

Questions for *First in Forestry*

1. In the late 1800s, what “revolution” was destroying America’s forests and made people fear a timber famine?

2. Where is the Biltmore House located?

3. Name the landscape architect hired to design the grounds at the Biltmore Estate.

4. What did Frederick Olmsted recommend George Vanderbilt do at the Biltmore Estate?

5. Who was the first forester hired for the Biltmore Estate?

6. Who was the second forester hired for the Biltmore Estate?

7. What country did he come from?

8. Carl Schenck and Gifford Pinchot disagreed about logging operations where?

9. In what year was the Biltmore Forest School established?

10. Was the Biltmore Forest School the first forestry school in the United States?

11. Name one of the three reasons why Vanderbilt took on the Pisgah Forest project.

12. There are four jobs mentioned that some of the Biltmore Forest School students went on to work after graduating. Name one of them.

13. What year did the Biltmore Forest School permanently close?

14. Name the national forest made up of lands bought from the Biltmore Estate.

15. What is the name of the national historic site that preserves the Biltmore Forest School?

Questions for *First In Forestry*:

Answer Key

1. In the late 1800s, what “revolution” was destroying America’s forests and made people fear a timber famine?

Industrial Revolution

2. Where is the Biltmore House located?

Asheville, North Carolina; western North Carolina; or the Southern Appalachian Mountains

3. Name the landscape architect hired to design the grounds at the Biltmore Estate.

Frederick Law Olmsted

4. What did Frederick Olmsted recommend George Vanderbilt do at the Biltmore Estate?

Scientifically manage the forests

5. Who was the first forester hired by George Vanderbilt for the Biltmore Estate?

Gifford Pinchot

6. Who was hired to be the second forester on the Biltmore Estate?

Carl Schenck

7. What country was he from?

Germany

8. Carl Schenck and Gifford Pinchot disagreed about logging operations where?

Big Creek

9. In what year was the Biltmore Forest School established?
1898
10. Was the Biltmore Forest School the first forestry school in the United States?
Yes
11. Name one of the three reasons why Vanderbilt took on the Pisgah Forest project.
1) Wanted a “playground” for him and his friends (meaning a place for recreation)
2) He wanted logs and lumber
3) He wanted to promote game and fishing.
12. There are four jobs mentioned that students went on to after graduating. Name one of them.
1) Lumberman
2) State forester
3) Teacher
4) Forest researcher
Can include working for Pinchot’s U.S. Forest Service too.
13. What year did the Biltmore Forest School permanently close?
1913
14. Name the national forest made up of lands bought from the Biltmore Estate.
Pisgah National Forest
15. What is the name of the national historic site that preserves the Biltmore Forest School?
Cradle of Forestry in America

Discussion questions for 8th grade instructors for *First in Forestry*

1. Do you think that George Vanderbilt's efforts to establish a huge estate in western North Carolina was a positive development?
2. Why did Frederick Law Olmsted encourage George Vanderbilt to hire a forester?
3. Carl Schenck emigrated from Germany to the United States in 1895. What advantages did he have over many of the immigrants of that time?
4. Carl Schenck was from Germany, where he received his forestry training. What challenges did he face as he tried to introduce scientific forestry on the Biltmore Estate?
5. Have these challenges changed during the last 100 years? If so, how?
6. Gifford Pinchot and Carl Schenck had different reactions to the logging operation on Big Creek. Discuss those differences.
7. Pioneer foresters in America like Schenck and Pinchot wanted to show how trees could be cut and conserved at the same time, what today we might call "sustainable forest management." Why did they want to do this? What is your definition of forest conservation?
8. How did Schenck view the role of private forest land ownership and management?
9. What responsibilities do you think private landowners should have toward the land?
10. Do you think that the government should help private landowners who provide public goods and services (like allowing camping or hunting) from their forest land?
11. Schenck claimed that he did nothing to find a buyer for the Pisgah Forest after Vanderbilt, his employer, asked him to. Do you agree with his decision and motivation? Why or why not?
12. Do you think Vanderbilt treated Schenck fairly when he let him go from his job?
13. The Biltmore Forestry School trained foresters to work in the woods by taking students into the forest every day after lunch. Schenck accused other programs of teaching only from books and not in the woods. How do you think a forester should be trained?
14. Think of a forest or wooded area you are familiar with. How has it changed? What may have caused those changes?

Discussion Questions for *First in Forestry*
Answer Key

1. Do you think that George Vanderbilt's efforts to establish a huge estate in western North Carolina was a positive development?

Gifford Pinchot and Carl Schenck demonstrated that landowners could cut trees *and* preserve the forest at the same time. According to Bill Alexander, they “felt that forestry properly done could perpetuate the forests forever while extracting timber products.” And so they were anxious to show that it could be profitable. The work there helped inspire the call to preserve the region's forests, and led to passage of the Weeks Act in 1911.

