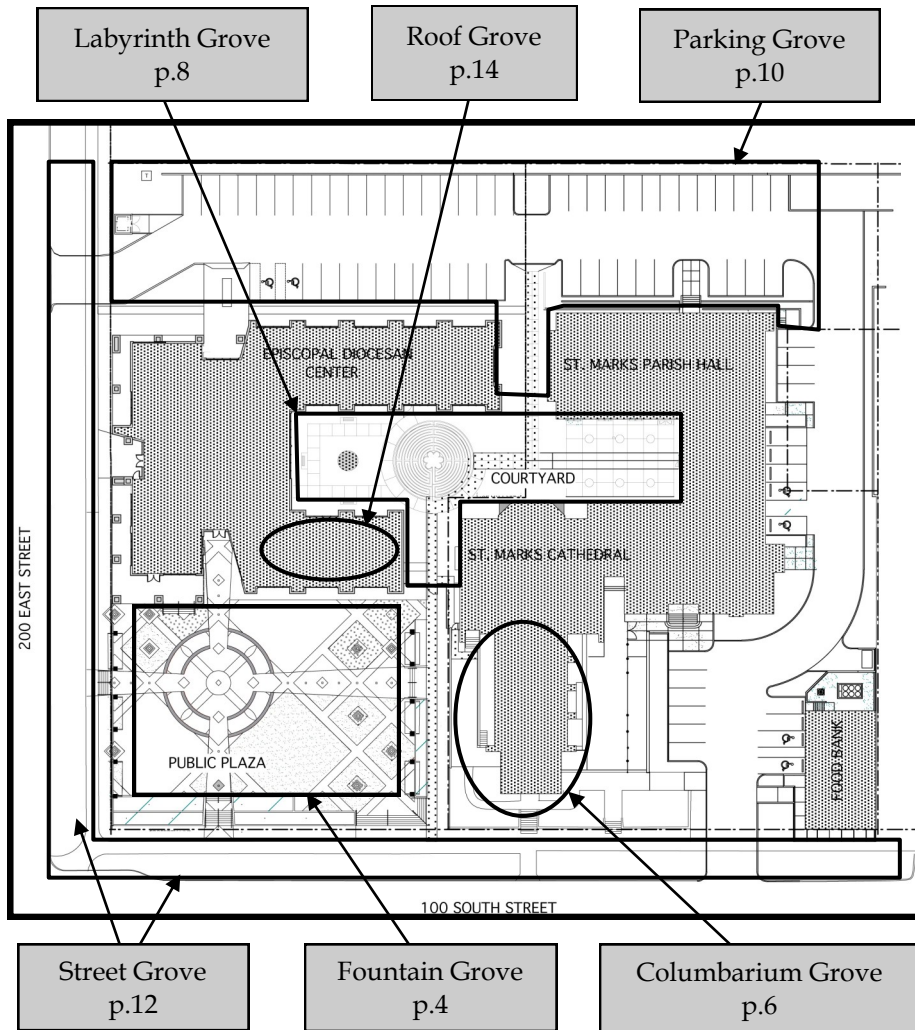


Tree Reference Map

This map depicts the tree groves on the campus of The Cathedral Church of St. Mark and The Episcopal Church Center of Utah. Flip to the corresponding page number in this booklet for more information about each grove.



Trees and Spirituality

A Guide to the Trees

of

The Cathedral Church of St. Mark and
The Episcopal Church Center of Utah



This guide was prepared by Kate Petersen and the University of Utah's Center for Science and Mathematics Education (www.csme.utah.edu).

Support was provided by: The Cathedral Church of St. Mark, The Episcopal Church Center of Utah, Bishop Scott Hayashi, Dean Ray Waldon, Willy Bautner, Susan Soleil, Utah Interfaith Power and Light (utahipl.org), The International Canopy Network (ican.csme.utah.edu), Chris Kolb, ArborCare, and a grant from the National Science Foundation [DEB-1141833]. Campus diagrams were provided by John Newell at BPN Architects in Salt Lake City.

