

4-H Forestry: More than Just Trees

<http://www.aces.edu/fourh/programs/forestry-new.php>

The Forestry Invitational lets you:

- Challenge your knowledge of more than 60 different trees species
- Experience a educational and fun program
- Take the opportunity to show off your strengths in such different contest areas as tree measurement, insect pest identification, compass and pacing and evaluating forest growth
- Work with a team to evaluate forests and make decisions.

What You Will Learn:

After studying and growing in your understanding you will be able to compete in the State Forestry Invitational and possibly get to go to the National Forestry Invitational. The 4-H Forestry program:

- Gives you a strong understanding of trees and environmental issues.
- Provides hands on learning experiences.
- Helps you to develop skills develop to a better manager of forested land.
- Helps you become aware of the environmental pros and cons and how to change them.

Who Can Participate:

4-H events are open to active members of a chartered Alabama 4-H club that has experiential learning in regularly scheduled and planned meetings. Participation is limited to those members who are actively participating in the 4-H program and have been a member for a 90-day minimum.

The Alabama 4-H Club Year begins on August 1 and ends on July 31. Age eligibility is determined by how old the youth is prior to January 1 of the Alabama 4-H Club Year. To be eligible for 4-H the youth must be nine (9) years old and not older than 19 years old prior to January 1 of the Alabama 4-H Club Year. Checking the Alabama 4-H Age and Eligibility Chart will help families, volunteers and staff to determine the divisions of 4-H Membership. Go to http://www.aces.edu/fourh/docs/programs/Eligibility_Chart.pdf.

If you and your friends are interested, you might want to start a 4-H Project Club that focuses on forestry skills, environmental awareness, insect/ disease identification, or some other aspects of forestry. For more information, see **Starting a 4-H Club** (www.aces.edu/pubs/docs/V/VOL-004/).

By preparing for this contest, young people learn to evaluate forest stands, measure standing timber, identify trees, identify insects and diseases, and demonstrate compass and pacing skills. You will sharpen your critical- thinking, decision-making, communication, and team building skills. The contest activities will help you learn practical forestry skills and improve your ability to manage and conserve a variety of forest habitats. Along the way, you'll have the opportunity to develop your citizenship and leadership skills.

Each county may bring as many participants as they choose (see Contestants and Eligibility in the Resource Handbook). Seniors will compete in all seven events, and the winning team will represent Alabama at the August National 4-H Forestry Invitational at Jackson's Mill 4-H Center in Weston, West Virginia. Junior teams will compete in Tree Identification, Compass Traverse, Tree Measurement, Knowledge Bowl (optional, but everyone is required to attend) and environmental education activities. In addition, juniors will be able to practice Insect & Disease Identification after the seniors in their group are finished.

The contest fee covers t-shirts and meals. **You must arrange for motel accommodations on your own.** If you plan to enter a team in the contest, please complete the **registration form** and **return it by the deadline date in the registration information.** Participant fees must be paid with one check from the county and **must be sent in with the registration form.** Agents may pay with a separate check or be included in the county check. **Cash will not be accepted.** Checks should be made payable to the **Alabama Cooperative Extension System.**

Each participant's parent or guardian must complete and sign an Alabama 4-H Youth and Parent Consent form (<http://www.aces.edu/fourh/volunteers/>.) Please note that parents are asked to keep a copy for their records. Bring all completed Codes of Conduct (<http://www.aces.edu/fourh/volunteers/>), Youth Consent Forms when you come to the contest. All participants are strongly encouraged to bring their own Biltmore stick. The county name should be written on each stick.

The contest will begin with registration at 10:00 a.m. on Tuesday and conclude at 3:30 p.m. on Wednesday. **Remember that the senior quiz will be 12:30-1:00 p.m. Orientation for everyone will be 1:15 p.m. Participants will leave the orientation with their competition groups.** All teams and agents report directly to registration - do not explore the forested area used for contest. Anyone who works with team as a coach or assistant must leave the contest area after Orientation. Only people who are not associated with a team will be group leaders.

There are many volunteers (private, industry and agency foresters) available in most counties to assist with training teams. You are encouraged to utilize them as much as possible.

Please remember that in order to compete in any Alabama 4-H contest, a youth must have completed the current year's 4-H Enrollment form and be a 4-H member for at least 90 days. Also if a 4-Her lives in a county where a particular program is not offered; i.e. forestry judging, he/she could participate in an adjoining county with the concurrence of the respective Extension Agents and the 4-H Regional Extension Agents (From: "Guidelines for Participation in 4-H County Programs").

