

***Celtis reticulata* Torr.**
ULMACEAE

netleaf hackberry

Synonyms: *Celtis douglasii* Planch.
C. occidentalis L. var. *reticulata* (Torr.) Sarg.
C. laevigata Willd. var. *reticulata* (Torr.) L. Benson

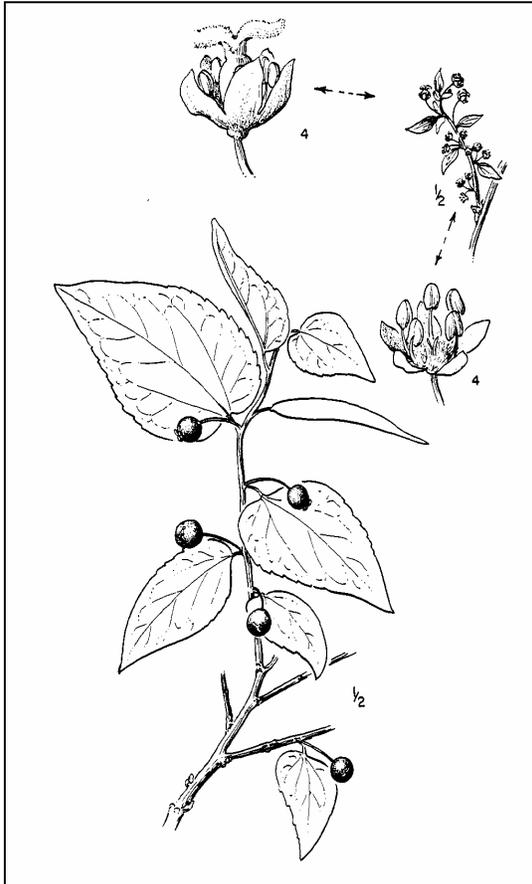


Illustration credit: J.R. Janish in Hitchcock and others 1964.

General Description.—Netleaf hackberry is also known as western or Douglas hackberry. It is a deciduous shrub to small tree from 3 to 20 m tall. Near the northern edge of its range in Idaho, its maximum height is 12 m (DeBolt and McCune 1995). This species' growth form varies from a singular, reasonably straight-stemmed tree to a gnarled shrub with multiple stems. The bark is gray, hard, and moderately thick, forming protruding corky ridges with age (Elias 1980). Leaves are 3 to 9 cm long, alternate, simple, ovate to ovate lanceolate, and somewhat leathery with scabrous surfaces and entire to serrate margins. The specific epithet *reticulata* comes from the

reticulate or netlike pattern of prominent venation on the leaf underside (Lanner 1983). Twigs and leaves are frequently infested by insect galls, but vigor is not seriously affected (Hayward 1948). The small, green, apetalous, polygamo-monoecious flowers number from one to several in the leaf axils. Pea-sized fruits are fleshy, reddish-orange to purple globose drupes, each with a single large seed. Some authorities consider the highly variable netleaf hackberry to be a variety of sugarberry (*C. laevigata* Willd.) (Natural Resources Conservation Service 2003, Stephens 1973). Others recognize many intergrading forms, and it is possible that future distribution maps of *C. reticulata*, if the name is retained, will not resemble those available today.

Range.—Netleaf hackberry is found east of the Cascade and Sierra Nevada Mountains from central Washington south to northern Mexico and east to central Kansas, Texas, and Oklahoma (Lanner 1983, Little 1976).

Ecology.—At elevations ranging from 100 to 2,000 m, netleaf hackberry grows in a variety of habitats including mountain shrub, deciduous riparian woodlands, live oak-mixed shrub and wash scrub communities, rocky ravines, and as scattered individuals in semi-desert grasslands, pinyon-juniper, and Joshua tree woodlands (Albee and others 1988, Brown 1982, Carmichael and others 1978, Plummer 1977). Populations can be small or highly localized, particularly at the northern latitudes (Daubenmire 1970), or they can comprise the dominant vegetation matrix. On the Edwards Plateau of Texas, netleaf hackberry grows as an overstory codominant in many riparian woodlands (Van Auken and others 1979). A hackberry association was presented by Dick-Peddie and Hubbard (1977) for the mixed deciduous series of their riparian classification scheme for New Mexico, and several ecologists have recognized it as a vegetation type on the lower Snake and Salmon Rivers in Idaho and Oregon (Huschle 1975, Tisdale 1986), where warm canyons are adequate for its existence. At

northern latitudes stands are often associated with rock (DeBolt and McCune 1995), which provides extra moisture and some protection from wildfire.

Reproduction.—Wind-pollinated, nonshowy flowers appear in spring, just before or as the leaves unfold, depending on latitude. Fruits ripen from September to November and persist on the trees until midwinter. They are dispersed by birds, rodents, and other small mammals. Netleaf hackberry exhibits low germination percentages (37 percent) and high seed dormancy (Bonner 1974). Seeds are hard and thick-walled, probably the major impediment to rapid germination. Germination is epigeal. Dormancy can be overcome with stratification at 5 °C in moist sand or other suitable media for 120 days (Bonner 1974). Mechanical scarification enhances germination after 45 days (DeBolt 1992). Netleaf hackberry can reproduce vegetatively by sprouting from the root crown, stem base, or lateral roots. It can also be propagated by cuttings (Bonner 1974).

Growth and Management.—Seedlings establish from animal-, gravity-, or water-dispersed propagules in sites free of herbaceous competition, often in rocky areas or in the duff of an existing stand. Plummer (1977) found netleaf hackberry useful in stabilizing disturbed areas in pinyon-juniper and mountain brush types of Utah. In Texas and Arizona, it is increasingly being used for riparian restoration and wildlife plantings. It currently receives limited use in artificial plantings in the northern portion of its range, though once established, young plants are hardy and persistent. Netleaf hackberry is generally slow-growing, but plants may live for 300 to 400 years (DeBolt and McCune 1995).

Benefits.—Netleaf hackberry provides cover and food for a host of wildlife species. Its fruits are particularly important for birds during winter (Hayward 1948, Lanner 1983), and its leaves and twigs are browsed by bighorn sheep, mule deer, whitetail deer, elk, and occasionally by livestock. It could be used more widely for domestic landscaping as it requires little maintenance and is drought tolerant. Its hard wood is still used today on a limited basis for tool handles and firewood.

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