WRITTEN FINDINGS OF THE
WASHINGTON STATE NOXIOUS WEED CONTROL BOARD
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Scientific Name: *Tamarix ramosissima* Ledeb.

Common Name: Saltcedar

Family: Tamaricaceae

Legal Status: Class A

Description and Variation: Spreading shrubs or small trees, 5-20 feet tall, with numerous slender branches and small, alternate, scale-like leaves. The pale pink to white flowers are small, perfect and regular, arranged in spike-like racemes. The distinct petals and sepals occur in fours or fives. Fruit is a capsule (Hitchcock and Cronquist 1961).

Tamarix taxonomy is currently in a state of confusion. The number of species in the genus has fluctuated widely because members of the genus have few constant differentiating features, and taxonomists have disagreed over which features are most important. Eight species have been listed as introduced into the U.S. and Canada. These species can be effectively divided into two groups. *Tamarix aphylla*, an evergreen tree, does not sexually reproduce in this climate, so it is not seriously invasive. Deciduous, shrubby species, including *T. pentandra, T. tetranda, T. gallica, T. chinensis, T. ramosissima,* and *T. parvifolia,* as described by various authors, are more serious invasive threats (Rodman 1989). Some authors continue to distinguish many species, while others consider these shrubby plants as one variable species or hybridizing group best designated by the single name *T. pentandra* (Sudbrock 1993).

Economic Importance: *Negative* - As an aggressive colonizer that is able to survive in a wide variety of habitats, saltcedar often forms monotypic stands, replacing willows, cottonwoods and other native riparian vegetation. The stems and leaves of mature plants secrete salt, forming a crust above and below ground that inhibits other plants (Sudbrock 1993). Saltcedar is also an enormous water consumer. A single large plant can absorb 200 gallons of water a day (Hoddenbach 1987), although evapotranspiration rates vary based on water availability, stand density, and weather conditions (Davenport et al. 1982). Saltcedar's high water consumption further stresses native vegetation by lowering ground water levels and can also dry up springs and marshy areas. Paradoxically, saltcedar infestations can also lead to flooding, as its extensive root system can choke stream beds (Rush 1994).

Infestations also have detrimental impacts on wildlife. Saltcedar seeds have almost no protein and are too small to be eaten by most animals. In addition, its scale-like leaves offer little suitable forage for browsing animals (Hoddenbach 1987). Studies indicate that saltcedar is not favored bird habitat. In their study of habitat use by birds along the lower Colorado River, Anderson and Ohmart (1977) found that saltcedar stands supported only four species per hundred acres, as opposed to 154 species per hundred acres of native vegetation.

Positive - Saltcedar provides nesting areas for whitewing and mourning doves, and its flowers are a source of pollen and nectar for honey bees (Frasier and Johnsen 1991).

Geographic Distribution: The genus *Tamarix* is native to a zone stretching from southern Europe and north Africa through the Middle East and south Asia to China and Japan. There are a few species in disjunct parts of Africa (Rodman 1989). Saltcedar is now established in many moist spots in the desert regions of the western U.S. (Hitchcock and Cronquist 1961).

Habitat: Seedlings establish most frequently in soils that are seasonally saturated at the surface. It appears to grow best in saline soils (up to 15,000 ppm sodium), but saltcedar is adaptable and tolerant of a wide variety of environmental conditions (Brotherson and Field 1987).

History: It is believed that nurserymen on the east coast made the first introduction of saltcedar to North America in 1823. Saltcedar appeared on the west coast, where it was apparently brought in from eastern nurseries. It was planted as an ornamental in the western U.S., but by the 1870's, it was reported to have escaped cultivation. By the 1920's, saltcedar was becoming a serious problem, spreading rapidly through the watersheds of the southwest (Brotherson and Winkel 1986).

Growth and Development: A single mature saltcedar may produce hundreds of thousands of seeds between April and October (Sudbrock 1993). The tiny, hairy, pollen-sized seeds are widely dispersed by wind and water throughout the growing season, and they will germinate within 24 hours of moistening. In Arizona, seeds have been known to germinate in May and June, while floating on water. Early seedling growth is slow, but older seedlings grow rapidly and are tolerant of submergence, saline soils, and drought (Frasier and Johnsen 1991); seedlings may grow up to a foot a month in early spring (Sudbrock 1993). Once saltcedar is established, not even dramatic changes in soil moisture will completely eliminate it, as long as abundant ground water is available (Frasier and Johnsen 1991).

Reproduction: Saltcedar spreads by seed and also resprouts vigorously from roots if the top portion of the plant is damaged or removed. It can also readily establish from cuttings, if buried in moist soil (Frasier and Johnsen 1991).

Response to Herbicides: Studies in New Mexico have shown aerially sprayed imazapyr (Arsenal) provided 90-99 % control of saltcedar at a cost of $85/acre. Tank mix applications of imazapyr + glyphosate (Rodeo) also provided 90-99 % control at a cost of as little as $60/acre (Duncan and McDaniel 1992). Frasier and Johnsen (1991) state that tebuthiuron is labeled for spot treating saltcedar as a soil application.

A cut-stump/herbicide method has also been used effectively in southern California (Sudbrock 1993). This approach involves cutting saltcedar as close to the ground surface as possible, then applying herbicide to the cut surface. Roundup (glyphosate) and Garlon 4 (triclopyr) have been effective. Garlon 4 can be diluted one-to-one with either diesel oil or water (Sudbrock 1993).

Response to Mechanical Methods: Because of saltcedar's ability to resprout from roots, many mechanical methods are largely unsuccessful. Root plowing 35 to 60 cm deep with a cutting blade equipped with fins to pull up roots and buried stems can be effective but destroys other vegetation as well (Frasier and Johnsen 1991). It is advisable to remove cut brush from a treated site (Sudbrock 1993). Effective control projects often utilize both mechanical and chemical control methods (see above).

Response to Physical Methods: Studies in west Texas have indicated that water inundation may be effective in controlling saltcedar. Partially or entirely covering saltcedar for 36 months, including three growing seasons, resulted in 99 % plant kill (Wiedemann and Cross 1978). Inundation of trees for 28 months, including 100 % of first growing season and over 50 % of second and third growing season also produced 99 % kills. Additional work indicated that a 24 month inundation period may be the minimum time required to achieve a 99 % plant kill (Wiedemann and Cross 1978).

Biocontrol Potentials: A feasibility study, funded in part by the Bureau of Reclamation, has been done on the biological control of saltcedar. Research has indicated approximately a dozen insect species that might be used to fight saltcedar (Hays 1989). However, none are presently available.

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**References available from the Washington State Noxious Weed Control Board office in Kent.*