

NEW MEXICO FFA FORESTRY CDE TREE IDENTIFICATION

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Tree Identification Study Guide

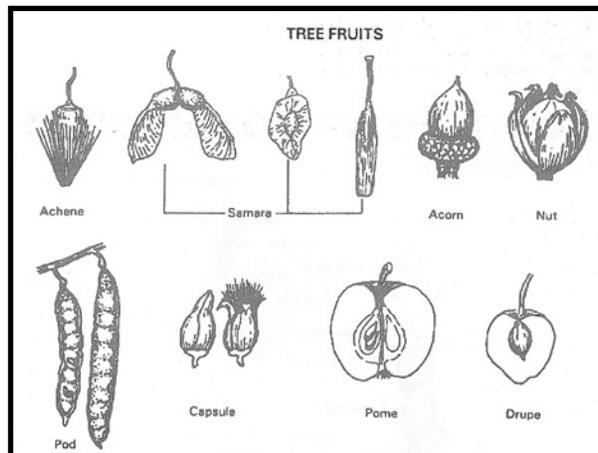
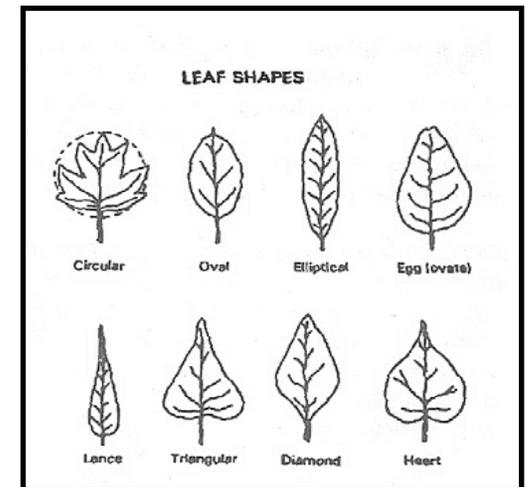
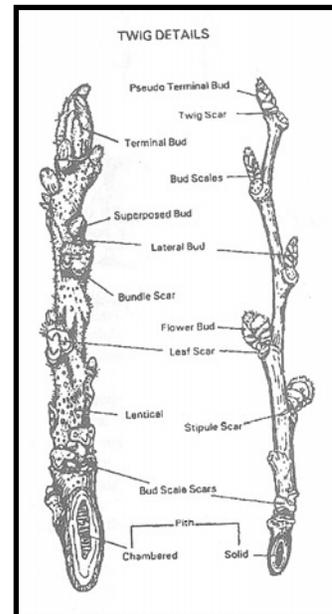
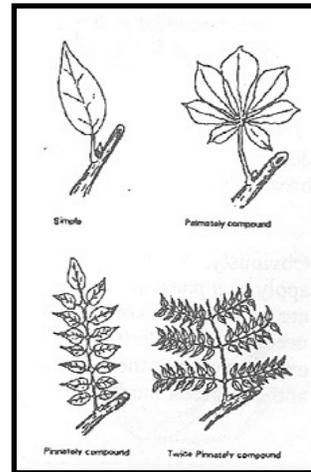
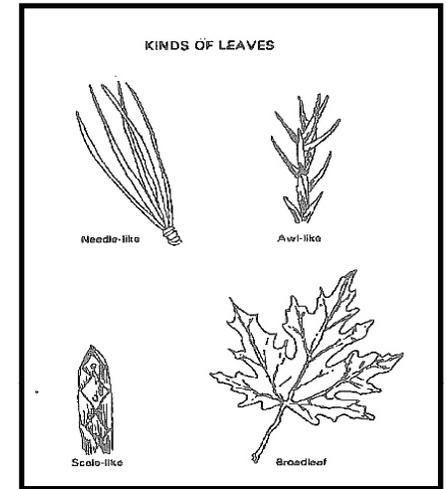
We will break the trees up into groups to study them:

Coniferous trees (trees that have cones)

- Leaf Shape
- Cones

Broadleaf trees (those that lose their leaves for a portion of the year)

- Twig structure
- Leaf Shape
- Thorns
- Fruit



Coniferous trees

- These trees have cones, and most have leaves that stay on the tree all year.
- Leaf structure can identify the genus of the plant. Other leaf characteristics can help identify the species.
- Conifer leaves are either needles, scales-like or awl-like. Some junipers may have both scale-like and awl-like leaves at the same time.

