



Figure 1: *Tamarix aphylla* (athel tree). Photo by Zoya Akulova (2016)

California Pest Rating Proposal for

Tamarix aphylla (L.) Karst.: athel tree

Family: Tamaricaceae

Pest Rating: B

Comment Period: 10/16/2020 through 11/30/2020

Initiating Event:

The athel tree has been proposed to be grown on a significant scale in California as a potential biofuel crop. However, the athel tree has not been reviewed under the current pest rating system. A pest rating proposal is required to evaluate the current rating and status of the athel tree in the state of California.

History & Status:

Background: The athel tree is a fast-growing tree that is not native to California. Unlike other species of tamarisk naturalized to California, it is an evergreen. It attains a height of 33 to 60 (rarely to 75) feet tall and in exceptional circumstances the trunk may attain a diameter of 2.5 feet. The leaves are in the shape of tiny scales approximately 2 mm in length, and are united completely around and are largely nonoverlapping, giving the stem a jointed appearance. The twigs are wiry and very slender. The athel tree has a deep taproot (Tesky, 1992). The small white to pink flowers are borne in dense compound racemes. The capsule fruits release numerous minute but long-haired seeds well suited to wind dispersal.

The athel tree is a facultative phreatophyte. It is drought resistant and is tolerant of alkaline and saline soils. (Tesky, 1992). Where established outside of cultivation, the athel tree commonly occurs on salt flats, springs, and other saline habitats especially along streams and rivers. The athel tree has been found along the saline portions of the lower Colorado and Gila rivers and in the Salton Sea Basin. It also grows along irrigation ditches in bottomlands (Tesky, 1992). The elevational range for the athel tree in California is from below sea level to 5,000 feet above sea level (Tesky, 1992).

The athel tree produces copious biomass in areas that normally have relatively little, especially by growing on harsh substrates like gravel banks and by being much taller than surrounding vegetation. This changes the shade profile, plant competition, and flammability of the community. Older stands may be able to provide fuel sufficient to support fires in riparian settings that would not normally be susceptible to fire. The tree can anchor soils normally more subject to shifting (e.g. mid-channel) and act as a physical barrier to stream flow through its biomass and accumulation of flotsam, thatch, and sediment. It also may impede irrigation maintenance.

A biocontrol agent, the beetle *Diorhabda elongata*, has been introduced in the southwestern United States to control the athel tree.

Worldwide Distribution: The athel tree is native to northern Africa and southwestern Asia (USDA/GRIN, 2020). It is cultivated in the Middle East and has become naturalized in portions of southern Africa, Australia, and North America, where it is present in the United States (Arizona, California, Hawaii, Nevada, Utah, and Texas) and Mexico (Jalisco) (USDA/GRIN, 2020). In Australia it is widespread in arid areas where it is regarded as “one of the worst weeds in Australia because of its invasiveness, potential for spread, and economic and environmental impact” (CRAWM, 2003).

Official Control: The athel tree is recognized as a noxious weed in Montana (*Tamarix* spp. Category 2B), New Mexico (*Tamarix* spp. Class C), South Dakota, Texas (*Tamarix* spp.), and Wyoming (*Tamarix* spp.). All seeds of *Tamarix* spp. are designated as prohibited noxious weed seeds in Montana, Nevada, North Dakota, and Wyoming (USDA/AMS, 2020).

California Distribution: Currently the athel tree is reported to be naturalized in all counties of Southern California and northwards to Madera and Mono counties with some observations in the San Francisco Bay area and Yolo, Sacramento, and San Joaquin counties (CalFlora, 2020; Consortium of California Herbaria, 2020).

California Interceptions: Material of the athel tree has been intercepted twice at California Border Inspection stations (CDFA, 2020).

The risk the **athel tree** would pose to California is evaluated below.

Consequences of Introduction:

- 1) Climate/Host Interaction:** In the states where it occurs, the athel tree shows a preference for drainage banks in saline areas. The athel tree is expected to colonize riparian areas, arroyos, sand dunes, roadside ditches, irrigation canal banks, and alkaline seeps. Therefore, the athel tree receives a **Medium (2)** in this category.

