

Assessment of Netleaf Hackberry Trees at Harris Ranch
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Between 1989 and 1991, I sampled 959 netleaf hackberry trees (*Celtis laevigata*; *Celtis occidentalis* var. *reticulata*) at 250 sites in western Idaho, eastern Oregon, and southeast Washington. The work was conducted in partial fulfillment of my Masters of Science degree at Oregon State University (see Related Publications below). This assessment is compiled from both my research and the literature review process.

Netleaf hackberry, which belongs to the elm family (Ulmaceae), is typically a relatively small tree to large shrub. It has a fragmented distribution in Idaho, where it grows in semi-arid portions of the state where temperatures are less severe during winter months. Within these semi-arid regions, netleaf hackberry grows in a variety of habitats, from riparian areas to uplands, but it is most often found on sites with a southeast- to southwesterly aspect and a rocky surface cover. The presence of rock helps trees survive, first by providing a “safe site” for seeds to collect and germinate. Rocks also reduce competition with other plants, provide protection from grazing animals, help funnel moisture to tree roots, and protect plants from fire. The presence of rock below ground may be equally important but was not measured during my study.

In our region, hackberry is usually slow-growing, averaging 13 feet tall at 50 years of age. Trees reach maximum heights where topographic shelter is greatest, such as in draws, and where soils are loamy. However, drainage seems to be important, as nearly all soils have some sand or skeletal to gravelly component. Trees can be long-lived. The oldest one sampled was at least 374 years; the average age of sampled trees was 66 years.

Plants reproduce either by root sprouting or from seed. They produce a pea-sized, reddish-orange fleshy drupe in the fall. A thin layer of pulp surrounds a single interior hard seed. Drupes (fruits) are eaten by a variety of birds and mammals. With as many as 41 species of birds associated with hackberry communities in Idaho, the tree’s importance for wildlife cannot be overemphasized. Hackberry trees provide cover for a variety of big game and small mammals alike. During my two summers of data collection, I also observed a great number of owls (great horned, long-eared, western screech) both nesting and roosting in the trees.

Netleaf hackberry gets its name from the pronounced net-like veins on the underside of its leaves. Leaves are late to develop in the spring, most likely to avoid late spring frosts, as this species is near the northern edge of its North American range, which extends from the desert southwest (AZ, NM) to prairie regions of Kansas and Oklahoma and south into Texas and northern Mexico.

Hackberry leaves often contain bumpy blemishes called “nipple galls”. Hackberry psyllids are small aphid-like insects that cause the galls commonly seen on the underside of tree leaves. Psyllids (pronounced: Sill - ids) are also called jumping plant lice. They resemble miniature cicadas and have powerful hind legs that allow them to jump and fly away quickly. The hackberry psyllids are 3/16" long and have lightly colored wings mottled with tiny dark spots. Adults fly to hackberry trees in early spring and lay eggs in leaf buds. After the egg hatches, the young psyllid starts feeding, and the leaf responds by growing abnormally. It develops a small pocket that surrounds the insect, forming the "gall". The psyllid spends the rest of the summer sucking on tree sap safely within the small gall. Several species of gall-making psyllids infest hackberry trees. **Hackberry psyllids are specific to hackberry trees and do not develop and cause galls on any other plant species.**

When psyllids complete their development in late summer, the adults leave the galls to pass the winter. They normally spend the winter in cracks and crevices of tree bark and other sheltered locations. Infested hackberry trees do not seem to be harmed by these galls, but their abundance makes hackberry leaves look unsightly to some.

Psyllids are annoying only because of their presence and the galls they create. They do not feed on humans, cannot sting and they do not carry disease. They will not attack pets, houseplants, stored products, or furnishings. Preventing psyllids by spraying hackberry trees before gall formation is occasionally done, but several applications of insecticide would generally be necessary to have a noticeable effect. Thoroughly spraying large trees is a further complication. In short, there is little that is practical in the way of hackberry psyllid management other than to tolerate the occasional annoyance and “warty” tree leaves.

The netleaf hackberry trees within the Harris Ranch Subdivision growing along the road that lead to the old ranch house have the largest diameter for their height of any I have seen. They have a relatively upright growth form for large old hackberries, since they grew most of their lives adjacent to a pasture irrigation ditch. Although their roots were impacted by cattle concentrating under the trees for shade, they grew with no shortage of water and so could achieve their large size. While the netleaf hackberry trees at this location were not aged, I estimate them to be 100-180 years old. The species' ability to withstand heat, strong winds and alkaline soil, and deep roots that won't crack nearby pavement, are all desirable characteristics of a “street tree”. Additionally, these particular trees value for shade, wildlife, and historical interest is unique and they should continue to be protected and maintained, as they are truly remnants from a different time.

Related Publications

DeBolt, Ann M. 2004. *Celtis reticulata* Torr. Ulmaceae, p. 167-169. In: Francis, John K., ed. Wildland shrubs of the United States and its Territories: Thamnlic Descriptions. Gen. Tech. Rep. IITF-GTR-26. U.S. Department of Agriculture, Forest Service, International Institute of Tropical Forestry and Shrub Sciences Laboratory, Ogden, UT. [Online: http://www.fs.fed.us/global/iitf/wildland_shrubs.htm].

DeBolt, A.M. and B. McCune. 1995. Ecology of *Celtis reticulata* in Idaho. Great Basin Naturalist. 55(3): 237-248.

DeBolt, A.M. and B. McCune. 1995. Is netleaf hackberry a viable rehabilitation species for Idaho rangelands? Pages 305-309 in: Roundy, B.A., E.D. McArthur, J.S. Haley, & D.K. Mann, compilers. Proceedings: wildland shrub and arid land restoration symposium. Gen. Tech. Rep. INT-GTR-315, Ogden, Utah.

DeBolt, A. 1992. The ecology of *Celtis reticulata* Torr. (netleaf hackberry) in Idaho. Corvallis, OR: Oregon State University. 161 p. Thesis.