Here is a training tip from the 4-H Forestry Committee: If possible, conduct your team practices in a real forest, not in a part where trees are out in the open. The adjustment to competition in a forest will be easier for your team members. Also, check out the following Alabama and National 4-H Forestry Invitational study sources:

STATE INVITATIONAL STUDY SOURCES

Compass and Pacing

<http://www.aces.edu/N4HFI/page77.html>

<http://www.learn-orienteeing.org/old/>

<http://www.aces.edu/fourh/newsite/Programs/#Publications> (4-H Publication Archives)

Insect and Disease Pests

<http://www.aces.edu/N4HFI/page5.html>

Knowledge Bowl

Questions for seniors will come from all of the following sources. Questions for juniors will come from the * sources only.

*ANR 509 A Key to Common Trees of Alabama

*YANR 191 Be a 4-H Forester

*YANR 196 Forest Ecology for 4-Hers

Alabama Forestry Facts

http://www.alaforestry.org/index.php?option=com_content&task=view&id=32&Itemid=169&mm=resources

Senior Quiz

National 4-H Council. 4-H Forestry Program - Unit A- Trees <http://www.aces.edu/n4hfi/page83.html>

National 4-H Council. 4-H Forestry Program - Unit B- Forests <http://www.aces.edu/n4hfi/page83.html>

YANR 191- Be a 4-H Forester

State 4-H Forestry Resource Guide

Tree Identification

<http://www.aces.edu/N4HFI/page13.html>

Tree Measurement

<http://www.aces.edu/N4HFI/page76.html>

NATIONAL INVITATIONAL STUDY SOURCES

Refer to the national Web references listed above plus the following:

Knowledge Bowl

<http://www.aces.edu/N4HFI/page86.html>

Topographic Maps

<http://www.aces.edu/N4HFI/page95.html>

<http://www.aces.edu/N4HFI/page75.html>

General Information about the National Invitational

<http://www.aces.edu/N4HFI/page75.html>

4-H FORESTRY RESOURCE HANDBOOK

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This handbook was prepared by Dr. Frank A. Roth II, former Extension Forest Management Specialist, School of Forestry, Auburn University, with assistance from the Alabama 4-H Forestry Contest Planning Committee. Latest revision: November 2008 by the Alabama 4-H Natural Resources & Environmental Education Committee's Forestry Sub-Committee.

INTRODUCTION

The Alabama 4-H Forestry Judging Program is a competitive event designed to help 4-H'ers develop their natural resources knowledge and skills. Teams from each county or region will compete in seven forestry team events:

1. Tree Identification
2. Tree Measurement
3. Compass Traverse
4. Insect and Disease Identification (senior team only)
5. Forest Evaluation (senior team* only)
6. Forestry Quiz (seniors only)
7. Forestry Bowl

The purpose of the Alabama 4-H Forestry Contest is to provide the opportunity for 4-H'ers from all counties to:

- A. Develop leadership talents and to work toward achieving character development and effective citizenship.
- B. Develop appreciation of the need and importance of conserving natural resources as sources of products and services necessary for quality living.
- C. Acquire information and understanding of practical forestry skills.
- D. Choose a team to represent Alabama at the National 4-H Forestry Invitational.

*Individuals (incomplete teams) will be allowed to participate for practice purposes only. Team scores for incomplete teams will not be announced nor will they be awarded team ribbons.

SCHEDULE OF ACTIVITIES

Day I

10:00 a.m. – 11:45	Registration/Check In
	Lunch on Your Own
12:30 – 1: 00 p.m.	Forestry Quiz (Seniors Only)
1:15 p.m.	Orientation
1:30 - 5:30 p.m.	Contest Events
	Tree ID
	Tree Measurement
	Compass Traverse
	Insect & Disease ID
	Environmental Education (Juniors Only)
6:00 p.m.	Catered Supper
6:45 p.m.	Review of the National Invitational contest & trip

Day II

	Breakfast on Your Own
8:30 - 10:00 a.m.	Forestry Knowledge Bowl (Seniors Only) Educational Activity (Juniors Only)
10:00-12:00 noon	Forest Evaluation (Seniors Only) Junior Knowledge Bowl
12:15 p.m.	Catered Lunch
1:15 p.m.	Evaluation
1:30 p.m.	Junior and Senior Awards Assembly
3:30 p.m.	Homeward Bound

GENERAL RULES AND REGULATIONS

I. Contestants and Eligibility

A. Separate teams or clubs from the same county may bring as many youth as they want to participate in this contest—as long as the teams are coached by different coaches at separate locations in the county at different times. Each “official” four-member team will not be designated prior to the state event. At the end of the first day, scores will be tabulated. The top four overall scoring individuals from each county or club will be determined, and these four individuals would comprise the "official team" for that county or club. The team events (knowledge bowl and forest evaluation) will be conducted the second day, with the top four scoring individuals from the previous day making up the "official team." Others could also participate in team events, but the county or club will have only one official team. The "official team" will still have one drop score per event. A county or club can win only one placing (1st, 2nd, 3rd, 4th or 5th) with their "official team." All others will receive individual awards.

