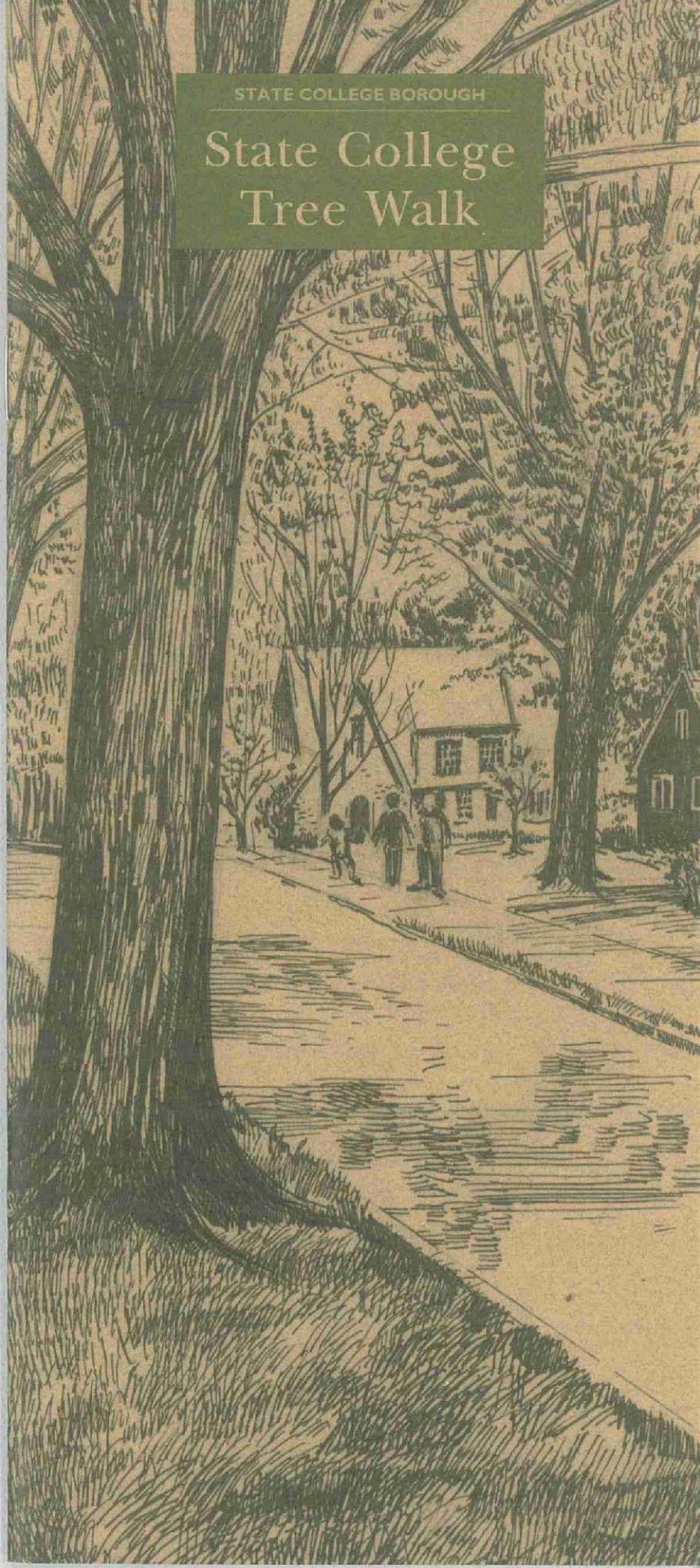
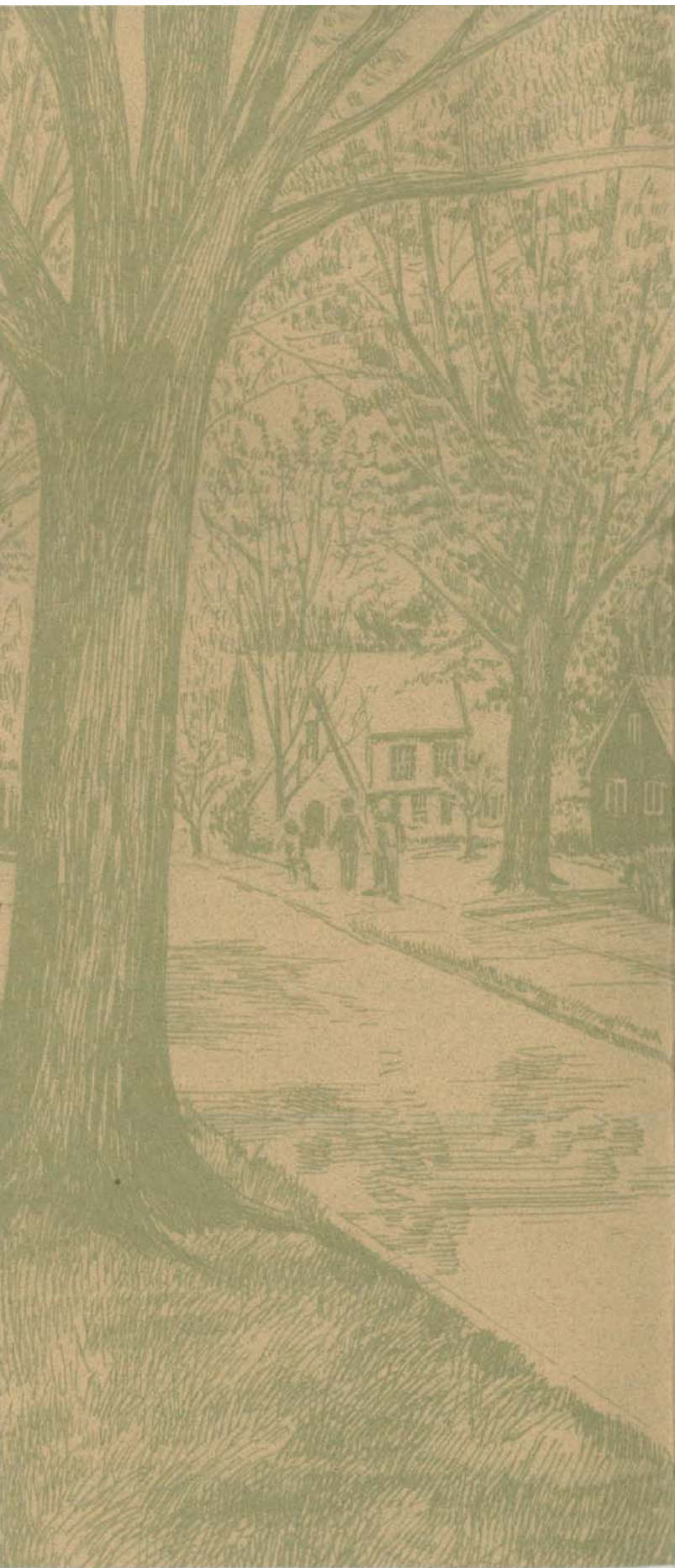