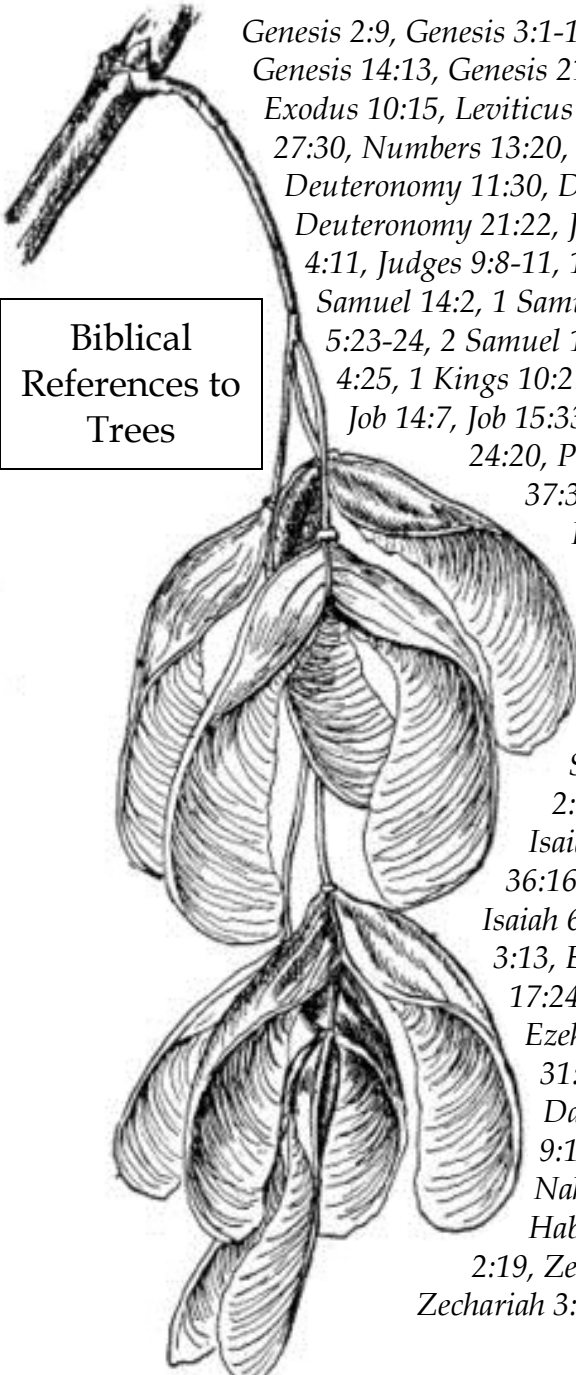
Dogwood image courtesy of: USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. 3 vols. Charles Scribner's Sons, New York. Vol. 2:662.

Interesting Tree Facts

- Trees make our air breathable. Through the process of photosynthesis, they take in carbon dioxide and water and release oxygen.
- Trees support vast communities of organisms, from microbial communities, to insects, mosses, fungi, birds, reptiles, amphibians, and mammals.
- Forests provide valuable economic benefits through the production of wood, wood products, food, and more.
- The oldest trees in the United States are Bristlecone Pines, a species that grows in western Utah. Bristlecones can live to be 5,000 years old.¹
- Since the 1600s, the amount of forested land area in the United States has declined by 30%. Today, about 1/3 of the country is forested.²
- Around the world, deforestation rates are rising rapidly. Preserving forests and planting trees can help alleviate global environmental changes, enhance water availability, and create beauty in our communities.



1. www.nps.gov/redw/faqs.htm; 2. *US Forest Facts and Historical Trends*, <http://fia.fs.fed.us/library/briefings-summaries-overviews/docs/ForestFactsMetric.pdf>; Image courtesy of: Florida Center for Instructional Technology / Kitto, J. 1853. *Daily Bible Illustrations*, Vol VII. Hurst & Company, New York. 139.