Scale-like



Awl-like



Needles



Tree Identification List

Trees from the identification list that we will be learning to identify in this section are:

Arizona cypress

Oneseed juniper

Rocky Mountain juniper

Blue spruce

Pinyon pine

Eldarica pine

Ponderosa pine

Scots pine

Southwestern white pine

Douglas-fir

White fir

Conifer trees with needles

- Pines – needles attached to the twig in fascicles (grouped together)
- Spruce – needles attached singly to the twig, sharp, square and stiff
- Fir – needles attached singly to the twig, flat, flexible and friendly

Pines

Scots pine

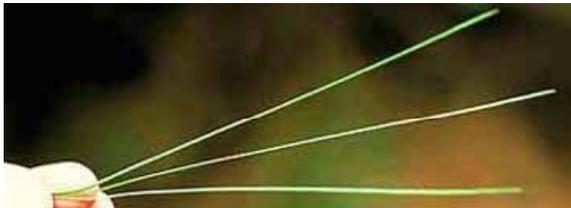
Pinus sylvestris



Scots pine needles are 1 ½ to 3 inches long and twist as they come out of the fascicle.

Ponderosa pine

Pinus ponderosa



Ponderosa pine have 3 needles to each group. The needles are from 5 to 10 inches in length.

There are 3 pines that have two needles per group.

Eldarica pine

Pinus eldarica



Eldarica pine needles are 3 to 6 inches long, thin and grow irregularly. The tree always looks like it is having a bad hair day!

Southwestern white pine

Pinus strobiformis



Southwestern white pine have 5 needles to each group. The needles are from 2 to 3 inches long.

Pinyon pine

Pinus edulis



Pinyon pine needles are 1 to 2 inches long and look like the needle was sliced in half. Each half mirrors the other.

Pine Cones

Pine cones have more mass than other conifer cones.

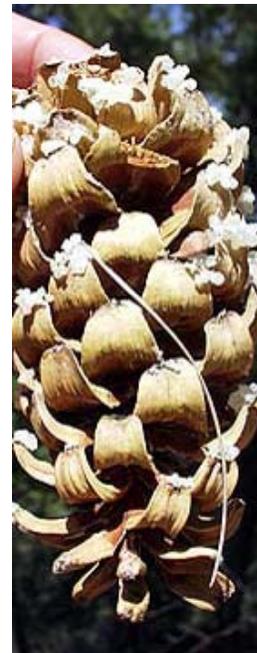


Pinyon cones are 2 inches long. They are as wide as they are long and each cone generally has two large edible seeds per scale.

Ponderosa cones are 3 to 6 inches long and have a prickle on the open end of the scales.



Eldarica cones are 3 to 4 inches long. They are smooth and fresh cones look like they are covered in a waxy substance.



Southwestern white cones are cylindrical and 5 to 9 inches long and taper to a tip. The scales curl back when the cone is open.



Scots cones are 1 ½ to 2 ½ inches long. The scales are very uniform have a lip. The cones look almost flower-like when open.

Spruce and Fir

White fir

Abies concolor



White fir needles are 2 to 3 inches long and are flat and blunt at the tip. They extend at right angles from the twig and curve upward.

Blue spruce

Picea pungens



Blue spruce needles are 3/4 to 1 1/4 inches long, square, stiff and very sharp (spine-like). Each is displayed nearly straight out from twig on a raised, woody peg called a sterigma.

Douglas-fir

Pseudotsuga menziesii



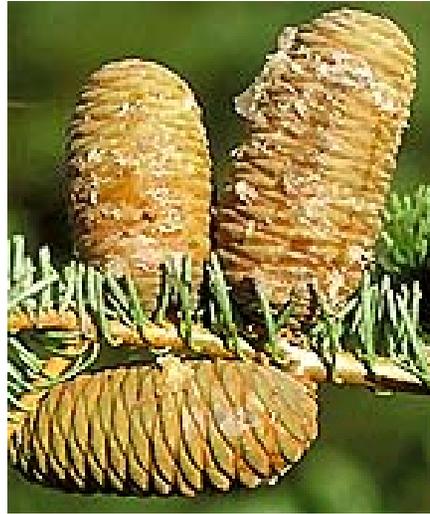
Douglas-fir needles lack woody pegs or suction cups. When pulled from the twig they resemble miniature hockey sticks. The 3/4 to 1 1/4 inches long, flat needles have tips that are blunt or slightly rounded.

Spruce and Fir Cones

Spruce and fir cones are thin and easily broken apart.