STATE COLLEGE BOROUGH

# State College Tree Walk







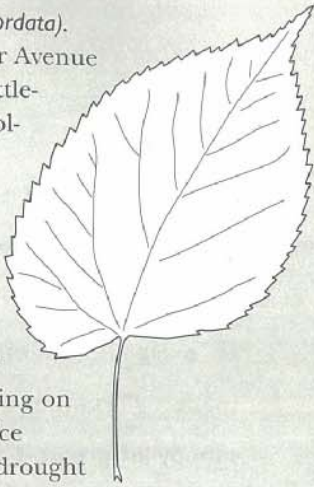
One of the unique features of State College Borough's neighborhoods is its landscaping, both at private residences and in public spaces. Tree-lined streets create a canopy of green. Large stands of evergreens and deciduous trees provide shade in public parks and recreation areas. The community is fortunate in the variety and interest of its urban forest. The urban forest not only provides beauty and shade, it also provides privacy and a noise buffer. Trees help clean the air and provide a habitat for wildlife.

We hope you will enjoy your tree walk through one of the older and well established neighborhoods in State College. The walk begins at the intersection of Beaver Avenue and Allen Street. The numbers preceding the descriptions coincide with map numbers and the number or name placed on trees, so you can find the tree that is being described. Look for tags identifying trees described in this guide and others along the walk. The tour can be completed in about an hour by fast walkers.



**1. Littleleaf linden (*Tilia cordata*).**

Many trees along Beaver Avenue near the Schlow Library are little-leaf lindens. These trees are tolerant of soil compaction and broadly adaptable to pH, but prefer deep and moist soils. Because it is sensitive to heat, drought, and road salt, the tree is a poor selection for planting in sidewalks, parking lots, and large patios. Depending on the time of year, you may notice browning of leaves caused by drought and heat. This species has few insect and disease problems although it does attract aphids that feed on shoots and leaves and exude a sticky "honey-dew," which tends to blacken leaves and objects beneath trees. A black fungus commonly called "sooty mold" grows on the honey-dew.



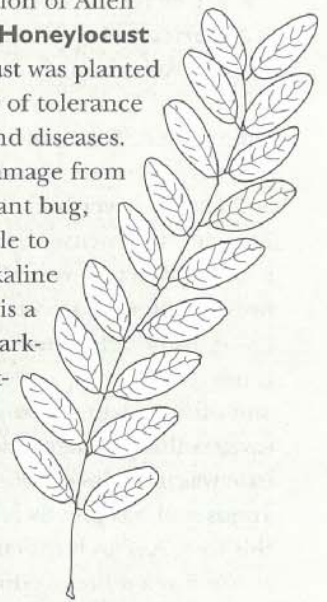
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As you walk, take note of the iron gratings surrounding the bases of many of the trees on Beaver. Although expensive, these gratings help minimize soil compaction and allow air and water into the soil.

One important concept that you should think about on this walk is soil pH, which describes whether a soil is acidic (below pH 7) or alkaline (above pH 7). Many Pennsylvania soils are alkaline (higher pH) because of limestone. The amount of loose, uncompacted, fertile soil, with proper pH available to a tree's roots is one of the most important and often overlooked aspects of tree health, growth, and life span. Many trees grow best in fertile, uncompacted soils with neutral (pH 7) or slightly acidic pH.

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**2.** The trees in the Borough parking lot just west of the intersection of Allen Street and Beaver Avenue are **Honeylocust (*Gleditsia triacanthos*)**. Honeylocust was planted extensively in the past because of tolerance to harsh urban sites, insects, and diseases. We now know that it suffers damage from insects including webworm, plant bug, and borer. The tree is adaptable to soil compaction, acidic and alkaline pH, heat, drought, and salt. It is a good selection for sidewalks, parking lots, and other tough planting sites. The trees in this parking lot not only provide beauty, but also cool, filtered shade from small twice-compound leaves.