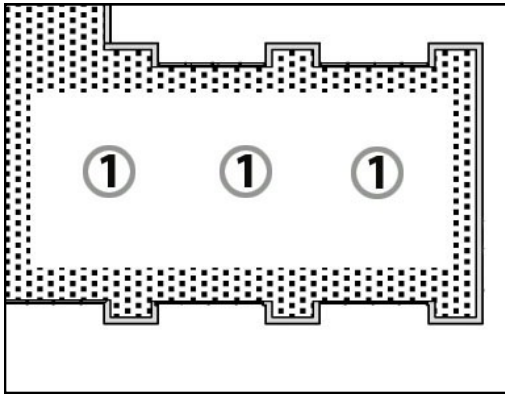
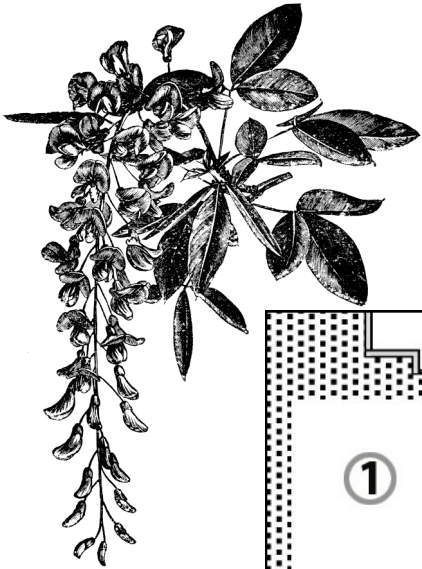


**Biblical
References to
Trees**

*Genesis 2:9, Genesis 3:1-12, Genesis 3:18,
 Genesis 14:13, Genesis 21:33, Genesis 30:37,
 Exodus 10:15, Leviticus 19:23, Leviticus
 27:30, Numbers 13:20, Deuteronomy 8:8,
 Deuteronomy 11:30, Deuteronomy 20:19,
 Deuteronomy 21:22, Joshua 8:29, Judges
 4:11, Judges 9:8-11, 1 Samuel 10:3, 1
 Samuel 14:2, 1 Samuel 22:61, 2 Samuel
 5:23-24, 2 Samuel 18: 9-14, 1 Kings
 4:25, 1 Kings 10:27, 1 Kings 19:4-8,
 Job 14:7, Job 15:33, Job 19:10, Job
 24:20, Psalms 1:3, Psalms
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 2:13, Isaiah 9:10,
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 2:19, Zechariah 1:8-11,
 Zechariah 3:10*

Box Elder image courtesy of: Florida Center for Instructional Technology / Keeler, H. 1915. *Our Native Trees and How To Identify Them*. Charles Scribner's Sons, New York. 86.

Roof Grove



① Golden Chain Tree

Laburnum spp.

These trees have leaves and seed pods similar to Locust trees, but their unique flaky bark indicates that they are Golden Chain Trees. All parts of this tree are toxic if eaten. The wood of this tree is very hard and is sometimes used for making musical instruments.

Golden Chain Tree image courtesy of: Florida Center for Instructional Technology / Nicholson, G. 1884. *The Illustrated Dictionary of Gardening*, Div VI. L. Upcott Gill, London. 2:3:223.

About This Guide

“The Lord God made all kinds of trees grow out of the ground – trees that were pleasing to the eye and good for food...” Genesis 2:9

Our Connection to Trees

Trees link us with the natural world. They are a source of shelter, protection, and food for humans and animals alike. Trees play an important role in our environment, and they are also spiritually significant for many faith groups.