Evaluate if the pest would have suitable hosts and climate to establish in California.

Score: 2

- Low (1) Not likely to establish in California; or likely to establish in very limited areas.
- **Medium (2) may be able to establish in a larger but limited part of California.**
- High (3) likely to establish a widespread distribution in California.

- 2) Known Pest Host Range:** Risk is **High (3)** as weeds do not require any one host, but grow wherever ecological conditions are favorable.

Evaluate the host range of the pest.

Score: 3

- Low (1) has a very limited host range.
- Medium (2) has a moderate host range.
- **High (3) has a wide host range.**

- 3) Pest Dispersal Potential:** the plant spreads by seed via water flow and wind. In the western United States, it has spread more slowly than its deciduous congeners. The athel tree receives a **Medium (2)** in this category.

Evaluate the natural and artificial dispersal potential of the pest.

Score: 2

- Low (1) does not have high reproductive or dispersal potential.
- **Medium (2) has either high reproductive or dispersal potential.**
- High (3) has both high reproduction and dispersal potential.

- 4) Economic Impact:** The athel tree can interfere with stock management and water availability, and is unpalatable to livestock. The athel tree receives a **Medium (2)** in this category.

Evaluate the economic impact of the pest to California using the criteria below.

Economic Impact: D, F

- A. The pest could lower crop yield.
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- B. The pest could lower crop value (includes increasing crop production costs).
- C. The pest could trigger the loss of markets (includes quarantines).
- D. **The pest could negatively change normal cultural practices.**
- E. The pest can vector, or is vectored, by another pestiferous organism. The organism is injurious or poisonous to agriculturally important animals.
- F. **The organism can interfere with the delivery or supply of water for agricultural uses.**

Economic Impact Score: 2

- Low (1) causes 0 or 1 of these impacts.
- **Medium (2) causes 2 of these impacts.**
- High (3) causes 3 or more of these impacts.

- 5) **Environmental Impact:** The athel tree can dominate desert riparian habitats that are often important for native species including sensitive species such as desert tortoise and Southwestern Willow Flycatcher. In addition, the plant changes the profile and disrupts natural communities by replacing native vegetation and increasing the surface soil salinity. It is beginning to trigger treatment programs. Therefore, it receives a **High (3)** in this category.

Environmental Impact: A, B, D

- A. **The pest could have a significant environmental impact such as lowering biodiversity, disrupting natural communities, or changing ecosystem processes.**
- B. **The pest could directly affect threatened or endangered species.**
- C. The pest could impact threatened or endangered species by disrupting critical habitats.
- D. **The pest could trigger additional official or private treatment programs.**
- E. The pest significantly impacts cultural practices, home/urban gardening or ornamental plantings.

Environmental Impact Score:

- Low (1) causes none of the above to occur.
- Medium (2) causes one of the above to occur.
- **High (3) causes two or more of the above to occur.**

Consequences of Introduction to California for the athel tree: Medium (12)

Add up the total score and include it here.

- Low = 5-8 points
- Medium = 9-12 points**
- High = 13-15 points

- 6) **Post Entry Distribution and Survey Information:** It receives a **Medium (-2)** in this category.

Score: -2

- Not established (0) Pest never detected in California or known only from incursions.
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-Low (-1) Pest has a localized distribution in California or is established in one suitable climate/host area (region).

-Medium (-2) Pest is widespread in California but not fully established in the endangered area, or pest established in two contiguous suitable climate/host areas.

-High (-3) Pest has fully established in the endangered area, or pest is reported in more than two contiguous or non-contiguous suitable climate/host areas.

7) The final score is the consequences of introduction score minus the post entry distribution and survey information score:

Final Score: *Score of Consequences of Introduction – Score of Post Entry Distribution and Survey Information = Medium (10)*

Uncertainty:

As the athel tree has shown its ability to spread in California if neglected, there is little uncertainty.

Conclusion and Rating Justification:

The athel tree is a potentially noxious weed of desert areas that appears to be spreading through the southwestern United States including California. A rating of “B” is appropriate due to its presence in multiple counties in different regions of California.