- B. All team members must be a bonafied 4-H Club member who is actively enrolled in a 4-H Forestry or other Natural Resources project or activity. Participation in a 4-H event will be limited to those members who are actively participating in the 4-H program and have been a member for a 90-day minimum.
- C. The Alabama 4-H Club Year begins on August 1 and ends on July 31. Age eligibility is determined by how old the youth is prior to January 1 of the Alabama 4-H Club Year. To be eligible for 4-H the youth must be nine (9) years old and not older than 19 years old prior to January 1 of the Alabama 4-H Club Year. Checking the Alabama 4-H Age and Eligibility Chart will help families, volunteers and staff to determine the divisions of 4-H Membership. Go to http://www.aces.edu/fourh/docs/programs/Eligibility_Chart.pdf.
- D. Junior teams will participate in Tree Identification, Tree Measurement and Compass Traverse and Knowledge Bowl.

II. General Contest Rules

- A. County or club team entries must be submitted on an official entry form, by the specified due date.
- B. Only contestants and designated officials shall be with-in the perimeter of an event. Once a contestant has started an event, he or she will not be allowed to talk with anyone other than a designated official until completion of that particular event.
- C. A team may be composed of either three or four members. Each team member will bring a clipboard or writing board, pencil and calculator. Contestants are encouraged to wear field clothing and heavy shoes and bring rain gear.
- D. Team scores for each event will be the sum of the three highest scoring team members. The overall team score will be the sum of the team scores from each event. The team with the highest overall team score will be chosen to represent Alabama in the National 4-H Forestry Invitational.
- E. Individuals with the highest scores in each event will be recognized also.

TREE IDENTIFICATION

Objectives

Various tree species have differing requirements for good growth. They also differ in use and value. Therefore, you should be able to identify trees of the forest.

Each team member will have the opportunity to identify 25 trees as found in a natural outdoor condition. All trees to be identified will be taken from the "official species list" below.

Contest Rules

1. Contestants will be required to identify species from those listed below. Contestants will be judged on the accuracy of identification and the spelling of common names. Scientific names will not be required. Incomplete names will be counted as wrong. Example: maple instead of red maple, or shortleaf instead of shortleaf pine, eastern redbud instead of redbud, Boxelder instead of boxelder, VIRGINIA PINE instead of Virginia pine .

2. Contestants will be given a specific time to identify the tree specimens and record the information on the score sheet.

3. Four points will be given for the correct common name. Two points will be deducted for each name misspelled.

Spelling, including capitalization, must be the same as that on the Official Tree List in order to be counted correct.

OFFICIAL SPECIES LIST

Common Name

Scientific Name

boxelder	<u>Acer negundo</u> L.
red maple	<u>Acer rubrum</u> L.
silver maple	<u>Acer saccharinum</u> L.
sugar maple	<u>Acer saccharum</u> Marsh.
buckeye	<u>Aesculus</u> sp.
alder	<u>Alnus</u> sp.
river birch	<u>Betula nigra</u> L.
American hornbeam or bluebeech	<u>Carpinus caroliniana</u> Walt.
pignut hickory	<u>Carya glabra</u> Sweet
pecan	<u>Carya illinoensis</u> K. Koch.
shagbark hickory	<u>Carya ovata</u> K. Koch.
mockernut hickory	<u>Carya tomentosa</u> Nutt.
southern catalpa	<u>Catalpa bignonioides</u> Walt.
hackberry	<u>Celtis occidentalis</u> L.
redbud	<u>Cercis canadensis</u> L.
flowering dogwood	<u>Cornus florida</u> L.
common persimmon	<u>Diospyros virginiana</u> L.
American beech	<u>Fagus grandifolia</u> Ehrh.
ash	<u>Fraxinus</u> sp.
honeylocust	<u>Gleditsia triacanthos</u> L.
American holly	<u>Ilex opaca</u> Ait.
black walnut	<u>Juglans nigra</u> L.
eastern redcedar	<u>Juniperus virginiana</u>
sweetgum	<u>Liquidambar styraciflua</u> L.
yellow-poplar or tulip poplar	<u>Liriodendron tulipifera</u> L.
cucumbertree	<u>Magnolia acuminata</u> L.
southern magnolia	<u>Magnolia grandiflora</u> L.
red mulberry	<u>Morus rubra</u> L.
water tupelo	<u>Nyssa aquatica</u> L.
black tupelo or blackgum	<u>Nyssa sylvatica</u> Marsh.
eastern hophornbeam	<u>Ostrya virginiana</u> K. Koch.
sourwood	<u>Oxydendrum arboretum</u>
spruce	<u>Picea</u> sp.
shortleaf pine	<u>Pinus echinata</u> Mill.