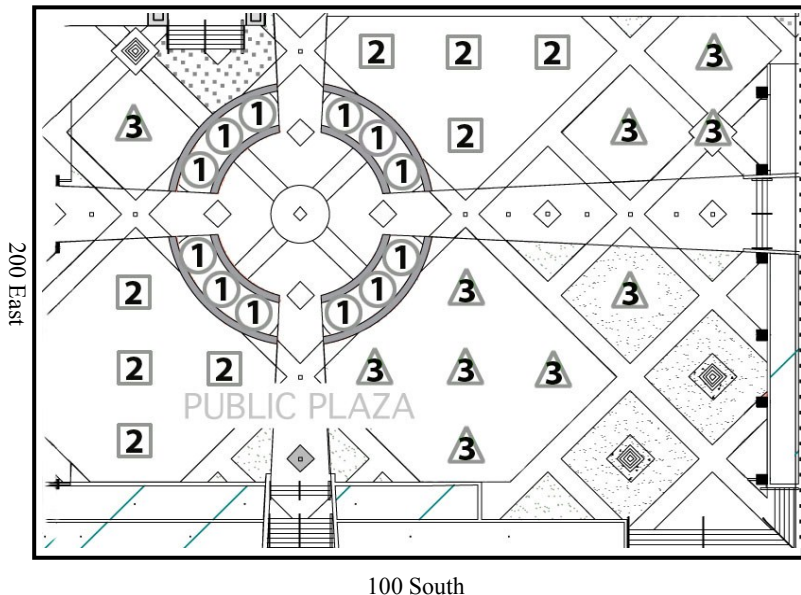
Tree References in Holy Texts

The holy scriptures make frequent references to trees. In fact, there are 395 tree references in the Old Testament of the Bible, in addition to references in other holy texts such as the Torah and Koran. Trees are depicted as metaphors for life, abundance, power, and divinity. They are used to denote place. They are the sites of miracles and redemption.

About This Guide

This booklet will acquaint you with the trees living on the campus of The Cathedral Church of St. Mark and The Episcopal Church Center of Utah. Often, the trees that surround us blend into the background of our lives, but if you look closely, you will notice the uniqueness of the many trees that grace the churchyard. Each grove of trees on the campus is included in a different section of the guide booklet. Turn to the back page for a reference map of all of the tree groves included in this booklet.

Fountain Grove



Locust Trees:

Shepherds of the Plant World

Nitrogen is an element required by all living things, but much of the Earth's nitrogen is in an unusable form. The Locust tree hosts nitrogen-fixers, a type of soil bacteria, in its root system. As the bacteria live and grow in the tree roots, they convert nitrogen into a usable form. The excess nitrogen is incorporated into the tissues of the Locust tree. When the Locust sheds its leaves and the leaves decompose, nitrogen is released into the soil for other plants to use. Thus, Black Locust and other nitrogen-fixing plants improve the soil, which means that more plants will grow and will contribute to the food web.

2 Green Ash

Fraxinus pennsylvanica

Green Ash is the most widespread native ash tree in North America. This tree has prolific seed production, wind-dispersed seeds, and a wide habitat tolerance. These characteristics allow the Green Ash to re-inhabit areas disturbed by wildfire.

3 Silver Linden

Tilia tomentosa

The Silver Linden grows quickly, up to 90 feet tall. Linden wood is soft, fine-grained, and resists warping once seasoned and sanded. It was used by Grinling Gibbons for his woodcarvings, some of which decorate St. Paul's Cathedral in London. It has also been used in the Slavic Orthodox Christian tradition for panel icon painting. Linden was planted near churches in the Middle Ages because it was viewed as a sacred tree.

4 Little Leaf Linden

Tilia cordata

This tree is closely related to the Silver Linden. Notice that the leaves of the Little Leaf Linden are smaller, with a pale green underside, whereas the larger Silver Linden leaves have a more metallic tone.

