Choosing Shade Tree Species

First, make sure it's a native species, and then make sure you are planning to give it the conditions it needs to thrive. You will need to know how big the tree or shrub will grow and how fast it will get there.

Some trees are understory trees – they are happiest in the company and part shade of taller trees.

Decisions about which trees to plant in the Borough, on public and private lands, should take into account the benefits of native species; the problem of invasive species , insect enemies, and diseases. Ecological conditions should be matched carefully with the requirements of particular tree species, explained in the US Forest Service's report, "Silvics of Trees of North America," at http://www.na.fs.fed.us/spfo/pubs/silvics_manual/table_of_contents.htm.

Another key consideration is global warming which is changing the geographic ranges where individual species can thrive. In its Climate Change Atlas, the U.S. Forest Service has mapped projections of where our native trees will be thriving in the future under several greenhouse-gas scenarios (http://www.nrs.fs.fed.us/atlas/). To minimize losses, common sense suggests that trees at the southern edge of their range should be avoided, while trees with drought- and heat-tolerance should be favored.

Madison's Shade Tree Management Board and our Municipal arborists are available to help with your decision. Please do not hesitate to contact STMB at (973) 593-3088.

Lists of recommended native trees to plant is available on The Shade Tree Management Board's page on Rosenet: https://rosenet.org/489/Tree-Guidelines-Landmark-Trees

These pages have been compiled with the help of Dr. Sara Webb, Professor Emeritus, Drew University.

Eastern Redbud

Cercis Canadensis

Redbuds famously provide a glorious magenta spring color and have a long history in American gardens. For instance, George Washington reported in his diary on many occasions about the beauty of the tree and spent many hours in his garden transplanting seedlings obtained from the nearby forest.

Redbuds

- Feature somewhat heart-shaped leaves 2–6" in length. They emerge a reddish color, turning dark green as summer approaches and then yellow in the fall.
- Grow to a height of 20–30' and a spread of 25–35' at maturity.
- Grow at a medium rate, with height increases of 13–24" per year
- Will thrive in both full sun and partial shade (need a minimum of four hours of direct, unfiltered sunlight each day)
- Prefer acidic, alkaline, loamy, moist, rich, sandy, well-drained and clay soils

Wildlife

Redbud pods are packed with seeds that sustain a variety of wildlife, including quail, cardinals, rose-breasted grosbeaks, wild turkeys, white-tailed deer and squirrels. Perhaps even more importantly is that Redbuds are such an important source of food for honeybees and other native pollinating insects that some experts rate it as one of our top 10 most important native flowering trees. Redbuds provide pollinators with abundant nectar and pollen in months when both are often hard to find elsewhere.

Linden

Tilia

Lime, Basswood, Bee Tree, Honey Tree

Lindens are recommended as an ornamental tree when a mass of foliage or a deep shade is desired. They have thick furrowed trunks, horizontal branches, dense leafy foliage, and a pyramidal growth shape.. In the fall, they turn a spectacular yellow.

- Grow to between 65 and 130 feet tall and 50 feet wide
- Prefer full sun to partial shade and moist soil with excellent drainage.
- The best time for planting a linden tree is in fall after the leaves drop, although you can plant container-grown trees any time of year.
- Prefers a neutral to alkaline pH but tolerates slightly acidic soils as well
- Is easy to transplant, is tolerant of clay soil and has some drought tolerance once established

Wildlife

Lindens produce fragrant, nectar-bearing flowers and are thus important plantings for beekeepers. Lindens are attractive to all pollinators, and are a larval plant for red-spotted purple and mourning cloak butterflies. Its seeds are eaten by birds and squirrels. Lindens also produce sap (honeydew) which can drip, to which ants and aphids are drawn, though these insects do little harm to the trees.

Honey Locust *Gleditsia triacanthos* L.

Honey Locust, Common Honey Locust,
Thorny Common Honey Locust,
Honey Shucks Locust, Sweet Locust,
Thorny Locust, Honey Shucks,
Sweet Bean Tree

For planting in yards, make sure you get the THORNLESS.

The honey-locust grows to between 30-75 feet. with a comparable spread and a "delicate and sophisticated" silhouette. Feathery, yellow-green, leaves provide lovely dappled shade. Fall color is yellow. Its spring greenish flowers are not conspicuous, but the twisted seed pods change from red-green to maroon-brown as they mature.

Pods 30-45 cm long, curled, persist into winter.