slash pine	<u>Pinus elliotii</u> Engelm.
longleaf pine	<u>Pinus palustris</u> Mill
eastern white pine	<u>Pinus strobus</u> L.
loblolly pine	<u>Pinus taeda</u> L.
Virginia pine	<u>Pinus virginiana</u> Mill
sycamore	<u>Platanus occidentalis</u> L.
eastern cottonwood	<u>Populus deltoides</u> Bartr.
black cherry	<u>Prunus serotina</u> Ehrh.
white oak	<u>Quercus alba</u> L.
scarlet oak	<u>Quercus coccinea</u> Muenchh.
southern red oak	<u>Quercus falcata</u> Michx.
cherrybark oak	<u>Quercus falcata</u> var. <u>paagodaefolio</u> Ell.
overcup oak	<u>Quercus lyrata</u> Walt.
blackjack oak	<u>Quercus marilandica</u> Muench.
water oak	<u>Quercus nigra</u> L.
willow oak	<u>Quercus phellos</u> L.
chestnut oak	<u>Quercus prinus</u> L.
northern red oak	<u>Quercus rubra</u> L.
post oak	<u>Quercus stellata</u> Wangenh.
black oak	<u>Quercus velutina</u> Lam.
live oak	<u>Quercus virginiana</u> Mill.
black locust	<u>Robinia pseudoacacia</u> L.
black willow	<u>Salix nigra</u>
sassafras	<u>Sassafras albidum</u> Nees
baldcypress	<u>Taxodium distichum</u> Rich.
northern white-cedar (arborvitae)	<u>Thuja occidentalis</u> L.
eastern hemlock	<u>Tsuga canadensis</u> Carr.
American basswood	<u>Tilia americana</u> L.
winged elm	<u>Ulmus alata</u> Michx.
American elm	<u>Ulmus americana</u> L.
slippery elm	<u>Ulmus rubra</u> muhl.

This list was cross-referenced and checked for preferred common names, spelling, and scientific names with the following references.

AboutForestry.com <http://forestry.about.com/library/tree/blntwh.htm>

Little Elbert L, 1978. Important trees of the United States. USDA Agriculture Handbook 519

Little, Elbert L, Chairman. 1979. Checklist of United States Trees. USDA Agriculture Handbook 541.
National 4-H Forestry Invitational Official Tree Species List <http://www.aces.edu/n4hfi/page13.html>

Southern Trees. Dover Publications, Inc., New York 709

Tree Identification Score Form		
County or Club	Group No.	Contestant Jr____ Sr____
No.	Common Name	Score
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
Contestant's Score		

**Spelling--including capitalization--must look like the official list, or is wrong.
Correct identification & spelling = 4 points Misspelling = 2 point off**

TREE MEASUREMENT

Objectives

It is often necessary to measure standing trees in order to estimate the volume of forest products which may be obtained from the trees. Since most timber is bought and sold on a volume basis (usually by the board foot volume) it is a good idea to have some estimate of total volume, per acre and volume by product before selling timber.

Contest Rules

1. A standard International 1/4 inch tree scale stick will be used. It maybe purchased for about \$10.00 from companies such as Forestry Inc., Box 8397, Jackson, MS 39204 or Ben Meadows Co., P.O. Box 80549, Atlanta, GA 30366. Each team will be required to furnish one tree scale stick for the competition. All such sticks will be International 1/4 inch log rule.

2. A 1/10, 1/5 or 1/4 acre plot will be selected and designated for use in this competition. Contestants will be required to give the total volume of sawtimber on one acre as determined from the sample plot volume.

3. Each member of the team will estimate each designated tree. All values will be recorded. Tree diameters will be taken to the nearest two inch class. Tree heights will be taken to the nearest full half-log for sawtimber. A half-log is defined as being 8 feet long. The minimum log will be 10 inches D.B.H., one log merchantable length, and have a minimum top diameter of 8 inches.

4. Each tree volume will be found in the volume table furnished to contestants. Record sawlog volumes as found in the table. Total all sawlog volume after all designated trees have been estimated.

