2019 LANCASTER COUNTY JUNIOR ENVIROTHON

FOREST MANAGEMENT

1. **History of Pennsylvania Forests**

As the last ice age ended, people traveled into the land area known as Pennsylvania. Ancient forests left evidence behind in the deep muck of wetlands where pollen grains have been preserved for centuries. Tiny grains of pollen tell what plants grew at that time. 12,000 years later, Native Americans cleared forests using fire so that crops of corn, beans, and squash could be planted. The impact on the forest was limited because populations of people were small.

About 250 years ago settlers from Europe arrived. They used steel plows and axes to clear land for farming, firewood, and other products made from wood. Just before 1860, there were 128,000 farms in the state. Businesses and industry grew out of the 1800's. Pennsylvania supplied a great number of trees for charcoal making that helped to melt iron ore rock to create iron products along with lumber for building. Sawmills were often built near streams and rivers so that logs could float on the water to the sawmill site. Wood was also used to power locomotives, steamboats, and steam engines. *Photo source*: http://www.susquehannalife.com

In the 1910's the state's rich forests dwindled to only 13 million acres. Wildfires and erosion happened. In the 1930's people began to work together to plant more trees and bring back forests.

2. **Present Day ways to Manage Forests**

Today 17 million acres of Pennsylvania are filled with forests. The state produces the United States largest number of hardwood or deciduous trees. Over half of all forest land in the state is owned by families or individual people. That means that they make decisions about how the forests will be managed such as preserving trees or selling them for a profit. Many times people face difficult decisions about whether to change forest lands into housing developments or stores. This is the biggest threat to the conservation of forest land. *Photo source*: www.worldcrosser.com

The State Forest Bureau has about 2 million acres. This land is open to the public. You might have hiked or camped in a state forest. Public forests are also found in State Game Lands, State Parks, and the Allegheny National Forest.

3. **History of Lancaster Naturalist: John P. McCaskey**

Photo source: http://mccaskeyalumni.org/quotes-of-john-piersol-mccaskey/

John P. McCaskey was born in Lancaster, Pennsylvania in the middle 1800's. He lived in a log cabin with his parents and six siblings. Mr. McCaskey traveled to Lancaster City when he was 12 to attend high school. At that time there were only 2 high schools in Pennsylvania, and Lancaster hosted one of the schools.

He was a really good student and became a teacher at the Boys' High School when he was 18. Later he became principal and married with seven children. During this time, he wrote stories for the *Pennsylvania School Journal*, a magazine for teachers. In 1872 the first Arbor Day was held in the state of Nebraska. The day of celebrating the benefits of trees spread to other states. He wrote an article for the magazine encouraging Pennsylvania to celebrate Arbor Day. In 1884, Mr. McCaskey led the first Arbor Day celebration in the state at the Boys' and Girls' High School.

Mr. McCaskey led planting ceremonies on Arbor Day that took place at school. Then each student received a tree to take home and plant. He saw how helpful trees are and when he retired, the students of Lancaster city had planted 9,000 trees! Some of those trees still stand today.

4. **History of Pennsylvania Forester: Gifford Pinchot**

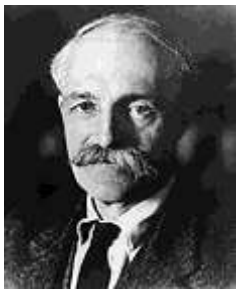

Photo source: https://www.nps.gov/people/gifford-pinchot.htm

Gifford Pinchot grew up in the late 1800's. He was America's first forester trained as a conservationist. Growing up Mr. Pinchot enjoyed the outdoors and his parents encourage him to learn and also give back by serving the community. He studied how forests were cared for in Germany and France. He was one of the first foresters in Pennsylvania by bringing back to the states what he learned in Europe. There were no jobs as foresters because no one had ever been a forester before.