- Is fast-growing and long lived
- Needs partial shade and moist, well-drained soil
- Provides perfect filtered light for underplanting
- Is salt, drought, and heat tolerant

Wildlife

Honey Locusts support Virginia opossum, eastern gray squirrel, fox squirrel, rabbits, quail (including northern bobwhite), crows, and starling.. White-tailed deer **and rabbits** frequently strip and eat the soft bark of young trees in winter, **so protection is necessary until the tree matures. The pods are eaten by white-tailed deer; ground, they provide good food for livestock.** Honey Locust is a source of pollen and nectar for honey.

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Red Maple *Acer rubrum*

Scarlet Maple, Swamp Maple, Soft Maple, Carolina Red Maple, and Water Maple.

Red Maples have a readily recognizable leaf shape and produces brilliant scarlet fall foliage.

A Red Maple

- Grows between 1 and 2 feet a year
- Grows to 40 to 60 feet tall, with a spread of around 40' at maturity
- Requires full sun (at least 6 hours a day)
- Grows in acidic, loamy, moist, rich, sandy, silty loam, well-drained and clay soils. It prefers wet soil conditions but has some drought tolerance.
- Produces red (sometimes yellow) clusters of small flowers winter to spring.
- Yields twin seeds bound at their tips to a long, drooping stems. The seeds ripen in late spring and have attached wings that are up to 1" in length.
- Can grow in an oval, rounded, upright or erect shape.
- Leaves are extremely toxic to horses and cattle.

Wildlife

Red Maple leaves, twig, bark, and fruits provide a food source for numerous mammals, birds, and insects.. The species is not preferred by deer as a browse source. The Red Maple is a larval host for the Rosy Maple Moth. Red squirrels use the cavities of older trees as nesting habitat. A number of birds build nests in Red Maples, including American Redstarts, Black-backed Woodpeckers, and Downy Woodpeckers. Woodpeckers and other insectivorous songbirds often search for the many insects that feed on maples; these insects are especially important in feeding young nestlings. For instance, Red Maple stands are a preferred micro-habitat for foraging for Red-eyed Vireo.

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Sugar Maple *Acer saccharum*

Sugar Maples are a standout landscaping tree that produces brilliant yellow and orange fall color.

A Sugar Maple produces the sap that becomes maple syrup.

A Sugar Maple

- Grows to 60 to 75 feet tall, with a spread of around 40' – 50' at maturity
- Grows 1-2 feet per year
- Tolerates shade and full sun (needs 4+ hours a day)
- Likes a well-drained, moderately moist, fertile soil
- ***Do not plant*** in confined areas or where salt is a problem.

Wildlife

Sugar maples are commonly browsed by white-tailed deer, moose and snowshoe hare. Squirrels feed on the seeds, buds, twigs and leaves.

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White Oak *Quercus alba*

- Grows to a height of 50–80' and a spread of 50–80'
- Grows at a slow to medium rate, 12" to 24" per year
- Prefers full sun or partial shade (4 hours of unfiltered sun each day)
- Prefers slightly acidic to neutral, deep, moist, well-drained soil
- Is intolerant of alkaline, shallow or abused soils
- Provides great fall color, with leaves turning showy shades of red or burgundy
- Develops notably strong branches
- Develops a deep taproot
- Begins producing acorns when trees are 50 - 100 years old
- Can live to a grand old age – many hundreds of years
- Madison's renowned Tuttle Oak was a White Oak to which local tradition has it that George Washington once tethered his horse.

Wildlife

White Oaks are host to numerous, inconspicuous insects, which in turn provide food for birds. It is a host plant for butterfly and moth larvae (caterpillars), including Edwards Hairstreak (Satyrium edwardsii). White Oak provides nesting space, cover, and shelter for wildlife.

Invasives: Why Plant Only Native Species?

Unfortunately, Madison's forests are desperately degraded beneath the canopy with virtually no young trees to replace the current generation. Two major forces behind this devastation are overabundant deer and burgeoning loads of invasive plants.

Like other forests throughout of Eastern and Midwestern North America, Madison's natural areas are threatened by the spread of non-native trees, shrubs, vines, and weeds. Not every introduced plant turns into an aggressive invader, but many reproduce and spread.

- **Invasives don't have any natural enemies to control their growth, and they don't cohabit successfully with native species, which die off. Then the birds and insects lose their food sources and . . .**

Invasives have completely displaced ground layers of vegetation, eliminated tree reproduction, and transformed wildlife habitat throughout the Borough. Among Madison's most problematic invaders, Japanese barberry transforms soil nitrogen to a form unavailable to woodland wildflowers; garlic mustard inhibits beneficial fungi required for establishment of tree seedlings; Norway maple suppresses diversity of shrubs and wildflowers; bittersweet and wisteria literally strangle trees and so convert forests to tangles of shrubs and vines. Scientists consider such biological invasions by plants, animals, and microbes to rank among the top threats to biodiversity worldwide. The consequences cascade throughout the food web with damage to beneficial insects and both migratory and nesting birds.