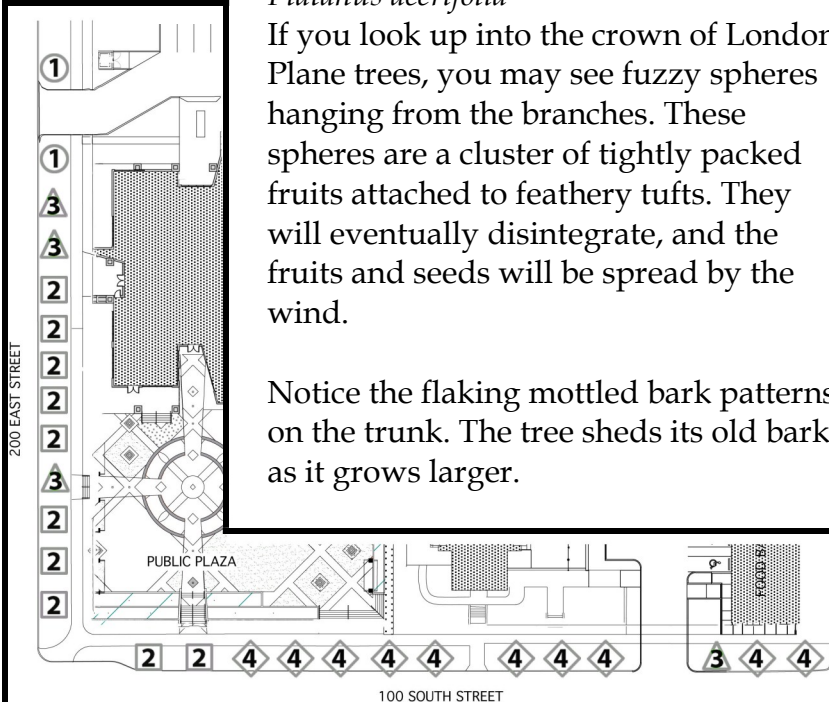
Street Grove

1 London Plane

Platanus acerifolia

If you look up into the crown of London Plane trees, you may see fuzzy spheres hanging from the branches. These spheres are a cluster of tightly packed fruits attached to feathery tufts. They will eventually disintegrate, and the fruits and seeds will be spread by the wind.

Notice the flaking mottled bark patterns on the trunk. The tree sheds its old bark as it grows larger.



Urban Forests

Trees such as the London Plane, Honey Locust, Silver Linden, and Little Leaf Linden are often planted in cities because they tolerate the stresses of an urban environment, such as pollution, soil compaction, heat, and disease. Urban trees help clean the air by absorbing pollutants. Their root systems also help to prevent erosion and reduce flood severity.

1 Autumn Brilliance Serviceberry

Amelanchier x grandiflora

These trees, surrounding the Fountain, have brilliant fall leaves and berries that are an important food for birds.

2 Purple Robe Black Locust

Robinia pseudoacacia

These beautiful trees have distinctive flowers and seed pods that resemble enlarged pea pods.

It is likely that the Locust tree was named after a biblical reference. Matthew 3:4 relates the story of John the Baptist eating locusts and honey. Some people believe that the 'locusts' were actually seed pods of the Carob tree, which resemble those of the Locust tree.



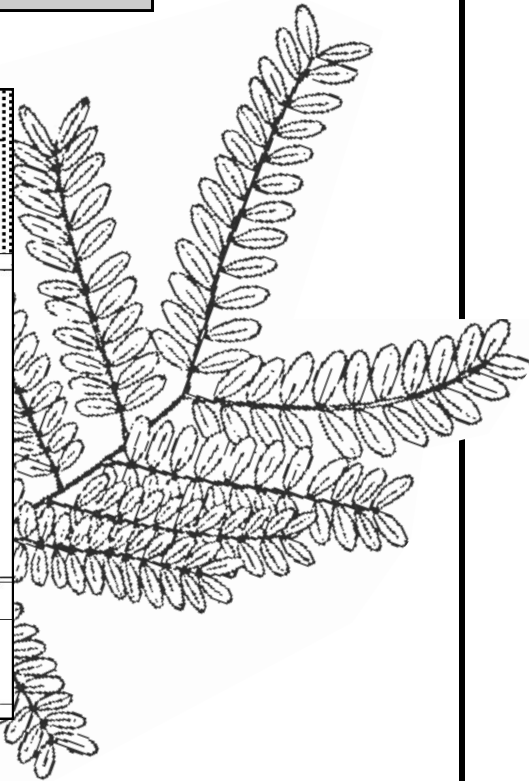
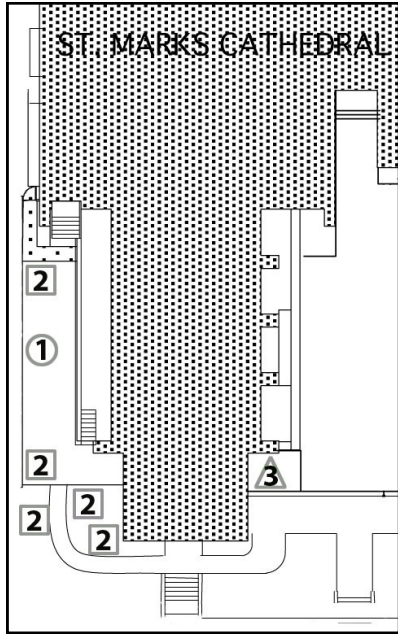
Black Locust Seed Pod
(image courtesy of: USDA-MRCS PLANTS Database)

3 Shademaster Honey Locust

Gleditsia triacanthos

The Honey Locust is native to North America. The tree is heat- and drought-tolerant and possesses many similarities to the Black Locust.