He saw a lot of mistakes Americans were making that harmed forests. In the early 1900's President Theodore Roosevelt created the United State Forest Service and hired Mr. Pinchot to be the first forester. Mr. Pinchot stated he would protect the nation's natural resources for "the greatest good, for the greatest number, in the long run". He thought trees could be managed for uses such as homes, medicines, and furniture as long as they were not just cut down without thought for the future.

Later Mr. Pinchot became governor of Pennsylvania. In the 1920's he set aside land in the state for state forests so that forests could regenerate or grow again for future generations.

5. **Today's Pennsylvania State Forester: Ellen Shultzabarger**

Ellen Shultzaberger is the State Forester of Pennsylvania. That means that the Governor of Wolf appointed her to be the director of the state Bureau of Forestry. The Bureau of Forestry is made up of men and women who work to protect, conserve, and grow our state forests. Mrs. Shultzabarger directs people and projects in our forests such as lessening the amount of invasive species, figuring out space needed for recreational use in the forests, managing forest lands for energy like natural gas, planning the future of forests impacted by climate change, and improving forests for use of trees.

Mrs. Shultzabarger lives in Lancaster County and enjoys hiking with her family.

6. **Concerns in Forests Today:**
    a. **Invasive Insects:**
        i. **Spotted Lanternfly** The spotted lanternfly arrived in the United States in 2014 by accident. Most likely it was attached to shipping crates transported from the continent of Asia. The spotted lanternfly is a type of insect called a plant hopper. It native to Southeast Asia. They are a threat because they feed on the sap of a plant or tree. This causes so much stress to the plant or tree it often will not survive.

            There are 5 stages of growth the spotted lanternfly goes through after hatching from an egg. Adult lanternflies lay eggs in masses in the late fall on trees, under bark, lawn furniture, cars, outdoor grills, and other surfaces. There are about 100 flies in each egg mass.

            Spotted lanternflies do not bite or sting people, pets, or farm animals.

            If you see a spotted lanternfly it's best to smoosh it. Look for the spotted lanternfly by finding its trail of honeydew. When the spotted lanternfly feeds on a plant or tree it will use a piercing mouthpart to tap into the tree and eat the sap like using a straw. It excretes

honeydew or sugary water at its feeding site. This makes a black mold begin to grow which is harmful to the plant or tree.

Some types of spiders and praying mantis have preyed on the spotted lanternfly. There are not enough of these insects to reduce the population of lanternflies. Scientists are still studying the lanternfly to discover other natural predators or ways to control the population.

(A) Spotted Lanternfly showing the fore and hind wings **(B)** Resting against bark **(C)** Lateral view **(D)** Early nymphs **(E)** Late nymphs **(F)** Feeding on wild Vitis sp.**(G)** Weeping sap trail on tree **(H)** Egg mass covered in waxy coating (I) Old hatched egg mass on a trunk