Federal agencies and regional organizations provide detailed, up-to-date listings of invasive plants, including those of our area. New invasive plants emerge continuously; for example, the notorious southern vines kudzu and mile-a-minute plant have appeared only recently in New Jersey. Thus current reports and websites should be consulted before plantings are made: the National Park Service's "**Weeds Gone Wild**" database (http://www.nps.gov/plants/alien/), the US Fish and Wildlife Service/National Park Service joint publication "**Plant Invaders of the Mid-Atlantic Natural Areas**" (available on line at http://www.nps.gov/plants/alien/pubs/midatlantic/), and the Mid-Atlantic Invasive Plant Council's database (http://www.invasive.org/maweeds.cfm) and information from the New Jersey Invasive Species Strike Team (http://www.njisst.org/).

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Here's What a Native

Hardwood Canopy Does:

- Converts carbon dioxide to oxygen, simultaneously producing the air we breathe and cleansing it of pollutants and allergens. Yearly, one acre of canopy trees absorbs enough CO2 to offset a car driven 26,000 miles. The same acre produces enough oxygen for 18 people to breathe.

- Trees help keep water clean and drinkable. 100 large canopy trees intercept 100,000 gallons of rainfall per year – they're essential in recharging local aquifers, which is where Madison gets its water.

- In monetary terms, over 50 years, *a single large canopy tree* generates about $30,000 in oxygen, recycles $35,000 worth of water, and removes $60,000 worth of air pollution.

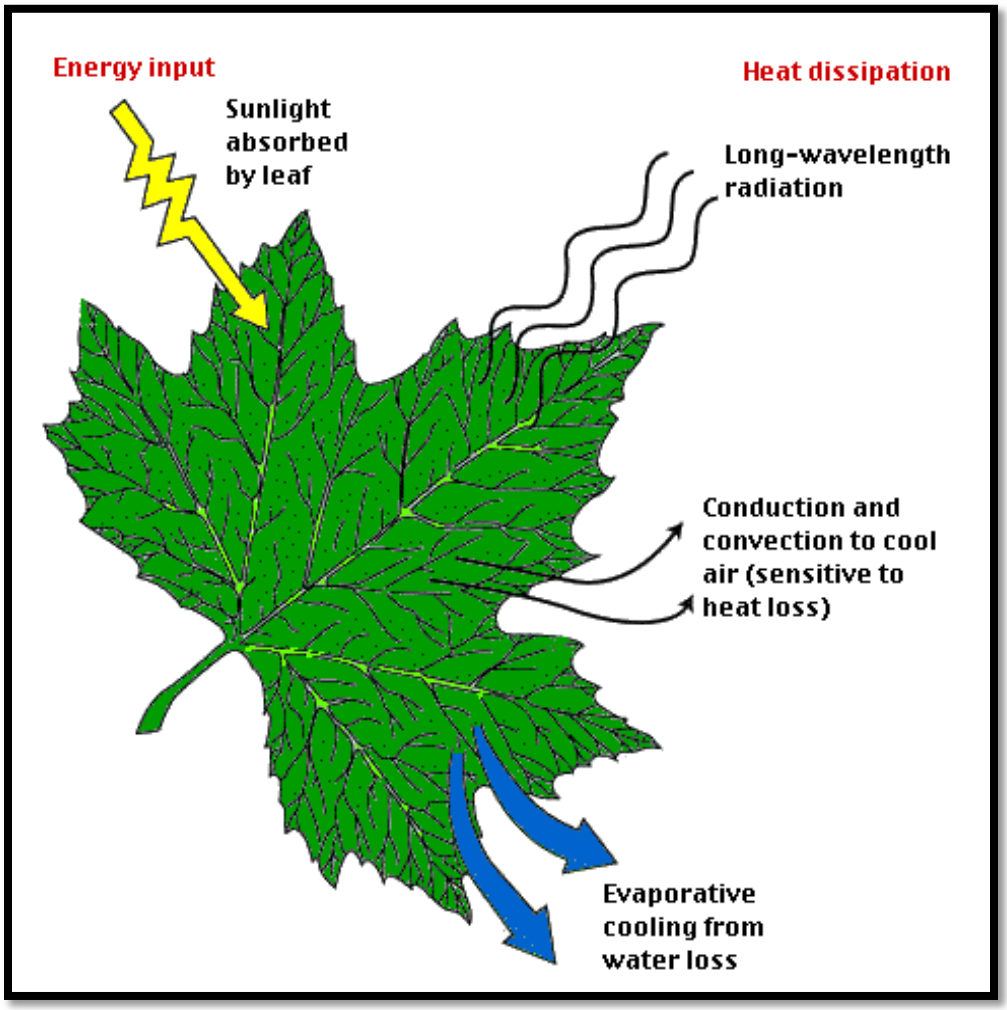
- Trees remove soil pollutants, too – one sugar maple can remove 60 mgs of chromium and 5,200 mgs of lead from the soil per year. Studies have shown that farm runoff contains up to 88% less nitrate and 76% less phospeorus after flowing through a forest.