Also, the news of the house's construction brought attention to Asheville, which was growing in popularity as a resort town and a place for tuberculosis patients to come to recuperate. Many men were hired to build the house and landscape the grounds, and then both men and women were hired to work in the house, on the farms, and in the woods. Just like today, tourists came to Asheville to see the house before and after it was built. Edith Vanderbilt, George's wife, also established Biltmore Industries, which employed people to make handcrafted textiles and furniture.

2. Why did Frederick Law Olmsted encourage George Vanderbilt to hire a forester?

In the film Biltmore historian Ellen Rickman states that “Olmsted saw a great opportunity at Biltmore and that is to scientifically manage the forests in a way that they became sustainable. And nobody else in this country was doing that.”

Biltmore Estate forest and landscape historian Bill Alexander said, “He advised Vanderbilt that such land in Europe would be made a forest, but with a long term view to crops of timber. Knowing that Vanderbilt didn't have a profession, he said, ‘That would be a suitable and dignified business for you to engage in and in the long run, it would be a fair investment of your capital.’ But Olmsted's real interest here was, he said, ‘This is your chance, this would be a great contribution and service to the country, to show how a systematic managed forest could not only benefit the land, but the landowner at the same time.’”

3. Carl Schenck emigrated from Germany to the United States in 1895. What advantages did he have over many of the immigrants of that time?

Schenck was born, raised, and educated in what became Germany. He had a PhD in forestry and a law degree, and could read and write English. He had a job waiting for him that paid him \$2,500 in 1895—the equivalent of about \$70,000 in today's dollars—and a furnished house to live in. In contrast, the majority of immigrants at the end of the 19th and beginning of the 20th centuries came from eastern and southern Europe, moved to big cities to work as laborers in factories, and lived in overcrowded tenements.

4. Carl Schenck was from Germany, where he received his forestry training. What challenges did he face as he tried to introduce scientific forestry on the Biltmore Estate?

He had never been to America and was not familiar with the trees and forest conditions. In addition to cultural and class differences between Schenck and the local people, English was not his first language, which sometimes made communication difficult.

In the film, historian James Lewis states: “He’s dealing with a landscape he’s never seen, there are literally hundreds of tree species he’s unfamiliar with. The Pisgah Forest is just one of the most biologically diverse areas in the world. Carl Schenck is unfamiliar with the landscape, the trees, the people, and democracy. He is in way over his head.” He had to adapt or be fired.

When Schenck arrived, the first thing he had to do was carry out Gifford Pinchot’s logging plan on Big Creek, which involved cutting more trees than Schenck was comfortable with and using splash dams to move the timber. Schenck disagreed with these plans. They had a difference of opinion about the results.

Other challenges included: Schenck had trouble finding buyers for the lumber; he needed workers who understood why he didn’t want to cut all the trees down and would carry out those orders; and Vanderbilt grew impatient waiting for the forestry work to turn a profit.

5. Have these challenges changed during the last 100 years? If so, how?

Scientists continue to study trees, forests, and wildlife in order to better understand forest conditions and how humans can improve them. Attitudes about forests continue to evolve. Some people believe we should not cut any trees and that forests should be left alone. Others support actively managing forests because insects, disease, and fire can alter the composition and health of forests. We still rely on trees and forests for hundreds of products. They come from live trees, solid wood, wood pulp, wood chips and sawdust, and from the cork and bark of trees. See <http://www.wisconsincountyforests.com/education/products-from-trees> for a partial list. A colorful brochure with an activity that teaches about these products is at <http://ecosystems.psu.edu/youth/sfrc/lesson-plan-pdfs/from-the-forest>.

Some things have not changed in the last one hundred years. To be healthy, trees still need moisture, sunlight, and nutrients. Diseases and fire are still a threat, as are human activity.

6. Gifford Pinchot and Carl Schenck had different reactions to the logging operation on Big Creek. Discuss those differences.

Pinchot believed that the logging operations were a success because the cut trees dropped their seeds and new trees grew back. Schenck thought they did not succeed because he feared they had cut too many logs, and when they tried to move the logs to Vanderbilt’s mill, they damaged some adjacent farmland. Here are some quotes from the film:

Carl Schenck: “Pinchot was elated while I was utterly depressed and torn by a doubting conscience. At a small expense, and without sacrificing the finest trees, we might have obtained the same end.”

James Lewis: “Gifford Pinchot views it as a success from a silvicultural standpoint. The trees that they had logged dropped their seeds and those seeds took and natural regeneration began.”

Bill Alexander: “But Schenck was concerned about that not being the primary method of forestry that he wanted to apply. And I think that both he and Pinchot learned over time that forest types were different in different regions and different species mix of trees and so you had to do different treatments. And that’s really how American silviculture was born, through these experiments.”