**3. Aristocrat pear (*Pyrus calleryana* "Aristocrat").**

Walk west towards Fraser Street. The second-to-last tree on the right-hand corner of Beaver Avenue and Fraser [141 Beaver] is one of many varieties, or cultivars, of callery pear, which include Bradford pear. Although popular for its showy spring flowers, Bradford pear should not be planted because the branches of older trees break during snow and other storms. A better choice for planting is Aristocrat pear. It shares the same white spring flowers as the Bradford pear, but has stronger branches and an upright growth habit. It is also adaptable to many soils, and tolerates pollution and drought. Young trees need to be selectively pruned to develop a strong and desirable branch structure. Along with another flowering tree, crabapple, it is a tough urban tree.





**4.** Turn left onto Fraser Street. The first tree on the left [Presbyterian Church] is **American elm** (*Ulmus americana*). The beloved American elm is the Borough's and University's most famous tree. Take note of the tree's massive vase-like shape and lack of lower branches. The tree's immense over-arching structure is perfect for shading wide streets and lawns. Although American elm is tolerant of compacted soils and other urban stresses, Dutch elm disease still ravages this premier shade tree. The fungus disease was introduced from Europe in the mid-1930s and has greatly reduced the population of this tree. A search for cultivars that are resistant to the disease has produced a number of promising alternatives, among them "Valley Forge" and "New Harmony." Care should be taken in planting hybrids, as their resistance has not yet been proven in the long-term.



**5.** The tree to the right of the American elm is **Ginkgo** or **Maidenhair tree** (*Ginkgo biloba*). This species is considered by some to be a living fossil. The tree flourished in Asia, Australia, and North America 200 million years ago. Buddhist monks in Asia preserved the species for thousands of years. It is another tough urban tree, tolerant of a wide range of soil conditions and pollution. The irregular form of the young tree develops into an interesting and massive mature tree structure, which requires little pruning. It has fan shaped leaves with distinctive veining and beautiful yellow fall color. Because the fruit of the female tree emits an unpleasant odor, usually only male trees are planted in public places. The nuts are a valuable food much prized in China.




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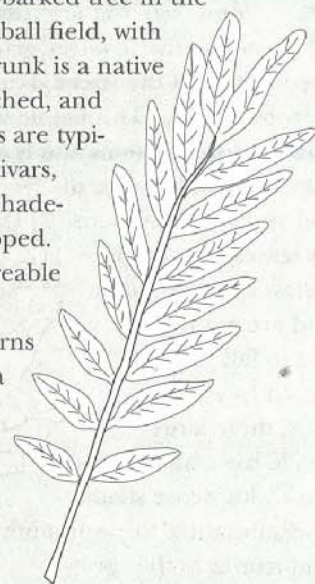
Follow Fraser Street until you reach the Central Parklet. Look at the raised planter at the park's entrance. In addition to providing shaded seating, raised planters allow better drainage for soils in wet places, avoid salty run-off, and discourage soil compaction due to pedestrian traffic.

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**6.** Look to the right of the planter at the parklet entrance to find **Yellowwood** (*Cladrastis kentukea*). Both honeylocust and yellowwood are part of the pea, or legume, family. These plants are known for their ability to take nitrogen from the air and "fix" it into the soil. The tree has few disease or insect problems, can be planted in a wide variety of fertile soils, but needs to be properly pruned when young to produce a desired branching structure. The tree's deeply yellow heartwood is used for producing dyes. Yellowwood is uncommon even within its native range in the southeastern United States.



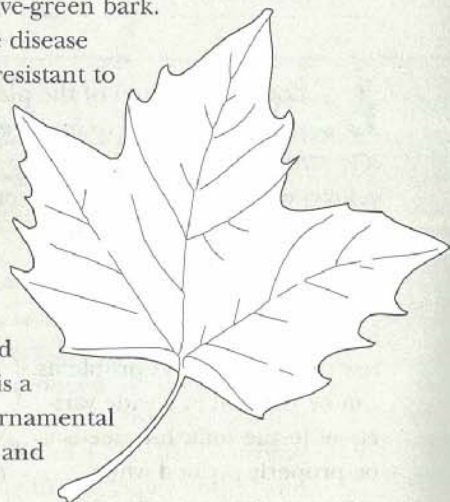
**7.** **Native honeylocust** (*Gleditsia triacanthos*). The purplish-barked tree in the corner of the fenced football field, with thorns jutting from the trunk is a native honeylocust. Long, branched, and dangerous looking thorns are typical of this tree. Many cultivars, such as "Imperial" and "Shade-master" have been developed. These cultivars are preferable to the native honeylocust because they have no thorns or pods and also display a better crown form.





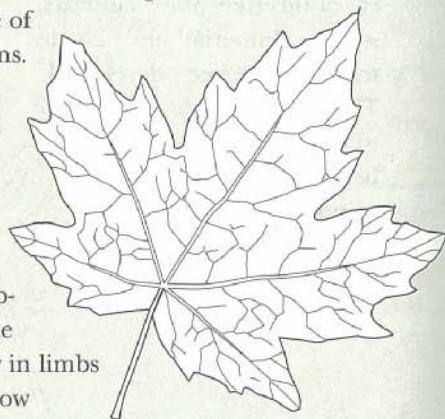
**8.** The first tree that you will come to on the right-hand side of Foster is a **London planetree** (*Platanus acerifolia*). The tree is a cross between the eastern American sycamore (Buttonwood) and the Oriental planetree. It is rapid growing, with a distinctive and interesting patchy olive-green bark.