Blue spruce cones grow downward on the tree and are 2 to 4 inches long. The scales are flexible and pointed with jagged erose margins.



White fir cones grow upright on the tree and are 3 to 5 1/2 inches long. These cones are difficult to find in one piece as they generally disintegrate while on the tree.



Douglas-fir cones grow downward on the tree and are 3 to 4 inches long with rounded scales. Three-lobed bracts extend beyond the cone scales and resemble mouse posteriors.

Junipers and Cypress

Arizona cypress

Cupressus arizonica



J.S. Peterson @ USDA-NRCS PLANTS Database

Oneseed juniper leaves are scale-like and pointed. Most are tight and crowded on the twig in opposite pairs resulting in a slightly square twig. On vigorous shoots a few are awl-like and point away from the twig. These leaves are very stout and compact on the twig.

Oneseed juniper

Juniperus monosperma

Rocky Mountain juniper

Juniperus scopulorum



Al Schneider @ USDA-NRCS PLANTS Database

Arizona cypress leaves are scale-like, tight and crowded on the twig in opposite pairs resulting in a square twig. The twigs are 4 angled and branch at almost right angles. If you look down the twig the leaves come out at right angles and form a cross.



James L. Reveal @ USDA-NRCS PLANTS Database

Rocky Mountain juniper leaves are small (1/8 inch), scale-like and tight against the branches. Back sides of needles bear inconspicuous glands. These leaves generally have are smaller and more spread out than Oneseed juniper leaves.

Juniper and Cypress Cones



Oneseed juniper cones are berry-like, round, 1/4 inch in diameter and dark bluish with a whitish coat. They have 1 seed per fruit and mature in one growing season.



Arizona cypress cones are dry, round, woody, cones, 1 inch in diameter. They have 6 to 8 pointed scales and mature in two growing seasons. They may remain on the branches for several years.



Rocky Mountain juniper cones are round, bluish berry-like cones with a whitish coat, 1/3 inch in diameter, and mature in two seasons. They usually have two seeds per cone.

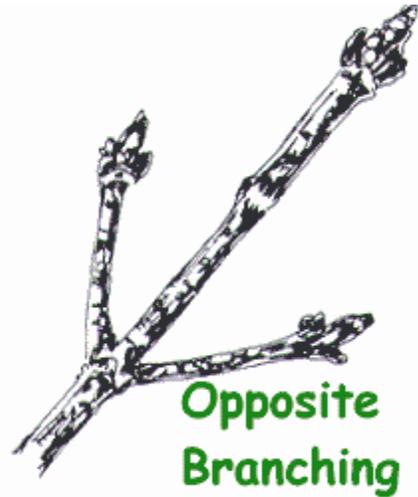
Broadleaf Trees

The first set of broadleaf trees we will study off of the tree identification list are the opposite branching ones.

Rocky Mountain maple

Boxelder

Arizona ash



Rocky Mountain maple

Acer glabrum



Leaves are opposite and will have 3 to 5 short-pointed lobes or can be divided into 3 lance-shaped leaflets. The leaves are doubly saw-toothed, green above with lighter veins, slightly paler below.



The fruit is a paired samara, one inch long that hang in clusters and dry to a light tan when mature.



Twigs are opposite, slender and pale green to red.

Buds are red and pointed. Lateral buds stand out from the twig.



Boxelder

Acer negundo



The leaves are opposite and pinnately compound with 3 to 5 leaflets (sometimes 7) that are 2 to 4 inches long. The margin is coarsely serrate or somewhat lobed. The shape is variable but leaflets often resemble a classic maple leaf and are light green above and paler below.



The fruit is a paired V-shaped samara, 1 to 1 1/2 inches long. The drooping samara clusters are light tan when they are ripe and persist throughout the winter.

The twig is green to purplish green, moderately stout with narrow leaf scars that meet in raised points. They are often covered with a glaucous bloom. The buds are white and hairy, lateral buds lie flat against the stem.



Arizona ash

Fraxinus velutina



The leaves are opposite, pinnately compound, 5 to 9 inches long, and typically have 5 leaflets (occasionally more or less). The leaflets are elliptical to ovate with margins entire (maybe wavy toothed). They are shiny green above and paler and pubescent below (maybe smooth).

The twig is stout and hairy when young. Color varies from gray to brown with age. The leaf scars are fairly large.



The fruit is a single wing, straight samara, 1 to 1 1/2 inches long with a plump seed. The large hanging clusters mature in late summer.