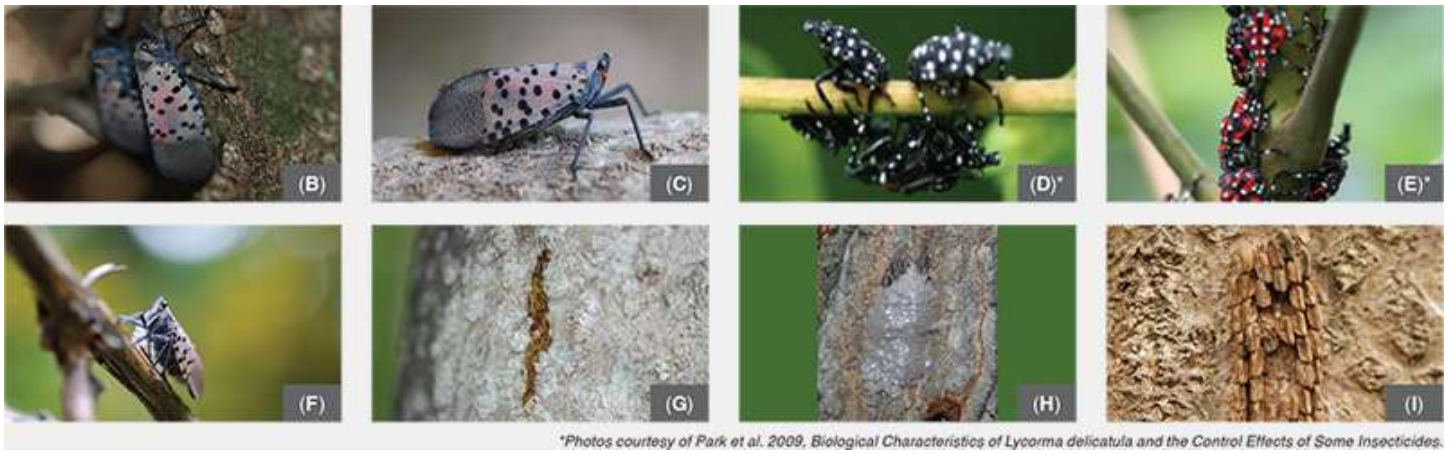

Photo source: www.salisburytownshippa.org

ii. **Gypsy Moth** – The gypsy moth is a serious forest pest. In 1869 it accidentally became part of the United States outdoors in Massachusetts. It made its way to Pennsylvania by 1932. It heavily deforested mountain ridges in forests picking oak trees as their favorites.

Each egg mass has about 500 eggs. Before turning into a moth it goes through a caterpillar stage. Egg masses are deposited on rocks or the base of tree trunks. Freezing temperatures in winter help to kill the egg masses.

Gypsy moths are hungry and can completely defoliate an entire tree. If a tree is defoliated a second year it can stress the tree out so that it doesn't survive. The loss of trees can impact the entire forest and wildlife depending on trees for food and cover.

Today chemical controls have been invented to spray and kill the gypsy moth because there are not enough natural predators. Inspect and remove gypsy moths from cars and belongings when traveling in and out of infested areas. Buy firewood local to where you are camping to prevent transporting the gypsy moth. *Photo source:* www.dnr.state.mn.us

b. Invasive Plants:

i. Tree of Heaven (known as Ailanthus)

The Tree of Heaven also known as Ailanthus has grown in the United States since early settlers from Europe brought it over in the 1700's and started it growing in Philadelphia. It is a fast growing tree that can spread by growing out of a cut stump or from the many seeds it drops. It is often found on the edge of forests or simply growing from cracks in the sidewalk. It is a tree that loves light and can not tolerate shade very well. It is a favorite tree for the spotted lanternfly to feed on and lay its eggs.

The tree has no lumber value and keeps coming back even if cut. In fact if the tree is cut down and the stump isn't treated, it seems to invigorate the tree to grow again.

The Ailanthus is easily confused with other trees such as black walnut and sumac based on the leaf structure and bark. The one trick to tell the difference is to break a twig from the tree, it gives off a scent of bad peanut butter.

The Ailanthus is native to countries in Asia. *Photo source*: keyserver.lucidcentral.org

ii. Japanese Honeysuckle

Japanese Honeysuckle arrived from Eastern Asia in 1806 and was first planted in New York. It was thought to be a good plant to control erosion and provide wildlife habitat. It soon spread throughout the United States. 100 years later people began to see that it grew in a dense thick mat and shaded everything below. It grows rapidly and can choke a young tree sapling by twining around them.

Unlike what early planters thought, wildlife do not enjoy the berries. This means that seeds in the berries easily drop to the ground and begin to grow a new plant. Though it is an invasive plant some pollinators will visit its flowers in the spring. Another help it provides is to hold soil in place however, it often crowds out native species and future trees. Once it grows in an area it's hard to get rid of Japanese Honeysuckle. Cutting it only seems to increase its vigor to return. It spreads by new shoots. Digging every root out of the ground is a struggle. *Photo source*: https://cipwg.uconn.edu