Although it has some disease problems, it is fairly resistant to anthracnose, a serious fungal disease of native sycamore which causes loss of leaves and dieback. Suited for large growing areas and tolerant of compacted soils and drought, it is a large and beautiful ornamental tree. Cross the street and start down Foster.



As you walk down Foster Avenue, take note of the metal curbing placed next to some of the larger trees. These were used in place of concrete curbs and required less root pruning. On South Pugh and other streets, wood has also been used as an alternative curb material to protect roots. Continue down Foster Avenue and cross Burrowes Street.

**9.** Immediately after crossing Burrowes Street, notice the first tree growing in the grass strip on the left side of the street. This is a **Norway maple** (*Acer platanoides*). This maple is relatively free of insect and disease problems and is a tough urban tree tolerant of a wide range of soil and site conditions. Its leaves turn bright yellow in the autumn and are among the last to fall. A popular urban tree in the past, these large shade trees have problems with dense shade and substantial decay in limbs and trunks as they grow

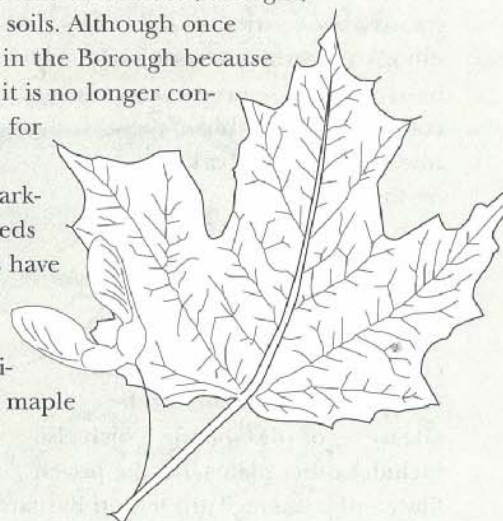


older. Norway maple is a highly invasive, non-native species which is known to produce abundant seedlings that colonize areas and replace native vegetation. Care should be taken in planting this tree, especially near native open and green spaces.

**10.** Look in the parking lot on Foster Avenue behind 300 South Burrowes Street. Growing there is an exceptionally large **White walnut** (*Juglans cinerea*). Also known as butternut, white walnut is not a good street tree because of slow growth and very heavy fruit production. The edible seeds of the white walnut are sweet and very oily. This specimen is a treasure. Continue down Foster Avenue and carefully cross Atherton Street.

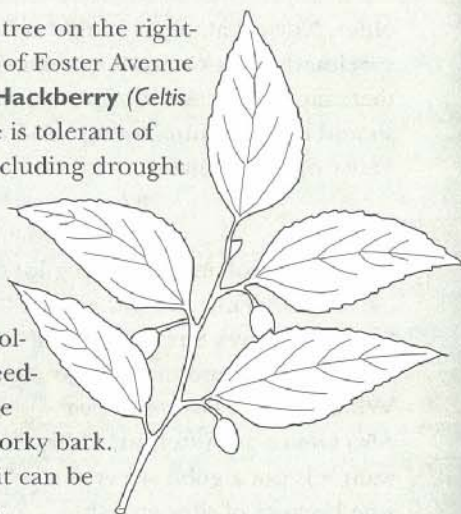


**11.** The second tree on the right after crossing Atherton Street is a mature **Sugar maple** (*Acer saccharum*). A commonly planted tree, it is prized for both its beautiful, bright orange fall foliage and sap that can be boiled into maple syrup. Sugar maple is extremely sensitive to road salt, drought, and compacted soils. Although once planted heavily in the Borough because of its fall color, it is no longer considered suitable for planting along streets and in parking lots. Hundreds of sugar maples have been removed along streets because of Verticillium wilt and maple decline.



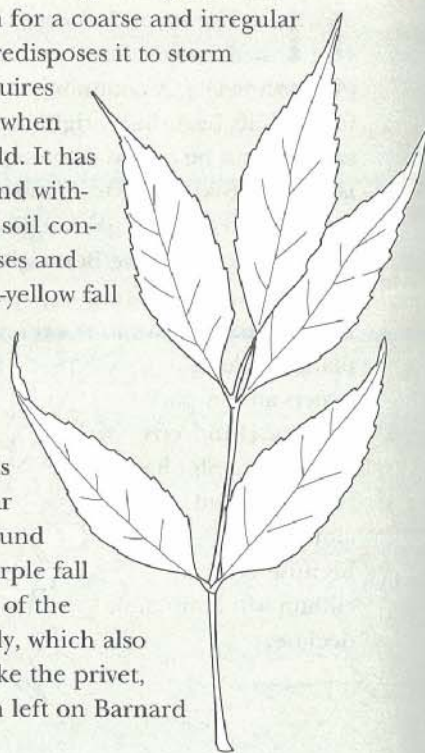


**12.** The third tree on the right-hand side of Foster Avenue is a "Prairie Pride" **Hackberry** (*Celtis occidentalis*). The tree is tolerant of urban conditions including drought and alkaline/lime-stone soils. It is known for a strong branch structure and its small, blue-colored drupes (one-seeded fruits). Notice the characteristic soft, corky bark. The tree and its fruit can be used to attract birds.