Broadleaf Trees

The next group we will look at are the broadleaf trees that have thorns. Those include Catclaw acacia, Honey mesquite, Screwbean mesquite and New Mexico locust.

Catclaw acacia

Acacia greggii



The twig is slender, brown, and angled, with numerous stout backward curving spines (1/4 inch). The spines or thorns are broad at the base like a rose thorn.



The fruit is a legume that is 3 to 6 inches long, 1/2 inch wide, flattened, and very twisted. It is brown and matures in mid to late summer.

The leaves are alternate and bipinnately compound, 1 to 2 inches long, with 1 to 3 pairs of major leaflets and 4 to 6 pairs of minor leaflets (1/4 inch long) The leaves are dull green.



Honey mesquite

Prosopis glandulosa



The leaves are alternate and bipinnately compound, 3 to 6 inches long, usually with only two major leaflets (may occasionally have 2 to 3 pairs). Each leaflet with 10 to 16 pairs of narrow minor leaflets (3/8 to 1 inch long) with entire margins and smooth surfaces, green to gray green above and paler below.



The twig is light brown and slightly zigzag with obvious paired slender, spines (up to 1 inch long) at the base of each leaf. Knobby spur branches may also be present.

The fruit is a 3 to 7 inch long, tubular legume, slightly swollen at seeds. It is light brown and ripens in mid to late summer.



Screwbean mesquite

Prosopis pubescens



The leaves are alternate and bipinnately compound, 1 to 2 inches long, usually with only two major leaflets (may occasionally have 2 to 3 pairs), each leaflet with 6 to 9 pairs of narrow minor leaflets (1/2 to 1 inch long) with entire margins and a fuzzy surface. They are green to gray-green above and paler below.



The fruit is a very unique, tightly coiled legume, 1 to 2 inches long and light brown, ripening in mid to late summer.

The twig is light reddish brown, slightly zigzag with obvious paired slender spines (up to 1 inch long) at the base of each leaf, spine is nearly white, knobby spur branches may also be present.



New Mexico locust

Robinia neomexicana



The leaves are alternate and pinnately compound. They have 11 to 19 elliptical leaflets each 1 to 1 1/2 inches long with entire margins.



The twig is a moderate size, zigzagged and somewhat angled or ridged. It has reddish hairs and a pair of spines at each leaf scar. The spines or thorns have a broad base like a rose thorn.



The fruit is a flat pod, brown, 2 to 4 inches long and covered in gland tipped hairs.

Broadleaf Trees

We will now look at the characteristics of the remaining trees on the tree identification list.

Algerita

Mahonia trifoliata

The leaves are evergreen, alternate, spine tipped, leathery and sessile, with 3 to 7 lobes on a trifoliate, holly-like leaf. Leaflets are thick and leathery, lanceolate-oblong to elliptic, and have coarsely serrate or spinose margins. Leaflets are pale green to glaucous.



Clarence A. Rechenthin @ USDA-NRCS PLANTS Database

The fruit is bright red, somewhat flattened, 1/3 to 1/2 inch berry with 1 to several seeds.

The twigs are smooth and reddish-green when young but turn gray to reddish-brown with age. Young stems are red or green becoming dark reddish-brown or gray.



Shrub live oak

Quercus turbinella

The leaves are alternate, evergreen, simple, elliptical and 1/2 to 1 1/2 inches long. They are spine-tipped lobes (holly-like), leathery and stiff and dull gray-green in color. They may have some whitish bloom. They also may be smooth or finely fuzzy beneath.



Algerita leaves are trifoliate not simple like those of the shrub live oak.



© Patrick J. Alexander

Patrick J. Alexander @ USDA-NRCS PLANTS Database

The twig is slender and reddish brown. Young twigs will have some fine tan fuzz on them. The buds are clustered and ball shaped.



The fruit is a narrow oblong acorn, 1/2 to 1 inch long. Its shallow, warty cap covers 1/4 to 1/3 of nut. The acorns ripen in one season in early fall or late summer.

Gambel oak

Quercus gambelii



The leaves are alternate, simple and have a leathery texture. The leaves are 3 to 6 inches long and 2 to 3 inches wide and are pinnately lobed with 5-9 moderate-to-deep rounded lobes. The leaves are usually widest above the midpoint. They are yellow-green and smooth above and paler and smooth to densely hairy below.

The fruit is a rounded acorn 1/2 to 1 inch long. It has a shallow cap covering 1/4 to 1/3 of the nut. They mature in one season.

