balance.

**Note: No single control method, or any one-year treatment program, will ever achieve effective control of an area contaminated with saltcedar. The fast growth, extensive root system, and**

G:\SWEMPweb\_database\factsheets\sf\_PEAKS\_Weed\_Infosheets\_Plans\tara\_info.doc

**prolific seed production of this plant require long-term cooperative integrated management programs and planning to prevent, contain, and reduce saltcedar infestations.**

Moser, L; D. Crisp. San Francisco Peaks Weed Management Area fact sheet on Tamarix ramosissima. Coconino National Forest.

G:\SWEMPweb\_database\factsheets\sf\_PEAKS\_Weed\_Infosheets\_Plans\tara\_info.doc