Cross to the other side of the street. Notice at 418 Foster how the sidewalk has been cut to provide more room for the tree to grow.

**13.** At the corner of Foster and Barnard, next to the green mail storage box, is a **Green ash** (*Fraxinus pennsylvanica*). This fast-growing tree with many cultivars is known for a coarse and irregular branching habit that predisposes it to storm damage. Green ash requires frequent pruning both when the tree is young and old. It has excellent adaptability and withstands a wide variety of soil conditions and urban stresses and has an enjoyable bright-yellow fall color. The deeply furrowed interlacing bark on the tree is common. A relative, white ash (*Fraxinus americana*) is becoming more popular because of a broadly round crown and beautiful purple fall color. Ash is a member of the Oleaceae, or olive family, which also includes other plants like the privet, lilac, and jasmine. Turn left on Barnard and walk uphill.

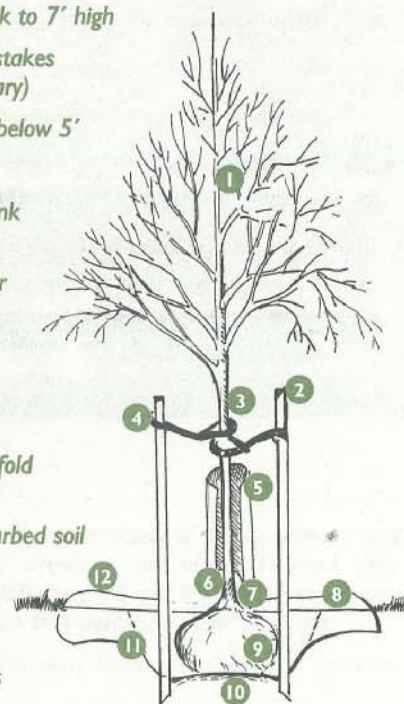


**14.** On Barnard, just before Nittany Avenue, take note of the last three trees on the right side of the street. These are **American basswood** (*Tilia americana*) and are not often found planted on streets. They are closely related to the little leaf linden you saw (#1) planted on Beaver and have similar, but larger leaves. The basswood tree is native to stream and river bottoms in Pennsylvania. Knock on the trunk a few times and hear the hollow sound it makes. This characteristic is unique to American basswood. The tree is highly susceptible to attack by Japanese beetle. Its wood is a favorite of carvers throughout the northern hemisphere.



#### How to plant a tree

1. Single straight trunk to 7' high
2. 2" x 2" hardwood stakes (use only if necessary)
3. Clear of branches below 5'
4. Slack rubber hose
5. Remove transit trunk guard
6. 1 1/2" to 2 1/2" caliper
7. Keep mulch away from root collar
8. Wider hole if soil is compacted
9. Remove burlap or fold down wire basket
10. Rootball on undisturbed soil
11. Good native soil or topsoil
12. 2" to 4" mulch of bark or wood chips





## State College Borough Tree Walk



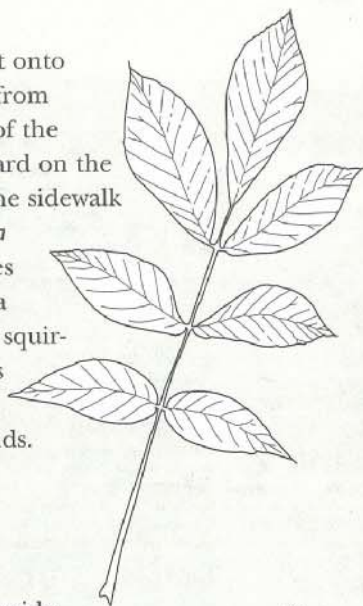
### Directions

The tree tour starts at the intersection of Beaver Avenue and Allen Street. Follow the arrows to each of the 31 black dots. Each dot represents a stop along the tour where you can see one of more specimens of the tree described in the brochure.

Please be careful when crossing Atherton Street, after stops 10 and 19.



**15.** As you turn right onto Nittany Avenue from Barnard Street, take note of the large trees in the private yard on the right. The tree closest to the sidewalk is **Shellbark hickory** (*Carya laciniosa*). This tree produces sweet edible nuts that are a favorite source of food for squirrels and other wildlife. It is native to fertile soils of floodplains and bottomlands.



**16.** The large tree beside the hickory is a **White oak** (*Quercus alba*). White oak is large and long-lived with mammoth, widely spreading canopies, white-gray bark, and leaves with circular lobes. It turns a reddish-purple color in fall. It is often called "Farmer's Oak" when it grows solitary in a field. White oak is a majestic, strong and worthwhile tree for planting in large areas, but its growth rate is slow, and it is hard to establish after transplanting.



Swamp white oak (*Quercus bicolor*), a relative of the white oak, is often used as a street tree in the borough because of its faster growth rate and tolerance to road salt, drought, and soil compaction. Both white and swamp white oak prefer acid soils. Watch for more oaks in yards as you continue down Prospect Avenue.

A few paces will bring you to two more hickories intruding upon and growing in the sidewalk. Note the great care taken with the sidewalk to protect the trees.