Young twigs are stout, reddish brown, and slightly hairy. Older twigs are darker and smoother. The terminal buds are clustered and have distinct overlapping scales.



Thinleaf alder

Alnus incana ssp tenuifolia



The leaves are 2 to 4 inches long, alternate, simple, oval, thin, and doubly serrated with 6 to 10 nearly straight parallel veins on each side. Dull dark green above and paler and slightly hairy below.



The twig is gray-brown to reddish brown, gummy, finely hairy, slightly zigzagged with lighter lenticels. The buds are stalked, plump and reddish brown. Pith is 3 angled



The fruit is cone-like, 1/2 to 3/4 inches long, and brown when ripe. 3 to 6 cones are clustered on slender, spreading, long stalks. Each scale encloses a very small winged seed. It matures in late summer and is persistent.

Water birch

Betula occidentalis



Susan McDougall @ USDA-NRCS PLANTS Database

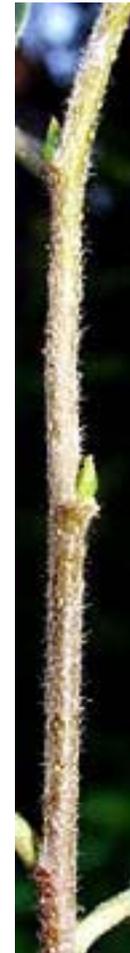
The leaves are 3/4 to 2 inches long, alternate, simple, ovate to diamond-shaped usually with 4 to 5 veins on each side. They are yellow-green above and initially sticky but change to smooth. They are paler and glandular below. Margins are distinctly serrated or doubly serrated, except near the base.



Robert H. Mohlenbrock @ USDA-NRCS PLANTS Database / USDA NRCS. 1992. *Western wetland flora: Field office guide to plant species*. West Region, Sacramento, CA.

The fruit is a 1 inch long cylindrical papery strobile (cone) that disintegrates at maturity. The seeds are tiny winged nutlets.

Young twigs are green and sticky, but turn reddish brown and resin-dotted. With age they eventually turn gray-brown and are smooth.



Pecan

Carya illinoensis



The fruit is 1 1/2 to 2 inch long oblong, brown, splotted with black, thin shelled nut. The husks are thin and usually occur in clusters on trees. They mature in the fall.



The leaves are alternate and pinnately compound with 9 to 15 finely serrate and often curved leaflets. The leaflet can be 12 to 18 inches long.

The twig is light brown and fuzzy (particularly when young). Leaf scars are large and three lobed (heart shaped). Buds are yellowish brown to brown, hairy, with terminal buds 1/4 to 1/2 inch long. Twigs have dark heartwood.



Arizona walnut

Juglans major

The fruit is a round nut, 1 to 1 1/2 inches in diameter.

The husk is thin and indehiscent, initially bright green but turning brown.

The nut is grooved and matures in fall.



Steve Hurst @ USDA-NRCS PLANTS Database



Susan McDougall @ USDA-NRCS PLANTS Database

The leaves are alternate, pinnately compound with 9 to 15 leaflets, 7 to 13 inches long. The leaflets are narrowly ovate to lanceolate, somewhat curved with serrated margins, each 2 to 4 inches long. They are yellow-green above and paler below.

The twig is initially green but turns brown and fuzzy. Buds are scruffy light gray-brown and fuzzy.

Leaf scars are very large, raised and 3-lobed (heart-shaped).

The pith is chambered and has dark heartwood.



Desert willow

Chilopsis linearis



The twig is slender, initially green but turning gray-brown. Buds are very small.



The leaves are alternate and opposite or whorled, linear, often slightly curved, 3 to 5 inches long and 1/4 to 3/8 inches wide. They are green above.

The fruit is a long thin slightly twisted brown capsule, 6 to 12 inches long. It contains numerous fluffy, winged seeds that ripen in the fall.



Sandbar willow

Salix exigua



The leaves are alternate, simple, and lanceolate to linear, 2 to 5 inches long and very narrow. They may be entire or have a few scattered teeth and are green to gray-green above, paler and may be hairy below.



