Category A—High

Tree of heaven (*Ailanthus altissima*)

Identification and Impacts

Photo credit: R. Gardner

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Key ID Tips

- Gland located at the base of each leaflet near the petiole.
- Skunky smell to leaves and flowers.
- Smooth, thin bark and a straight bole.

Navajo Name

T'iis Nattói

Photo credit: R. Kleinman

Origin

Native to China

Description

Tree of Heaven is a deciduous tree that can grow to nearly 70 feet tall. It has large, pinnately compound leaves. The leaves give a skunk-like odor when crushed. It looks similar to native smooth sumac and hickory but is distinguished by the small notched gland at the base of each leaflet near the petiole. Its flowers are dioecious (either male or female) and grow in a long panicle with small white to pink flowers that also have a strong smell (Fryer 2010). The tree produces seeds in a samara that appear reddish brown in the fall. Young trees develop a taproot that diminishes with age as a network of long, lateral roots develop, making adults shallowly rooted. Bark is smooth and thin, and branches break easily and the bole of the tree is straight.

Biology

Tree of heaven prefers disturbed sites in riparian areas, grasslands, and woodlands. It tolerates shade, pollution, and a wide range of soil conditions including acidic and mining wastes. It is a prolific seeder and can reproduce by seed and vegetatively through its root suckers. Its root sprouts can sprout up to 50 feet from the parent tree. Individual trees can live between 30 to 50 years.

Locations

Populations have been documented in Shiprock.

Ecological Threat and Management Concerns

Tree of heaven's extensive and woody root network can damage underground structures and buildings. Its weak branches can also increase property damage and hazard branch risks. It grows rapidly, creating dense stands that limit native plant growth and grazing. Chemicals excreted from its leaves, bark, roots, and seeds may inhibit the growth of other plants. While not toxic, the foliage can cause contact dermatitis and allergies in some individuals.

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Management Recommendations		Additional safety measures and limitations may apply to each method. Refer to the Navajo Nation Integrated Weed Management Plan for more information. **Mechanical/Manual Removal** Hand pulling can remove seedings, but must remove the underground roots to be effective. Removal of the entire root is needed and removal is best when soil is wet. **Biological** No biological control organisms are available for use on the Navajo Nation. **Cultural Control** Grazing and fire are not recommended for controlling tree of heaven as both can cause resprouting. Leaves are also high in various bitter compounds that make them unpalatable to livestock. (Fryer 2010). Maintaining shade is key to reduce establishment of resprouting trees and seedlings. **Chemical** Use of herbicides can be effective. Refer to the product labels for application rates, timing, and approved application methods. Recommended herbicides include: • Glyphosate • Imazapyr • Triclopyr **References** DiTomaso, J.M., G.B. Kyser et al. 2013. *Weed Control in Natural Areas in the Western United States.* Weed Research and Information Center. University of California. 544 pp. Fryer, J. 2010. Ailanthus altissima. In: Fire Effects Information System, U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory. Available at: https://www.fs.usda.gov/database/feis/plants/tree/ailalt/all.html. USDA, NRCS. 2023. PLANTS Database. Available at https://plants.sc.egov.usda.gov/. National Plant Data Team, Greensboro, NC 27401-4901 USA.

Bureau of Indian Affairs
Navajo Region
301 West Hill Street
Gallup, NM 87301
Phone: (505) 863-8314
www.bia.gov/regional-offices/Navajo-region