**17.** The small trees planted immediately after the second sidewalk hickory are **Redbuds** (*Cercis canadensis*). Although redbud can be used as a street tree, it is better suited for lawn and naturalized landscapes. It is a beautiful, small native tree with spectacular reddish-purple flowers that cover branches in early spring before heart-shaped leaves appear. It often has multiple trunks and graceful branching. The tree can tolerate a variety of soil conditions and both acidic and alkaline soils. For all its beauty, it is a tough little tree. Unfortunately, a canker disease can kill young and old redbuds alike. In spring, the redbuds planted along Robin Road make a breathtaking show.



After turning left onto Gill Street, notice the special curb cuts used to protect the trees when the street was lowered. Also notice the impressive stature and handsome form of the white oaks in the yard [401 S. Gill]. The long, horizontal branching of the trees is typical. The average weight of white oak wood is 45 lbs. per cubic foot, so you know the tree's long, horizontal limbs are supporting a great deal of weight.

**18.** Before turning onto Prospect Avenue, notice the two shady giants on your left [525 S. Gill]. These are **Siberian elms** (*Ulmus pumila*). Siberian elms are resistant to Dutch elm disease and are capable of growing rapidly almost anywhere. However, the tree has serious problems with branch and limb breakage (notice the chains that have been placed in the canopy of the first tree) and is loved by insects. For these reasons Siberian elm should not be planted as a replacement for American elm. Turn left on Prospect Avenue.





This street is no place to be on a hot summer day. Why? Because there are no large trees to shade the sidewalk and street. Trees cool our neighborhoods, up to ten degrees on hot, summer days. If it is not too hot to linger, look across the street towards the soccer field.

**19.** You will see a few scattered trees on top of the hill past Barnard Street. These are **Red maples** (*Acer rubrum*). This fast-growing tree is one of the most common trees in Pennsylvania forests. It has showy red flowers in early spring, and brilliant splashes of red and yellow in the fall. The serrated leaves with white undersides and smooth, light-colored bark are typical.



**20.** Carefully crossing Atherton Street once more, take note of the two small, **Hardy rubber trees** (*Eucommia ulmoides*) growing in front of 313 and 309 Prospect Avenue. The tree does produce rubber, but its extraction is difficult. It is known for summer foliage that is beautiful and completely insect free. The tree is widely cultivated in China for its medicine-producing bark, which is the source of a hypertension drug.

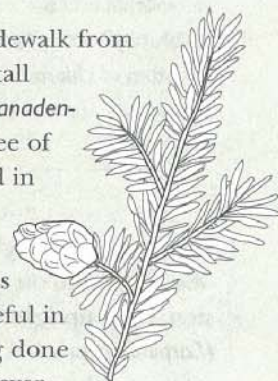


**21.** At 200 Prospect Avenue, near the intersection with Fraser Street, you will see three medium-sized **Sycamore maples** (*Acer pseudoplatanus*). Because of the abundance of better maples, this tree is rarely used

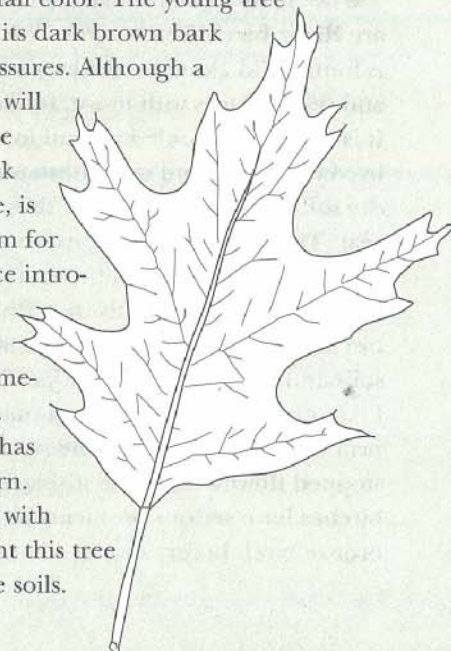


in street and other plantings. It is one of the most salt-tolerant species for planting near the ocean. Notice the bark's similarity to the London plane tree you saw earlier, and the leaves similarity to sugar maple.

**22.** Immediately across the sidewalk from the sycamore maples is a tall hedge of **Eastern hemlock** (*Tsuga canadensis*). Eastern hemlock is the State Tree of Pennsylvania. It is a large tree found in cool, shady, moist, well-drained, acidic soils, such as in draws and ravines and is widely used for hedges and foundation plantings. It is graceful in youth and tolerant of heavy pruning done correctly in spring or summer. However, the tree is not tolerant of road salt and is having problems with the woolly adelgid — a sucking insect.



**23.** After crossing Fraser Street, the fourth tree on the right [152 Prospect Avenue] is a **Red oak** (*Quercus rubra*). Red oak is a fast-growing tree with pointed, bristle-tipped leaves instead of rounded tips like white oak. It is an excellent tree for larger planting areas including spacious areas along streets. It is known for strong and durable branching as well as attractive reddish fall color. The young tree can grow so fast that its dark brown bark splits, showing tiny fissures. Although a proven performer, it will not withstand alkaline soils. Oak wilt, a quick killing fungus disease, is a very serious problem for red oaks because once introduced into a landscape containing these trees it is extremely difficult to control. Bacterial leaf scorch has also become a concern. Because of problems with chlorosis, do not plant this tree in alkaline/limestone soils.