James Lewis: “What Schenck learned at Big Creek is that it would’ve been cheaper in the long run to have built roads and to do what he called ‘permanent forestry’ than to construct these splash dams and then try and run the logs down to the mill that Vanderbilt owned.”

7. Pioneer foresters in America like Schenck and Pinchot wanted to show how trees could be cut and preserved at the same time, what today we might call “sustainable forest management.” Why did they want to do this? What is your definition of forest conservation?

Pinchot and Schenck believed that forest conservation meant having foresters actively managing the land to maintain and improve tree production, soil, water, and air quality, and fish and animal habitat. This included not cutting, or harvesting, more wood than grows annually and replanting trees. It also includes meeting the needs of the present generation without compromising the ability of future generations to meet their own needs. Like Schenck tried to do for Vanderbilt, foresters manage the land not only for trees and nontimber products like nuts and medicinal herbs, but for animal and fish habitat, and soil, water, and air quality.

Schenck stated:

“I am a forester, and as a forester I am meant to raise trees, partly by planting, partly by lending nature a helping hand. I am a lumberman. I cannot help being a lumberman. Without lumbering no cash dividend is obtainable from forest investments. Therefore, I cut the trees, though I do not cut all the trees—for the reason that it pays better not to cut all of them.”

The Food and Agriculture Organization, a part of the United Nations, defines sustainable forest management as:

“The stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfill, now and in the future, relevant ecological, economic and social functions, at local, national, and global levels, and that does not cause damage to other ecosystems.”

In simpler terms, the concept can be described as the attainment of balance— balance between our increasing demands for forest products and benefits, and the preservation of forest health and diversity. This balance is for sustainability, and to the prosperity of forest-dependent communities.

8. How did Schenck view the role of private forest land ownership and management?

He thought that private landowners had an important role to play in forest conservation. His work on the Biltmore Estate showed that you could cut trees and conserve the forest at the same time, a policy adopted by the federal government’s Forest Service. He also argued that if the government lowered taxes on land enough, landowners would instead have incentive to hold on to the land and invest in it by replanting trees, fighting forest fires, and other practices.

9. What responsibilities do you think private landowners should have toward the land?

A responsible forest landowner should consult with a forester to create a plan that sets management goals that helps guide the owner. One basic legal responsibility is not polluting the land or waterways. One ethical, but not necessarily legal, responsibility is managing for both current and future generations.

10. Do you think that the government should help private landowners who provide public goods and services (like allowing camping or hunting) from their forest land?

The U.S. Forest Service and the North Carolina Forest Service both help private landowners by providing forestry advice to landowners, helping to develop management plans, and conducting research on things like invasive plants, insects, and animals that can harm privately owned forests. The government fights wildfires that threaten private property and does not charge money for this.

11. Schenck claimed that he did nothing to find a buyer for the Pisgah Forest after Vanderbilt, his employer, asked him to. Do you agree with his decision and motivation? Why or why not?

Schenck feared that selling the land would undo all of his hard work, declaring, “All my forestry. All my teaching. All my ambitions were shipwrecked if Pisgah Forest were sold. I did not make the slightest attempt to find a purchaser for Pisgah Forest.” It is the ethical responsibility of a professional forester to advise an owner of their options but then carry out the orders of the owner, as long as they are not illegal.

12. Do you think Vanderbilt treated Schenck fairly when he let him go from his job?

Schenck failed to generate a profit from the forest and logging operations, as Vanderbilt expected. He disobeyed Vanderbilt’s request to find a buyer for the land. He also got in a fight with the estate manager Chauncey Beadle, who accused him of lying to Vanderbilt, and punched him. On the other hand, Vanderbilt had failed to pay Schenck his salary for several years and cut his budget, making carrying out the forest management plan and generating profits difficult.

13. The Biltmore Forestry School trained foresters to work in the woods by taking students into the forest every day after lunch. Schenck accused other programs of teaching only from books and not in the woods. How do you think a forester should be trained?

To be a forester today, one must have a bachelor’s degree. A student will take classes in math and science (trigonometry, biology, chemistry, and economics), natural resources (in which students study botany, dendrology [tree structure], soils, and geographic information systems [mapping]), and forestry topics (including forest economics, forest ecology, silviculture, forest products manufacturing, harvesting and roads, watershed hydrology, natural resource policy). Field training is also required. Bachelor’s degree programs may even offer specialization areas, like forest management or forest restoration. Programs often offer internship opportunities as well. (You can learn more about professional foresters on our website at: <http://bit.ly/2FJLFBS>.)

14. Think of a forest or wooded area you are familiar with. How has it changed? What may have caused those changes?

Things that can cause changes in a forest include development (such as converting forests to new communities or buildings, or even constructing new trails), the introduction of invasive insects or plants, the occurrence of fires or other natural disasters like a hurricane or tornado, and a change in the use of the land, such as converting it to or from a park.