References:

Baldwin, B. G., Goldman, D. H., Keil, D.J., Patterson, R., Rosatti, T.J., and Wilken, D.H., editors. 2012. The Jepson manual: vascular plants of California, second edition. University of California Press, Berkeley.

Benson, L.; Darrow, R. A. 1981. The trees and shrubs of the Southwestern deserts. Tucson, AZ: The University of Arizona Press.

Calflora. 2020. Information on California plants for education, research and conservation, with data contributed by public and private institutions and individuals. Accessed: April 10, 2020:

https://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=7913

California Department of Food and Agriculture (CDFFA). 2020. Pest and damage record database. Accessed March 25, 2020:

<https://pdr.cdfa.ca.gov/PDR/pdrmainmenu.aspx>

Consortium of California Herbaria (CCH). 2020. Data provided by the participants of the CCH. Regents of

the University of California 2020. Accessed April 10, 2020:

<http://ucjeps.berkeley.edu/consortium/>

CRC for Australian Weed Management (CRAWM). 2003. Weeds in Australia: Athel Pine. Accessed April 10, 2020:

<http://www.environment.gov.au/biodiversity/invasive/weeds/publications/guidelines/wons/t-aphylla.html>

Milbrath, L.R. and De Loach, C.C.J. 2006. Acceptability and suitability of athel, *Tamarix aphylla*, to the leaf beetle *Diorhabda elongata* (Coleoptera: Chrysomelidae), a biological control agent of saltcedar (*Tamarix* spp.). Environmental Entomology 35: 1379-1389.

Rowlands, P.G. 1989. History and treatment of the salt cedar problem in Death Valley National National Monument. In: Tamarisk control in southwestern United States; 1987 September 2 to 3; Tucson, AZ.

Tesky, J.L. 1992. *Tamarix aphylla*. In: Fire Effects Information System, U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Accessed November 25, 2014:

<https://www.fs.usda.gov/database/feis/plants/tree/tamaph/all.html>

Turner, R. M. and Brown, D. E. 1982. Sonoran desert scrub. In: Brown, D.E. (ed.) Biotic communities of the American Southwest-United States and Mexico. Desert Plants. 4(1-4): 181-221.

United States Department of Agriculture (USDA), Agricultural Marketing Service (AMS). 2020. State Noxious Weed Seed Requirements Recognized in the Administration of the Federal Seed Act. Accessed August 27, 2020:

<https://www.ams.usda.gov/sites/default/files/media/StateNoxiousWeedsSeedList.pdf>

USDA Agricultural Research Service, National Plant Germplasm System. 2020. Germplasm Resources Information Network (GRIN-Taxonomy). National Germplasm Resources Laboratory, Beltsville, Maryland. Accessed August 27, 2020:

<https://npgsweb.ars-grin.gov/gringlobal/taxon/taxonomydetail?id=36222>

USDA Plants database: *Tamarix aphylla*. Accessed April 10, 2020:

<http://plants.usda.gov/core/profile?symbol=taap>

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***Comment Period: 10/16/2020 through 11/30/2020**

***NOTE:**

You must be registered and logged in to post a comment. If you have registered and have not received the registration confirmation, please contact us at permits[@]cdfa.ca.gov.

Comment Format:

- ❖ Comments should refer to the appropriate California Pest Rating Proposal Form subsection(s) being commented on, as shown below.

Example Comment:

Consequences of Introduction: 1. Climate/Host Interaction: [Your comment that relates to “Climate/Host Interaction” here.]

- ❖ Posted comments will not be able to be viewed immediately.
 - ❖ Comments may not be posted if they:
 - Contain inappropriate language which is not germane to the pest rating proposal;
 - Contains defamatory, false, inaccurate, abusive, obscene, pornographic, sexually oriented, threatening, racially offensive, discriminatory or illegal material;
 - Violates agency regulations prohibiting sexual harassment or other forms of discrimination;
 - Violates agency regulations prohibiting workplace violence, including threats.
 - ❖ Comments may be edited prior to posting to ensure they are entirely germane.
 - ❖ Posted comments shall be those which have been approved in content and posted to the website to be viewed, not just submitted.
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Pest Rating: B
