

4-H Forestry Project No. 8: Identifying Forest Insects and Diseases



Forests are an entirely different world than open fields or other biological settings. Various insects and diseases that depend on trees for their existence are an extremely important part of this “forest world.”

Remember, not all insects or fungi are harmful. In fact, forest ecosystems depend on insects, fungi, and bacteria for breaking down dead wood, twigs, bark, and leaves for incorporation into the mineral soil. This is a form of fertilizer, much like compost used in many gardens. Some insects help pollinate trees and other forest plants, and some fungi, bacteria, and insects help forest systems by attacking insects that are harmful to trees, acting as a line of defense for forests.

However, many insects, fungi, and bacteria considered important can also be destructive or damaging to trees. In the South, insects and diseases destroy and damage more trees than forest fires. Enough trees for hundreds of new houses, thousands of new books and newspapers, or enough furniture to furnish thousands of homes are destroyed every year.

Unlike fire, which is easy to see and does damage quickly, some insects and diseases are slow acting and often go unnoticed until a tree is seriously damaged or dead. While fires are contained quickly, insect and disease problems may go unchecked for long periods.

The ability to identify the major insects and diseases of the forest is important. Only when these pests are positively identified can you know what to expect—are they beneficial, or will they destroy acres of trees?

Spend some time with this project. Learn to identify these important pests of the forest.

Project References

- Insects and Diseases of Trees of the South. USDA Forest Service General Report R8-GR5. 98 pages.
- Oak Pests—A Guide to Major Insects, Diseases, Air Pollution, and Chemical Injury. USDA Forest Service General Report SA-GR11. 69 pages.
- Insects on Trees and Shrubs Around the Home. USDA Home and Garden Bulletin No. 214. 51 pages.
- Forest, insect, and disease references at extension.msstate.edu
- www.bugwood.org
- www.iNaturalist.org

Project Materials

- Paper (legal pad)
- 3-ring binder or notebook
- Black pen or a computer and printer

Optional Items

- A 32-by-40-inch piece of poster board or display foam board available at your local discount or art supply store
- A 32-by-40-inch piece of stiff cardboard or quarter-inch plywood (not needed if you use the display foam board)
- Felt-tip marker
- One example of insect damage and one example of disease damage from the list of major forest pests
- Two 3-by-5-inch index cards
- Sharp knife or small saw

Sources of Help and Information

- MSU Extension county coordinator or 4-H youth agent
- County service forester, Mississippi Forestry Commission
- MSU Extension Forestry Department
- District conservationist, Natural Resources Conservation Service, U.S. Department of Agriculture
- Project forester or district ranger, U.S. Forest Service, U.S. Department of Agriculture
- Industry foresters with local forest industries
- Consulting foresters
- Garden clubs and other local conservation groups
- MSU Department of Agricultural Science and Plant Protection

Major Forest Pests in Mississippi

Diseases

- Fusiform rust
- Annosus root rot
- Brown spot needle blight
- Black knot
- Needle casts
- Mistletoe
- Cedar apple rust
- Red heart
- Oak wilt
- Hypoxylon canker
- Needle rust

Insects

- Southern pine beetle
- Ips beetle
- Black turpentine beetle
- Nantucket pine tip moth
- Eastern tent caterpillar
- Fall webworm
- Pales weevil
- White oak borer
- Pine webworm
- Locust borer

Instructions

1. Using the references listed, prepare a brief written report on each insect or disease listed as a major forest pest in Mississippi. Each report should be on a separate page and should include the following information: importance of the pest, how to identify it, how to identify injuries caused by the pest, as well as its biology and how to control it. Please limit each report to 300 words.
2. Assemble a notebook from these reports. Learn the types of damage caused by each of these pests. You may want to include a picture of the insect and/or its damage in your report. Identifying injuries and how they occur is the first step in controlling any insect or disease problem.

Optional Project Exhibit

If you want to make this project extra special and have a great visual aid, you can prepare an exhibit of insect and disease damage.

1. Make your exhibit board by gluing white poster board (32-by-40-inch) on one side of a piece of heavy cardboard or a piece of quarter-inch plywood. This gives your exhibit enough rigidity to hold its shape. Another option is to use display foam board.
2. Using your reference materials, prepare a 3-by-5-inch index card for each type of insect or disease damage you plan to exhibit. Type or clearly print the common name and a brief description of each insect or disease.
3. Title your exhibit "Forest Insect and Disease Identification." Write or type the title in block letters 1.5 inches high, 1 inch from the top of the board.
4. Collect a sample of the damaged tree that clearly shows the associated injury. These samples could range from bark pieces showing the feeding galleries of bark beetles to twigs showing the evidence of defoliation. If possible, visit a local forester for assistance in locating a tree with damage.
5. Now you are ready to put your exhibit together. First, place your index cards and damaged specimens on the board without glue. Arrange the materials so all items fit and are neatly and evenly spaced on the board.
6. After you are satisfied with the arrangement, glue the cards and samples onto the board.
7. Now that your exhibit is complete, get some good use from it as a visual presentation at club meetings or school. You might also want to use it as a window display or at a county fair.
8. If possible, have someone take a picture of you and your finished exhibit. You may want to include a photograph in your 4-H member's record book.
9. If possible, get a local forester to check your exhibit and sign your record sheet when your project is complete. Clip the record sheet and include it in your current year's record book.
10. Save this project sheet and other materials for future reference as you continue in other 4-H forestry projects.

4-H Forestry Project No. 8: Identifying Forest Insects and Diseases

Full name

Age

Date of birth

Grade

Years in 4-H

Name of club

Your parents' names

Your address

Adult leaders' names

1. List the common names of forest pests you studied that cause the following damage:

- a. Defoliation
- b. Bark damage
- c. Foliage disease
- d. Stem or branch disease

2. What was the most interesting forest pest you studied? Why?

3. What did you like most about studying forest pests?

4. What sources of information did you consult for help?

5. Did you complete the optional exhibit? If so, have you used your exhibit since you finished it?

6. Write down suggestions on how this project can be improved.

As a forester, I have checked the exhibit and found the specimens to be correct.

Forester

As a 4-H leader, I have checked the notebook and found it to be completed satisfactorily.

4-H leader

Publication 1687 (POD-08-26)

Revised by **Kristy McAndrew**, PhD, Assistant Professor, Forest Health Extension Specialist, Forestry, from earlier editions by Brady Self, PhD, Extension Professor, Forestry, and Andrew Ezell, Robert Daniels, and Andy Londo.



Copyright 2026 by Mississippi State University. All rights reserved. This publication may be copied and distributed without alteration for nonprofit educational purposes provided that credit is given to the Mississippi State University Extension Service.

Produced by Agricultural Communications.

Mississippi State University is an equal opportunity institution. Discrimination is prohibited in university employment, programs, or activities based on race, color, ethnicity, sex, pregnancy, religion, national origin, disability, age, sexual orientation, genetic information, status as a U.S. veteran, or any other status to the extent protected by applicable law. Questions about equal opportunity programs or compliance should be directed to the [Office of Civil Rights Compliance](#), 231 Famous Maroon Band Street, P.O. 6044, Mississippi State, MS 39762.

Extension Service of Mississippi State University, cooperating with U.S. Department of Agriculture. Published in furtherance of Acts of Congress, May 8 and June 30, 1914. ANGUS L. CATCHOT JR., Director