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European Beech (*Fagus Sylvatica*) Observations

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BIO 140: Humans and Their Environment

Salve Regina University



European Beech

Fagus sylvatica

ID# 604

The location of tree #604 is by the walkway to the library, and right across the street from the Salve Regina Mercy Center. I observed this tree from September 24, 2021 until December 9, 2021.

Natural range of the European Beech (*Fagus sylvatica*)

Beech trees are located in temperate and subtropical areas of North America, Asia, and Europe. The natural range of the European Beech in Europe is it extends from southern Scandinavia to Sicily, and from Spain in the west to northwest Turkey in the east (Houston Durrant et al. 2016). The natural range of the Beech trees in North America is they are native to the eastern section from Nova Scotia west to southern Ontario, and then west to Wisconsin and south to eastern Texas and northern Florida (Tanabe, 2019).

Natural history of the European Beech (*Fagus sylvatica*)

The European Beech tree is a species of beech trees that is native to Europe. Recent evidence has shown that it did not arrive in England until about 4000 BCE, or two thousand years after the English Channel formed after the ice ages (Tanabe, 2019). This species of tree can reach heights as tall as 157 feet (48 meters) with a ten-foot (three meter) trunk diameter, but it more typically is 82-115 feet (25-35 meters) tall with a five-foot (1.5 meter) trunk diameter (Tanabe, 2019). European Beeches have a typical lifespan of 150 to 200 years, but it has sometimes lived for 300 years (Tanabe, 2019).

The European Beech starts to flower when it is between 30 and 80 years old, the flowers appear shortly after the leaves in spring, and they are small catkins (Tanabe, 2019). The seeds are small triangular nuts that are about 15-20mm long and 7-10mm wide at the base with two nuts in

each cupule, and they mature in the fall five to six months after pollination (Tanabe, 2019). In the years following a hot, sunny, and dry summer, flower and seed production is particularly abundant, although it rarely is two years in a row (Tanabe, 2019).

Human uses of European Beech (*Fagus sylvatica*)

European beech wood is heavy, tough, hard, and strong, which makes it an important tree used in forestry (Tanabe, 2019). The wood today is harvested for uses such as flooring, containers, handles, furniture, and woodenware (Tanabe, 2019). The Beech's short grain makes it an easy wood to soak, dye, varnish, glue, and easy to work with in general, and it has an excellent finish and is resistant to splitting and compression (Tanabe, 2019). This species of tree is well suited for minor carpentry and can do almost anything other than heavy structural support if it is not left outdoors (Tanabe, 2019). The wood can rot easily if not protected by a tar based on a distillate of its own bark. In the past humans have eaten beechnuts, but they are no longer eaten by people because they are slightly toxic to man if eaten in large quantities due to the tannins they contain (Tanabe, 2019). The nuts were also pressed to receive oil that could be used for cooking and lamps in England in the nineteenth century (Tanabe, 2019). In addition, the nuts were ground to make edible flour after the tannins were leached out by soaking (Tanabe, 2019).

Wildlife uses of European Beech (*Fagus sylvatica*)

In the wildlife, the leaves and nuts of the European Beeches have provided food for many species of animals (Tanabe, 2019). These species of animals include ruffed goose, wild turkeys, raccoons, red/gray foxes, white tail deer, rabbits, opossums, black bears, squirrels, pheasants, and porcupines (Tanabe, 2019).

Observation 1:



Figure 2: European Beech #604 (*Fagus sylvatica*) leaves October 18, 2021.



Figure 3: European Beech #604 (*Fagus sylvatica*). Photograph October 18, 2021.



Figure 4: European Beech #604 (*Fagus sylvatica*) bark. Photograph October 18, 2021.



Figure 5: European Beech #604 (*Fagus sylvatica*) leaf color change on October 18, 2021.

The leaves on this beech tree are a green color with a little brown on the edges of some, and a few leaves here and there are yellow. There are still many leaves attached to the tree at this point in fall on October 18, 2021, see Figure 3. The bark is a light grey and very smooth with some green and white patches, see Figure 4. European beeches are known to have silvery-grey smooth bark, and this makes them ideal targets for carving initials and words into (Beaulieu, 2021). Also, as can be seen in Figure 5 there are lights hanging from this tree which was put on this tree for a play. The branches being lower and skinner allows for lights to be put up easier compared to the tree to the right of it whose branches are much taller up, this can be seen in Figure 3.

Observation 2:



Figure 6: European Beech #604 (*Fagus sylvatica*).
Photograph October 29, 2021.

