

**TEACHING KATE
TEACHING KIDS ABOUT THE ENVIRONMENT
ESTABLISHING A WOOD DUCK NESTING AREA**

Grade Level: 7

Time Required:

SC Science Standards

This lesson plan was correlated with only the grade level specified unless otherwise noted.

- I. A. 1. a. 1
- I. A. 1. c. 1
- I. A. 1. e. 1
- I. A. 2. f, h
- I. A. 7. c
- II. D. 2. b, c
- II. D. 3. b

Purpose

Students will aid in increasing the local wood duck population. Students will study wood duck nesting habits, apply what they learn in choosing appropriate nesting box locations, install boxes, follow through with data collection and reporting, and will evaluate their activities.

Skills

Mapping, measuring, observing, recording data, synthesizing, transfer of knowledge.

Concepts

Relationships between wood ducks and their habitats, predator-prey relationships, competition for resources, and human impact on the environment.

Materials Needed

Graph Paper	Pencils
Colored Pencils (optional)	Rulers
Measuring Tapes	Hammers
No Pest Strips	Sawdust or Wood Shavings
Wood Duck Nesting Box Kits	Wood Sealer
Paint Brushes	Screwdrivers
Aluminum Conical Guards (if not included in kits)	
Wood Duck Egg Count Report Forms From South Carolina Department of Natural Resources	

Definitions of Terms

<u>Clutch</u>	The number of eggs a wood duck lays at one time. (Anywhere from twelve to fifteen eggs).
<u>Dump Nest</u>	A nest with a greater number of eggs than normal, due to more than one duck laying her eggs in the box. Usually means one duck has abandoned her clutch.
<u>Habitat Depletion</u>	Loss of natural living space that includes elements necessary for survival of the species.
<u>Population</u>	A specific species living within a defined area.
<u>Wood Duck</u>	A migratory waterfowl that is found in South Carolina and nests in wetlands.
<u>Wood Duck Nesting Box</u>	A man-made, wooden box used to offer an alternative nesting place for wood ducks.

Before the Session

Discuss the background information on wood ducks and explain how people affect wood duck populations through good wildlife management practices. Make sure to identify an appropriate site that can support wood ducks; call an expert for consultation if necessary (see references). Purchase all needed materials including nesting boxes or kits (available through South Carolina Department of Natural Resources, nature stores, hunting magazines, and some sporting goods companies). Make all necessary arrangements for field trips. Obtain official egg count reporting forms from the South Carolina Department of Natural Resources.

Background Information

Over the past century South Carolina's wood duck population has dropped and rebounded in response to human population growth and its demands on the environment. Although hunters have pursued wood ducks for decades, population depletion cannot be blamed on sport alone. Wildlife experts have identified habitat loss as the main cause of decline in the species. In response to the wood duck's plight, volunteers around the state have put up an effective, artificial nesting alternative—the nesting box. The addition of nesting boxes to the environment has allowed wood ducks to make a comeback. Thanks to those who care enough to protect the species, the wood duck is no longer in danger of disappearing from the state. Nevertheless caution must be used to preserve proper habitats as well as promote wood duck box installations.

Wood ducks live in and around wetland areas and require nesting sites near bodies of water such as lakes or ponds. With every new real estate development in a wetland area, anywhere from a dozen to thousands of wood ducks lose their natural habitat and annual breeding grounds. Wood ducks normally return to their place of birth to lay eggs as long as suitable nesting sites are available. Wood ducks are cavity nesters, a suitable site includes a hollow in a tree or structure that stands between eight and sixty feet high with one side facing the water and the remaining sides surrounded by vegetative cover. The ducks nest high off the ground to avoid predators such as raccoons, cats, some snakes, etc. Following an incubation period of approximately one month, mother hens call to their ducklings who then climb out of the nest within hours after hatching. These ducklings can withstand falls of up to sixty feet. Once on the ground the hens herd ducklings toward water and teach them to swim, find food, and hide from predators. Hens choose nesting sites that have wide-open flight paths in front, preferably over water, and vegetative cover around the nests to hide eggs from predatory birds. Wood ducks may also look for locations near food supplies such as corn, white-oak acorns, spiders, and insects while staying clear of underbrush that can hide enemies. Often students may find that wood ducks will nest in unusual and unexpected spots, and they must examine the areas to determine why they are so attractive.