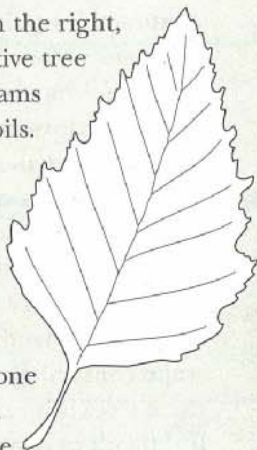


At certain times of the year, you can see some red oak leaves turn an unnatural yellowish-green color. The trees are suffering from a problem called chlorosis, which is common in red maple, red oak, pin oak, and other trees not tolerant of alkaline soils. If planted in high alkaline soils, iron and manganese become unavailable and the tree can not produce enough green pigment (chlorophyll) in its leaves. Discoloration of leaves is not the only symptom of chlorosis — leaf death, poor growth, and tree death also occur. These trees should not be planted in alkaline/limestone soils.

**24.** Turn right onto Walnut Street. The first tree on the right, beside the no parking sign, is an upright **European hornbeam** (*Carpinus betulus*). A larger specimen is located across the street near the stop sign. This is one of the finest small landscape trees, excellent for screens and hedges since it withstands pruning. The name “hornbeam” refers both to the strength of the wood, which is as strong as an animal’s horn, and to its use to make yokes which were attached to the horns of oxen.



**25.** The third tree on the left side of the street, and the last three on the right, are **River birch** (*Betula nigra*). This native tree is found wild along Pennsylvania streams and other places with moist, fertile soils. It is the most trouble free and long-lived of birches and can withstand dry soils for some portion of the year. The salmon-colored, exfoliating bark is a distinct, and to many, handsome feature of this tree. River birch is intolerant of alkaline/limestone soils and requires a pH of 6.5 or less. Like other birches, the tree should be pruned in summer, after the sap has stopped flowing, because it “bleeds” easily. Other birches have serious problems with insects, such as the bronze birch borer, and are short-lived.



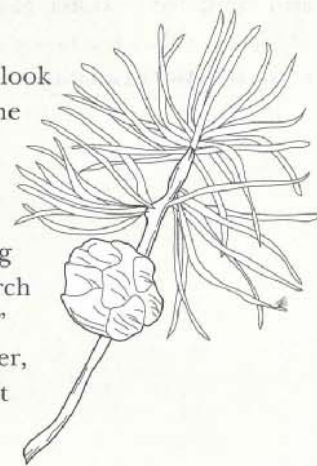
After you turn left on Hamilton Avenue, the first few trees that you will see on either side of the street are honeylocusts. Unlike the thorny one that you saw earlier [#4], these thornless and podless trees, like those in the Beaver Avenue parking lot [#2], are “cultivars” — cultivated varieties produced by nursery people through selection and breeding. Again, one of the toughest urban trees, honeylocust is excellent for parking lots and other tough growing sites.

**26.** Crossing to the right side of Hamilton Avenue, notice the last tree on the right side of the street, beside the telephone pole. It is a **Japanese tree lilac** (*Syringa reticulata*). This tree is tolerant of a range of soil pH, but prefers slightly acid soils. One of the toughest of the lilacs, it is an excellent tree for small planting areas or under utilities on streets. In June it produces creamy-white fragrant flowers that resemble lilacs. It is, in fact, closely related to the common garden shrub form of lilac.



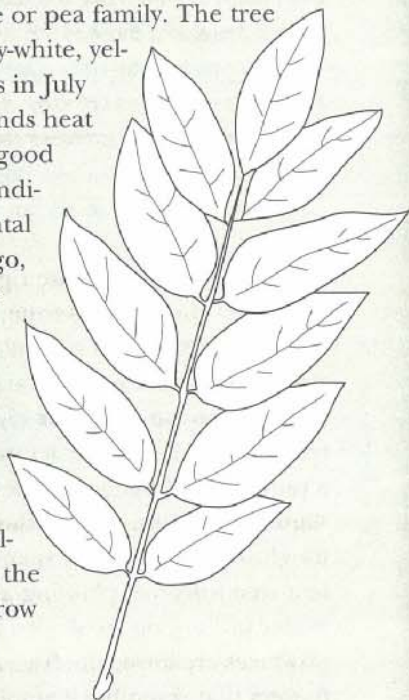
After turning left onto Allen Street, you immediately notice the enjoyable tunnel formed by the large London plane and sycamore trees.

**27.** After crossing Prospect Avenue, look towards the first house on the left. In the yard to the left of this house is a deciduous conifer, **European larch** (*Larix decidua*). After dropping its needles each year, the larch exhibits an interesting “lacy” appearance during the winter, and its spring burst of bright green is beautiful.