There is a slight decrease in the number of leaves on the tree. However, they are all still dark green. There are more leaves on the ground under the tree than there was in the previous observation.

Observation 3:



Figure 7: European Beech #604 (*Fagus sylvatica*).
Photograph November 8, 2021.

Figure 8: European Beech #604 (*Fagus sylvatica*)
leaves. Photograph November 8, 2021.



Figure 9: European Beech #604 (*Fagus sylvatica*) bark. Photograph November 8, 2021.



Figure 10: European Beech #604 (*Fagus sylvatica*) leaf color and number of leaves change. Photograph November 8, 2021.

I noticed on November 8, 2021, that there was a significant decrease in the number of leaves on the tree. Many of the leaves on the tree were still a medium green color. However, some of the leaves started turning lighter green and yellow with a little brown on the edges at this point. In addition, the canopy of the tree started to appear smaller because there were less leaves on the branches. However, there were more leaves this late into fall than I would expect there to be. Many of the trees around were changing to more intense colors at this point except for the European beech tree I was looking at.

It is common for the European beech tree leaves to be elliptical-shaped, and they are between five and ten inches (twelve to twenty-five centimeters) long and about four to seven

inches wide (ten to eighteen centimeters) (*European Beech*, n.d.). In addition, the leaves have pronounced lateral nerves that extend from each side of the main rib (*European Beech*, n.d.). After the leaf shoots, the leaves are equipped with bright, white eyelashes. The upper side of the leaf is a dark green-glossy, and the leaf margin is slightly wavy (*European Beech*, n.d.). The autumn coloration of the leaves of the beech is particularly intense (*European Beech*, n.d.). They have a golden-bronze fall foliage, and the leaves persist into the winter after turning a tan color (Beaulieu, 2021). This makes sense why the beech tree I was looking at still had a large number of leaves attached to the tree on November 8, 2021, see Figure 6.

Observation 4:



Figure 11: European Beech #604 (*Fagus sylvatica*). Photograph November 15, 2021.

The tree lost a significant number of leaves from the top half of its branches. Many of the leaves that are left are green, but you can see a few yellow and lighter green ones on the tree. In addition, there were many more fallen brown and yellow leaves underneath the tree.

Observation 5:



Figure 12: European Beech #604 (*Fagus sylvatica*).
Photograph December 9, 2021.



Figure13: European Beech #604 (*Fagus sylvatica*)
leaves. Photograph December 9, 2021.



Figure 14: European Beech #604 (*Fagus sylvatica*) bark. Photograph December 9, 2021.

Figure 15: European Beech #604 (*Fagus sylvatica*) leaf color and number of leaves change. Photograph December 9, 2021.

In my third observation I noticed that there were very few leaves left on the tree. The ones that were left were very fragile and felt as if they would fall off soon. In addition, all the leaves that were left were brown and crunchy. Also, this time I noticed that the green spots on my tree looked thicker than they had in the past, and I was curious what these green and white patches were.

These patches on the tree are tree lichens which tend to be harmless (Rhoades, 2021). The rhizines allow the lichen to attach to the tree, but not go deep enough to harm the tree (Rhoades, 2021). Tree lichens are a unique organism because they are a symbiotic relationship between two organisms, algae and fungus (Rhoades, 2021). The way their relationship works is

the fungus grows on the tree and can collect moisture which the algae need (Rhoades, 2021). In return, the algae can create food from the energy of the sun, which then feeds the fungus (Rhoades, 2021).

The lichen on beech trees can be confused with Beech Bark Disease (National Parks Services [NPS], 2021). If the bark has fuzzy white "cotton ball" bumps or white patches on its bark it is Beech Bark Diseases (NPS, 2021). This is the result of a complex interaction between three non-native pests and a native *Nectria* fungus (NPS, 2021). This happens when the beech scale insect wounds the tree by piercing the bark with sharp mouth parts and then sucks the sap out (NPS, 2021). After, the *Nectria* fungus is then able to enter and infect the tree through these wounds (NPS, 2021).

Throughout my time observing and learning about European beech (*Fagus sylvatica*) trees I found out some very interesting facts. The first one is that it takes them awhile to start flowering, about 30 to 80 years. The second is that flower and seed production rarely happens two years in a row, which I thought was interesting because I had just assumed every tree did this every year with the change in seasons. In addition, I found it interesting that humans used to eat parts of this tree many years ago. Also, it was interesting walking by my tree every day and seeing how this tree takes a little bit longer than others to change color in autumn. I have learned many new facts about European beech's by doing this project, and I now know the best type of tree to carve my initials into.

References

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