Columbarium Grove



1 Crab Apple *Malus sylvestris*

The Crab Apple is related to the common apple tree, but it possesses apples that are small and sour. Monks in the 15th Century used crab apple fruits medicinally. The fruits were roasted, covered with honey, dried, and eaten to treat diarrhea, dysentery, and gallstones.

2 Shademaster Honey Locust *Gleditsia triacanthos*

The Honey Locust possesses a distinctive compound leaf (see image, above). For more information, see page 5.

Locust image courtesy of: USDA-NRCS PLANTS Database / USDA NRCS. Wetland flora: Field office illustrated guide to plant species. USDA Natural Resources Conservation Service.



5 Caucasian Zelkova

Zelkova carpinifolia

Native to the Caucasus (an area between Europe and Asia), this tree grows slowly at first, but will continue to grow for 250+ years. It can reach a height of 90 feet.



6 Serbian Spruce

Picea omorika

This is the classic Christmas tree and is native to Bosnia and Serbia. In the wild, this tree can be 60 feet tall.



+ Columnar Buckthorn

Rhamnus frangula columnaris

These trees produce an abundance of berries. Birds are attracted to the fruit and help to spread the seeds over a large area. The trees have a good chance of surviving wherever they land because they tolerate a range of conditions. Due to the Buckthorn's prolific reproductive capacity, they are considered an invasive species in the southeastern United States.



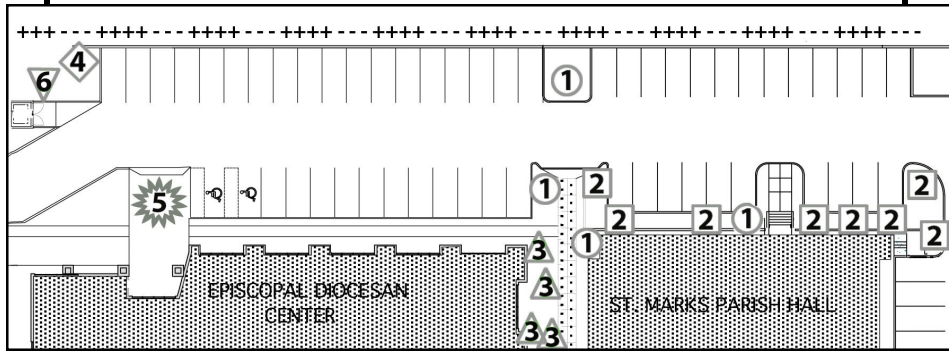
- Cologreen Juniper

Juniperus scopulorum

1 Kings 19:4-8 relates the story of Elijah fleeing to the desert and, exhausted, lying down under a juniper (broom) tree, anticipating death. Elijah was awakened by an angel who brought food and water, allowing him to complete his journey.

Juniper is used as a medicinal tonic all over the world. It is a drought-tolerant tree, able to continue growing in conditions that kill other desert trees.

Parking Grove



1 Bigtooth Maple

Acer grandidentatum

Like the sugar maple, the sap from this tree can be extracted to make a sweet syrup.

2 Rocky Mountain Maple

Acer glabrum

Some trees take advantage of wildfire as part of their life cycle. The Rocky Mountain Maple experiences a rapid increase in height following wildfire. Rocky Mountain Maple leaves are shown on this page.

Maple image courtesy of: USDA-NRCS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada, and the British Possessions*. 3 vols. Charles Scribner's Sons, New York. Vol 2:497.

3 Amur Maple

Acer ginnala [See page 9.]

4 Curly Willow

Salix matsudana tortuosa

Ezekiel 17:5-6 "Then he took of the seed of the land and planted it in fertile soil; he placed it beside abundant waters. He set it like a willow twig, and it sprouted..."