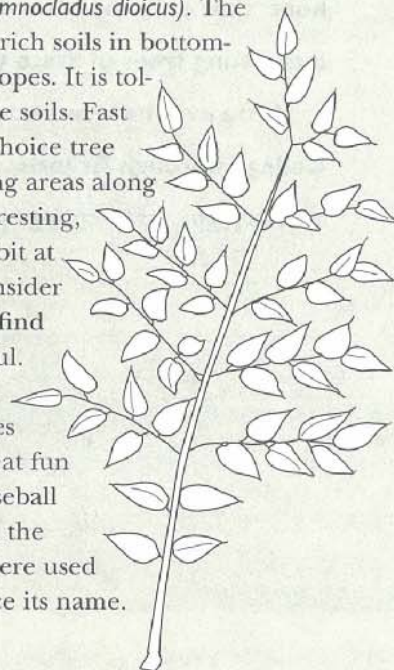
**28.** The third tree along the sidewalk is a **Japanese pagoda tree** or **Scholar tree**, (*Sophora japonica*). Like honeylocust and yellowwood, it is a member of the legume or pea family. The tree has mildly fragrant, creamy-white, yellow flowers borne on stalks in July through August. It withstands heat and drought well and is a good tree for tough planting conditions. Along with ornamental pear, Norway maple, ginkgo, and willow, it is one of the last trees in fall to lose its leaves. The tree is known in China as the "Tree of Success in Life" and is planted on the graves of high officials. The flower buds have been used as yellow dye for silk. Known as the pagoda tree, it is said to grow around Japanese temples.



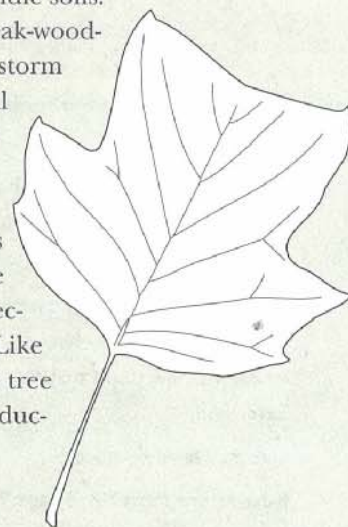
**29.** Upon reaching Fairmount Avenue, turn right for a quick stop at the first trees on the right side of Fairmount, **Zelkova** (*Zelkova serrata*). This tree can withstand a wide range of soil pH, soil compaction, and drought. It is a handsome tree with good foliage and an interesting vase-shaped, over-arching growth habit. Because of a similar growth habit and tolerance to Dutch elm disease, it has been widely planted as a replacement for American elm.



**30.** Resume your walk down Allen Street. The medium-sized trees growing along the street in front of "The Towers" office building are **Kentucky coffeetrees** (*Gymnocladus dioica*). The native tree grows in deep, rich soils in bottomlands, deep ravines, and slopes. It is tolerant of alkaline/limestone soils. Fast growing and large, it is a choice tree for parks and large planting areas along streets. It develops an interesting, large-spreading growth habit at maturity. Some people consider this ungainly while others find the tree absolutely beautiful. Its burrito-like fruit is purple brown and 6–10 inches long. The fruits can be great fun to throw and hit with a baseball bat. During pioneer times, the roasted seeds of the tree were used as a coffee substitute; hence its name.



**31.** After you cross Nittany Avenue, the next group of trees on the right side of the street are **Tulip poplars** or **Tuliptree** (*Liriodendron tulipifera*). Known as the "redwoods of the east," these fast-growing, elegant trees can reach extreme heights and girths. It is not a tree to be planted in small areas. Tulip trees can tolerate a range of soil pH, but like most plants prefers slightly acidic soils. The tree can be somewhat weak-wooded and suffer from wind and storm damage. The bright-yellow fall color can be spectacular, and the tulip-shaped foliage and flowers make identification easy. The lovely May blossoms are usually high in these large trees and are an important nectar source for the honeybee. Like the little leaf linden, the tulip tree is a favorite of honey-dew producing aphids.





**This completes the self-guided tree tour. To return to the Municipal Building follow Allen Street. We hope that you have learned something about the interesting trees of State College.**

**If you ever have any questions, contact the State College Borough Arborist at 814 234-7145 or e-mail at [aws@gov.state-college.pa.us](mailto:aws@gov.state-college.pa.us).**

#### **Credits**

Developed by Bill Elmendorf, Royce Clay, Alan Sam, and the State College Tree Commission in partnership with the Penn State School of Forest Resources.

This walk is for the use and enjoyment of State College residents and visitors, as a teaching tool for local schools, and as a demonstration project and teaching aid for the Penn State Cooperative Extension.

Design: David Lembeck

Illustrations (cover and page 9): Phyllis Kipp

#### **Trees Featured in the Tour**

American basswood #14, page 9  
American elm #4, page 4  
American hornbeam #2, page 2  
eastern hemlock #22, page 15  
eastern larch #27, page 17  
European hornbeam #24, page 16  
ginkgo #5, page 4  
green ash #13, page 8  
hackberry #12, page 8  
hardy rubber tree #20, page 14  
honeylocust (cultivar) #2, page 3  
honeylocust (native) #7, page 5  
Japanese pagoda tree #28, page 18  
Japanese tree lilac #26, page 17  
Kentucky coffeetree #30, page 19  
littleleaf linden #1, page 2  
london planetree #8, page 6  
Norway maple #9, page 6  
pear (ornamental) #3, page 3  
red maple #19, page 14  
red oak #23, page 15  
redbud #17, page 13  
river birch #25, page 16  
shellbark hickory #15, page 12  
Siberian elm #18, page 13  
sugar maple #11, page 7  
sycamore maple #21, page 14  
tulip poplar #31, page 19  
yellowwood #6, page 5  
white oak #16, page 12  
white walnut #10, page 7  
zelkova #29, page 18