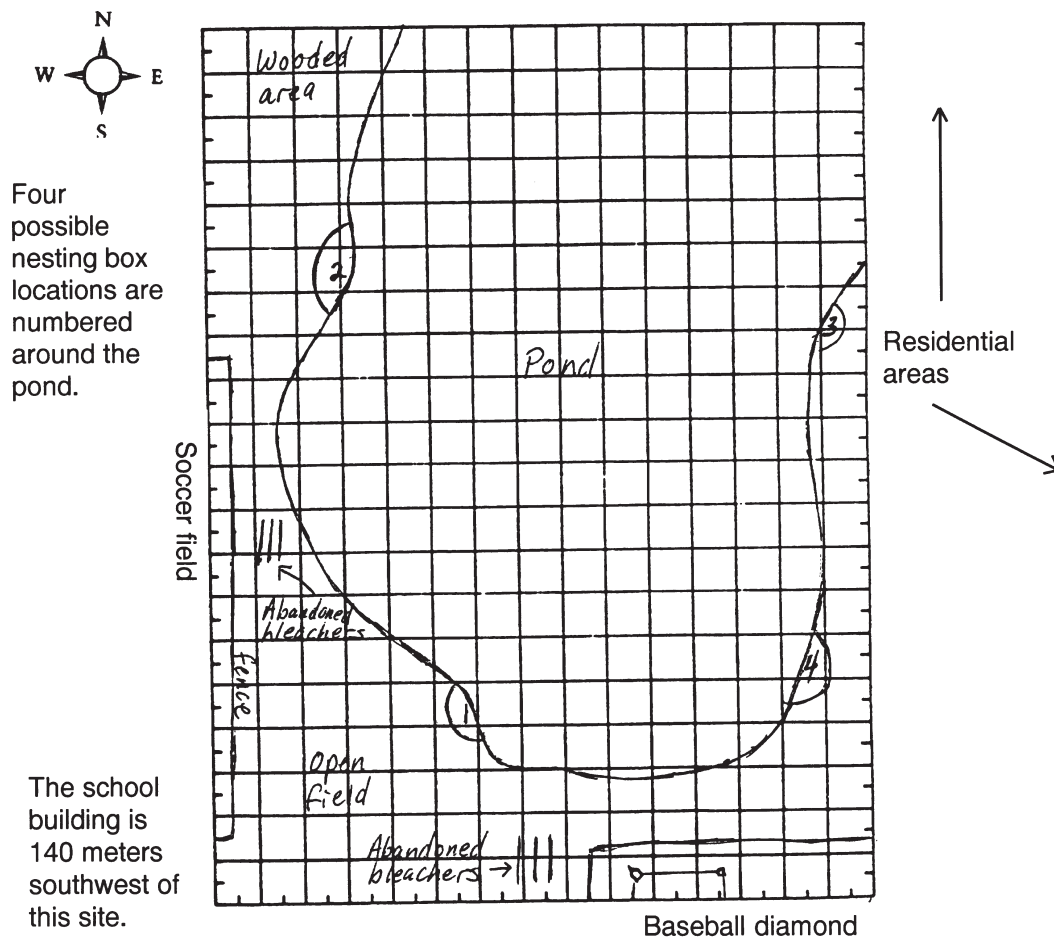
Since the 1960's wood duck conservationists have sought out preferred nesting areas and installed alternative nesting boxes for the birds. If the boxes are built to exact specifications and mounted at least five to six feet above the water in suitable areas, wood ducks respond favorably and build their nests inside. Wood ducks can lay their eggs in either late January to early February or late June to early July, so nesting boxes need to be checked twice a year. The eggshell count should be reported to the South Carolina Department of Natural Resources.

Suggested Lesson Plan

Part A

1. Have students choose an appropriate school site for wood duck nesting boxes based on the information above.
2. Students will draw a scale map of the site and include possible locations for the wood duck nesting boxes; a sample map is included.