An Episcopal Church Center employee received a

3 Dogwood

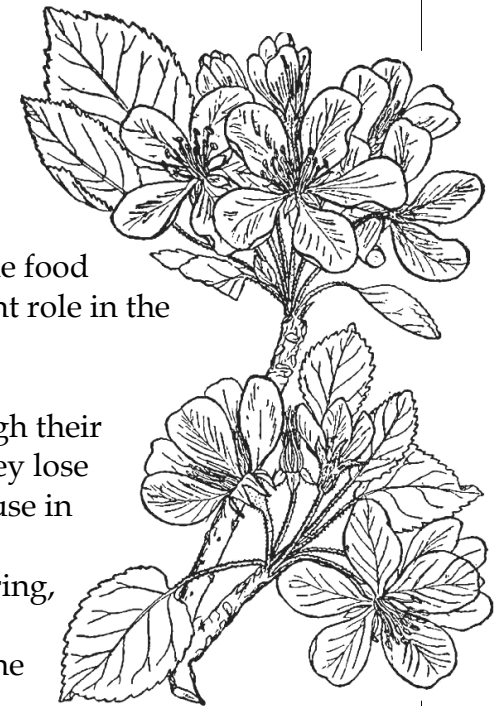
Cornus spp.

Many species of dogwood are native to Europe, Asia, and North America. Some Christians consider the dogwood's flowers to symbolize the sacrifice of Christ. The showy flower parts, shaped like the cross, tend to bloom around Easter time.

Trees: Symbols of Renewal

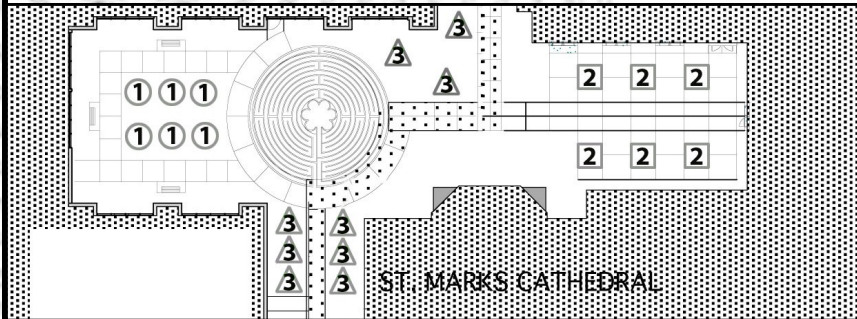
In nature, trees are an integral part of the cycle of life and death. Trees incorporate nutrients from decaying organic matter and transform the nutrients into wood, bark, leaves, flowers, and fruit. These parts of the tree provide food and shelter for other living beings. Thus, trees cycle nutrients through the food web and play an important role in the circle of life.

Deciduous trees go through their own cycle each year as they lose their leaves in the fall, pause in dormancy throughout the winter, blossom in the spring, and grow through the summer. They illustrate the cycle of life, death, action and rest.



Crab Apple image courtesy of: USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. 3 vols. Charles Scribner's Sons, New York. Vol. 2:290.

Labyrinth Grove



1 Washington Hawthorn

Crataegus phaenopyrum

These trees bloom with white flowers and have an intense perfume. Notice the large thorns and red berry clusters at certain times of the year. Some faith traditions view the Hawthorn tree as a symbol of union, love, and marriage.

The Washington Hawthorn is native to and endangered in Florida.

2 Kwanzan Cherry Tree

Prunus serrulata

This tree is a cultivar of the Japanese flowering cherry tree. The tree is prized for its showy, fragrant blossoms. Birds, insects, and small mammals feed on the cherries.

3

Amur Maple

Acer ginnala

The leaves of the Amur Maple create beautiful, brilliant colors in the fall. The bright color appears because as winter sets in, trees stop producing chlorophyll, a green pigment critical for energy production in the leaf. During the growing season, there is so much chlorophyll in the leaf that it masks all other colors and makes the leaf appear green. Once the green color starts to fade, other pigments in the leaf can show through. The red and purple colors come from anthocyanin pigments, which are also found in beets, grapes, and apples.

A Labyrinth of Water Pathways

After water enters the tree roots, it travels through a series of connected pores and tubes known as the xylem. It eventually reaches the topmost leaves.

How does that happen?

There are pores in the leaves called stomata, which means "mouths." Through the heating effects of the sun, water from the tree exits through these pores via evaporation.

The water leaving the tree creates negative pressure inside the xylem. This negative pressure pulls more water into the tree through the roots, just like sucking on a straw pulls water from a glass.