- Properly placed screens of trees considerably reduce noise pollution.

- Trees provide privacy, separating neighbors and keeping the public a bit more distant.

- In terms of utility costs and renewable energies: a house shaded by *three* properly placed, mature, canopy trees cuts its energy needs by 50% in the summer. The same three mature canopy trees serve as windbreaks against winter winds and reduce heating costs by 30%.

- Each leaf on a shade tree is quite literally a little cooling engine:



- Having 10 more trees in a city block, on average, improves health perception in ways comparable to an increase in annual personal income of $10,000 and moving to a neighborhood with $10,000 higher median income or being 7 years younger. We also find that having 11 more trees in a city block, on average, decreases cardio-metabolic conditions in ways comparable to an increase in annual personal income of $20,000 and moving to a neighborhood with $20,000 higher median income or being 1.4 years younger.

- Mature canopy trees increase property value between 10% and 20% -- in Madison that's ***a median increase*** of between **$7,500 and $15,000.**

Introducing
Madison's Shade Tree Boards

STMB

The Shade Tree Management Board **has seven regular members and two alternates, who are appointed by the Mayor. They are charged with developing and maintaining a community Forestry Management Plan in compliance with the New Jersey Shade Tree and Community Forestry Assistance Act.** ***The Shade Tree Management Boa*****rd regularly surveys the public trees of Madison, and reports on them. They are responsible for the selection, planting, care, and control of shade and ornamental trees and shrubbery upon and in the streets, highways and public places of the Borough of Madison, (excluding state highways, county highways, parks and parkways). This Board selects, oversees the purchase of, plants, cares for, and protects Madison's public shade and ornamental trees and shrubbery. This includes the planting, pruning, spraying, and, when necessary, removing damaged or dying trees and shrubs.** ***The Shade Tree Management Board*** **works closely with the Department of Public Works to achieve these ends. STMB can arrange for the town's trained arborists to assist Madison residents with on-site advice about protecting and caring for shade trees in their own yards.**

FMST

Friends of Madison Shade Trees **is the non-profit fundraising, private counterpart to** ***The Shade Tree Management Board*****. All members are volunteers. FMST plants trees in public spaces all around Madison. Our priority is native shade trees in the canopy but, as we plant street trees, we are constrained by their height and root systems. So we support planting** ***the right tree in the right location*****, although our priority is maintaining Madison's native hardwood shade tree canopy. We work very closely with the Department of Public Works, with the Parks Commission, and with the Garden Club -- Rose Garden Park is one result of that. The historically accurate landscaping at the train station was another FMST project, funded by a grant that took ten years to complete. FMST welcomes new members; we meet on the 2nd Tuesday of each month, and take as our mission not only to help plant and maintain trees in Madison, but to educate our community about the incredible value of mature trees in climate and environmental health. They are essential to clean air and water, flood control, soil stabilization, and their positive temperature-control effects on urban areas and individual residence. We can't live without them.**

Resources & Further Information About the Importance of Planting Native Species

Doug Tallamy, an American entomologist and wildlife ecologist argues convincingly that native species are essential to maintaining the biological diversity on which ecosystems depend. In addition to this** article, his books include:

- *Tallamy, Douglas W. (2007). Bringing Nature Home: How Native Plants Sustain Wildlife in Our Gardens. Timber Press. ISBN 978-0-88192-854-9.* (2007)
- *Darke, Rick; Tallamy, Douglas W. (4 February 2016). The Living Landscape: Designing for Beauty and Biodiversity in the Home Garden. Timber Press. ISBN 978-1-60469-739-1.* (2016)
- *Tallamy, Douglas W. (4 February 2020). Nature's Best Hope: A New Approach to Conservation that Starts in Your Yard. Timber Press. ISBN 978-1-60469-900-5.* (2020)
- *Tallamy, Douglas W. (30 March 2021). The Nature of Oaks: The Rich Ecology of Our Most Essential Native Trees. Timber Press. ISBN 978-1-64326-044-0.* (2021)

**https://www.smithsonianmag.com/science-nature/meet-ecologist-who-wants-unleash-wild-backyard-180974372/

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