



New Jersey School of Conservation

One Wapalanne Road • Branchville, NJ 07826-5115

<http://friendsofnjsoc.org> • info@friendsofnjsoc.org

Woodworking For Wildlife

After a short discussion of woodworking in the 1860's, and a look at tree types and felling practices, students will use old and new hand tools to construct birdhouses.

OBJECTIVES:

1. Students will use hand tools to construct a birdhouse.
2. Students will compare and contrast construction in the 1860's and the modern era.
3. Students will justify the value of trees and wood in the past, current age and future.
4. Students will consider self sufficiency as a form of sustainability and understand the concept of "cottage industry" as a livelihood.
5. Students will describe how building bird nesting boxes can enhance wildlife habitats.

MATERIALS NEEDED:

Augers, brace and bit, hammers, 1 ½" galvanized finish nails, hand drills, hand saws, C clamps, pencils, hand square, nail punch, premeasured boards for birdhouses, a completed bird box and laminated picture card of target bird species.

PROCEDURE:

1. Begin the session with a discussion about wood and woodworking and how important they were to early humans and to human development. Many early tools, weapons, shelters, fencing, and modes of transportation were made of wood. The ability to utilize this resource was dependent on the technology available.

When the Europeans arrived in what is now Stokes Forest, the area had been occupied by humans for approximately 12,000 years. The forest was very different from the one you see today. It was an old-growth hardwood forest of Elm, Chestnut, Oak and other hardwoods, with huge trees over a hundred feet tall having thick trunks. The Native-Americans lacked the tools to cut down and utilize these trees. The Europeans arrived around 400 years ago with metal tools and immediately began to cut the forest down and use the wood for shelter, fencing, shipbuilding, charcoal, and for export back to Europe. They also developed the concept of home grown businesses, or "cottage industries" to produce quantities of goods for resale. The forest you see today is a second or third growth succession forest.

2. Discuss some skill sets early woodworkers may have needed to possess, such as tree identification, felling, and processing skills. Oak trees, especially the White Oak, were valued for the hardness of their wood and were used in many different applications such as structures, wagons and shipbuilding. Walnuts were valued for their nuts, the dyes from husks, their wood for furniture and waterwheels due to its water resistance, and their value for making charcoal. Ash and Hickory were used for tool handles, oars, and wheel spokes. Hickory has the same tensile strength as wrought iron. Pines of all types were of enormous value providing fuel, turpentine, resin, tar, paints, pitch. and lumber. White Pines, some growing up to 240 feet tall, were especially valued in ship building for ship masts.

All were harvested by hand using axes and saws. The tree was notched on the side in the direction that you wanted it to fall. The tree was then cut above the notch on the opposite side until gravity and lack of support caused the tree to fall, hopefully where it was planned. It was then limbed and cut into transportable logs. The logs were then utilized onsite or transported to a nearby sawmill.

3. Walk to the DeGroat cabin and discuss the techniques used to construct the cabin. How many trees are needed? (70-75) Point out the axe marks and the broadax used to make them.

Why are logs square? Removing the outer layer leaving only the heartwood increases durability. Remind students that the entire cabin was constructed using only hand tools and muscle power in about 3 ½ months.

4. Return to the Pavilion area. Hand out mandatory safety glasses. Review safety protocols and care of tools. Demonstrate how to use the tools.
5. Show the students an example of the birdhouse they will be constructing. The particular house they will be constructing was designed for wrens, chickadees, warblers and titmice. That is why the size of the entrance hole is important; in this case 1 1/8 inches.
6. Divide the students into three equal groups. Each group will work on one step needed in constructing a birdhouse. One group will saw the boards to proper length, one will drill the entrance and ventilation holes, and another will nail the birdhouse together. Each group should spend approximately 10-15 minutes at each station, rotating to another station at the end of that time. The instructor will spend time with each group ensuring that they are being safe and using the tools properly. Adults accompanying the students should also be encouraged to help supervise the groups. Boxes may be left partially completed as those will be used at the start of upcoming sessions.
7. Stop work and begin to clean up when there is about 10 minutes left in the session. Gather the group together and show them the birdhouses they constructed. Explain that they can take the birdhouses back to their school or they may leave them at NJSOC and we will hang them somewhere on the property. They may sign them and/or identify their school if they leave them.

SUMMARY:

Ask the students if building the birdhouses was harder than they expected. Remind them that until relatively recently all woodworking was done without power tools. Also discuss how creating houses like these can help and encourage wildlife to take up residence in the area. If they enjoyed the process then they could easily make these at home too!

Have a brief discussion about wood being a renewable resource, point out that 150 years ago what is now Stokes State Forest was logged off and it has grown back to the forest you see today.

BIBLIOGRAPHY:

Sloane, Eric. (1964) *Museum of Early American Tools*. New York: Ballantine Books.
Henderson, Carrol. (1992) *Woodworking for Wildlife*. Minnesota DNR

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NJ Student Learning Standards

SOCIAL STUDIES

- 6.1.5.GeoPP.2: Describe how landforms, climate and weather, and availability of resources have impacted where and how people live and work in different regions of New Jersey and the United States.
- 6.1.5.GeoGI.4: Explain how cultural and environmental characteristics affect the distribution and movement of people, goods, and ideas.
- 6.1.5.EconEM.2: Identify examples of the variety of resources that are used to produce goods and services (i.e., human capital, physical capital, natural resources).

MATH

- 4.MD.A Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

COMPREHENSIVE HEALTH AND PHYSICAL EDUCATION

- 2.1.8.SSH.3: Demonstrate communication skills that will support healthy relationships

LIFE LITERACIES AND KEY SKILLS

- 9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process
- 9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global

SOCIAL AND EMOTIONAL LEARNING

All of our field lessons integrate the concepts of self-awareness, self-management, social awareness, responsible decision-making, and relationship skills found in the New Jersey's Core Social and Emotional Learning (SEL) Competencies.