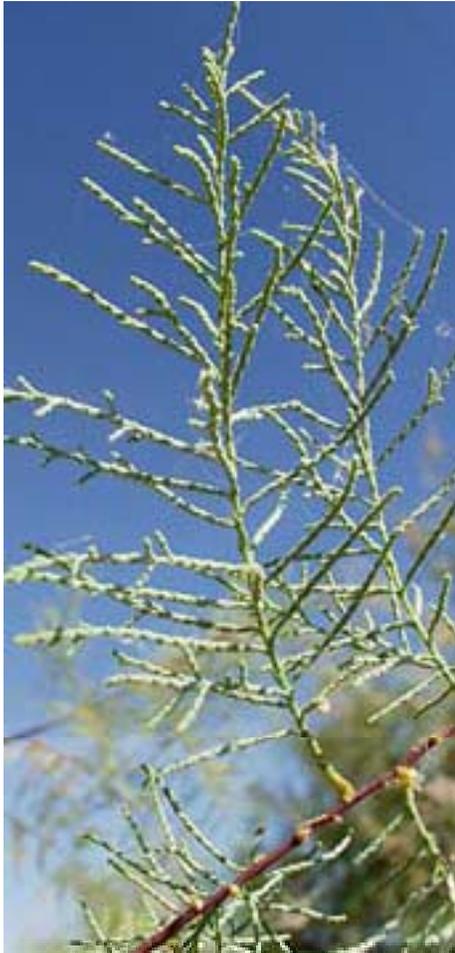
The fruit is a small (1/4 inch), long-pointed capsule in long, narrow clusters. Each capsule contains numerous small fuzzy seeds.

The twig is slender and pale green to tan. It may be reddish in winter and sometimes fuzzy. The buds are covered by a single cap-like scale.



Salt cedar

Tamarix chinensis



The twig is a slender, drooping, green branch covered in scale-like foliage that later turns purplish. The leaf scars are very small, raised and numerous on the twig.

The leaves are alternate, very small (1/16 inch), scale-like and gray-green.



The fruit is a small, dry, brown, pointed capsules 1/8 inch long that contains numerous cottony seeds and ripens in summer.

Rio Grande cottonwood

Populus deltoides ssp. *wislizeni*



The leaves are alternate, simple, pinnately veined, 3 to 6 inches long. The leaves are triangular (deltoid) in shape with a crenate/serrate margin. The petiole is flattened and glands are present at the top of the petiole.



W.L. Wagner @ USDA-
NRCS PLANTS Database

The fruit is cottony seeds, 1/4 inch long borne in a dehiscent capsule. They mature in summer.



The twig is somewhat angled and yellowish. Bud scars are large and raised. The buds are 3/4 inch long and covered with several brown, resinous scales.



Quaking aspen

Populus tremuloides



USDA-NRCS PLANTS Database / Herman, D.E. et al. 1996. *North Dakota tree handbook*. USDA NRCS ND State Soil Conservation Committee; NDSU Extension and Western Area Power Admin., Bismarck, ND.

The twig is slender, glabrous, reddish brown often with a gray, waxy film. Buds are conical and reddish brown. The terminal bud is 1/4 inch long and may be slightly resinous.

The fruit is a catkin (2 to 4 inches long), with attached light green capsules which contain many small hairy seeds.

The leaves are alternate, simple, heart-shaped to nearly round with a fine toothed margin, 1 to 3 inches long. They are green above and paler below. The petiole is flattened.



UGA0008058

Paul Wray, Iowa State University, Bugwood.org

Arizona sycamore

Plantanus wrightii



The twig is zigzag, orange-brown and green and fuzzy when young. Circular leaf scars surround the reddish cone shaped bud covered with a single cap-like scale.



The fruit is a round and somewhat fuzzy tan ball (1 to 1 1/2 inches in diameter), 2 to 4 hanging from a slender pendant stalk. Each ball is composed of numerous tiny, tufted seeds (achenes). The balls disintegrate over winter, dispersing the seeds with the wind.



The leaves are alternate, simple, 6 to 9 inches long, with 3 to 5 pointed lobes and somewhat star-shaped. It has a swollen petiole base and is green above and pale green and fuzzy below.

Netleaf hackberry

Celtis laevigata Willd. var. *reticulata*



© Al Schneider
Al Schneider @ USDA-NRCS PLANTS Database

The leaves are alternate, simple, pinnately veined, 2 to 4 inches long, leathery, ovate in shape with an entire margin or with a few widely spaced teeth. They are dark green and rough on the upper surface with conspicuous "net-like" raised veins on the lower surface.



The twig is slender, zigzag, brown with numerous lighter lenticels when hardened. It is fuzzy particularly when young with tightly appressed light brown lateral buds. It has a chambered pith.

The fruit is a fleshy, sweet, globose drupe, 1/4 to 3/8 inch in diameter. The fruit is reddish orange to purple when ripe in late summer.