School Site Map for Wood Duck Nesting Boxes



Four possible nesting box locations are numbered around the pond.

The school building is 140 meters southwest of this site.

Scale: 1 block (1 cm) = 20 meters

The pond is surrounded by wooded areas and a dirt trail.

- a. Measure the site and choose a good scale in order to fit the drawing onto graph paper.
- b. Select key topographical features or landmarks, measure the distances between these landmarks, and use these as benchmarks in the scale drawing. Sketch and label all landmarks on the map.
- c. Decide on possible wood-duck nesting box locations and number these on the map.

Part B

1. Obtain a list of people or organizations that have installed nesting boxes in your area. Lists are available through the South Carolina Department of Natural Resources.
2. Take students to visit one of these sites and compare the landscape to that of your school site.
3. Have students draw a map of this site by following the directions in Part A, 2. a. and b. Add the existing wood duck boxes to the map making sure to include the box number for each.
4. Obtain the winter and summer egg-count data for each box going back as far as data permits, and allow students to study the data.
5. Have students make a chart listing each box, dates of data collection, and the number of eggs found in each box.
6. Students will decide which boxes attracted female wood ducks more often and compare clutch sizes for each box to determine which boxes contained more eggs. Look for persistent patterns.
7. Based on their conclusions from step 6, students will decide which box locations were more productive.
8. Students will mark the most productive boxes on the second site map and examine their proximity to forests, underbrush, water, houses or other buildings, paths, driveways, or any area of frequent human activity.
9. Based on observations made in step 8, have students discuss possible criteria ducks use in choosing nesting sites, and apply this information to the school site. Criteria may include additional concerns not covered in the background information. Consult an expert if necessary (see references).
10. Students will choose the best nesting box locations for the school site and mark these locations on the school site map.

Part C

1. If wood duck nesting box kits were purchased instead of ready-made boxes, have students assemble kits according to instructions.
2. Students will then paint boxes with a wood sealer/weather proofer and allow to dry according to directions.
3. If necessary, find someone to help install wood duck boxes five to six feet above the water on top of sturdy aluminum poles that have been sunk into the ground. Conical shaped aluminum guards are recommended for use on the poles beneath the boxes to keep predators from climbing the poles. The boxes themselves can be attached to the poles with heavy screws and U bolts.
4. Students will fill the boxes with sawdust or wood shavings to a depth of four to ten inches. Add No Pest strips to the inside of the lid.
5. Turn boxes to face the water and have backs turned toward vegetative cover where possible.
6. Have students spread corn around nesting boxes to attract ducks.

Part D

1. Check on wood-duck nesting boxes at least twice a year:
 - a. Students will check in mid to late February and count the eggshells that are at least 50% intact. This insures that an egg is not counted twice. Record the information on the official report form and send the sheet to the South Carolina Department of Natural Resources. Keep copies of records for annual data comparisons.
 - b. Boxes must be checked again in July by anyone who is available to do the count. If eggs are found, record the data as in step above.
 - c. Students may rely on information from previous years as well as the current year to determine the productivity of each box. Students may evaluate box locations and decide whether or not boxes should be moved. All changes must be recorded on the school site map.

Application

Either while the students are working on the nesting box project or soon after they complete it, have them analyze any available information on wood duck populations in South Carolina. A little research will allow students to compare the rise in the number of ducks with the rise in the number of installed wood duck nesting boxes. Students may also see a link between increased commercial and residential development and a decrease in the number of ducks in an area. Also have students compare the favored nesting locations to the most probable living areas for predators and other non-threatening species. Have students decide whether other animals are competing for the same food sources or if the ducks have little competition. Students can discuss the predator/prey relationship by focusing on the needs of the ducks and predators as well. Is there enough food for the predators including or excluding ducks? Allow students to explore the intricacies of overlapping food webs in the area—the ones in which wood ducks play a role.

References

Strange, Tommy. South Carolina Department of Natural Resources, P.O. Box 37, McClellanville, SC 29458-0037. (803) 546-8665

Watson, David. Educational Facility Director, South Carolina Waterfowl Association, P.O. Box 450, Pinewood, SC 29125. (803) 551-4610

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