5. There will be two separate score sheets for Juniors and Seniors. Seniors will identify ten trees and Juniors will identify eight trees.

For Seniors, two points will be awarded for each correct species identification, three points D.B.H., and three for number of 16-foot logs for a possible total of 80 points.

For Juniors, two points will be awarded for each correct species identification, four points D.B.H., and four for number of 16-foot logs for a possible total of 80 points.

6. Twenty points will be allowed for the correct sawtimber volume per acre. Remember--the total volume will be the volume per acre as represented by the plot. Point allocation will be 20 for + or - 5% of the official volume, 15 points for + or - 10%, 10 points for + or - 15%, and no points over + or - 15%.

7. Maximum points for this phase is 100.

Example: If 4,000 bd. ft. is the official volume, then 3800 bd. ft. through 4200 equals 20 points; 3600 to 3799 and 4201 to 4400 equals 15 points; 3400 to 3599 and 4401 to 4600 equals 10 points; and under 3400 and over 4600 has no points.

MEASUREMENT OF STANDING TREES STUDY GUIDE

Since a tree is shaped like a cylinder, its volume may be determined by measuring its diameter and height. Diameter of standing trees is measured by time-honored custom, at 4-1/2 feet above ground on the uphill side of the tree. This is abbreviated as D.B.H. (diameter breast height.) The way to determine diameter will be explained in detail later. Height of a standing tree might be measured as total (the entire height from ground line to the top) or merchantable. Merchantable height varies, depending on the product which might be cut. If a tree might make a pole or piling, the height used will be measured in 5 foot increments. The top diameter is fixed by certain specifications. If a tree is to be cut into logs, its height usually will be measured in 16 foot logs to the nearest 1/2 log.

To measure diameter, you may use a caliper, diameter tape, or tree scale stick. Since the tree scale stick is to be used in the contest, the method of using it will be explained.

The drawing below shows how the tree scale stick is used to find tree diameter. Use the flat side of the stick, indicated "Diameter of Tree (inches)." Hold the stick level at 25 inches from the eye, against the tree, at a height of 4-1/2 feet above ground. Practice is needed to find both the 4-1/2 foot point in relation to your height, and the 25-inch distance to eye, sight at the left or zero end. This and the tree bark should be in the same line. Now, **DO NOT MOVE YOUR HEAD**. Just move your eye across the stick to the right hand edge of the tree. Read the tree diameter to the nearest even inch. Hold the stick perpendicular to the tree.

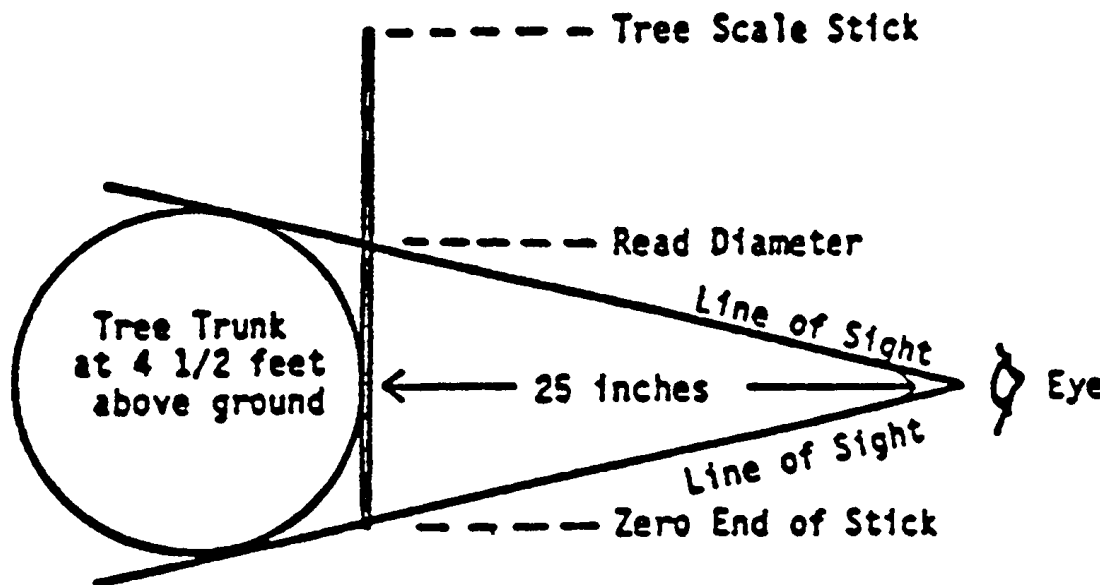


Figure 1. Method of using tree scale stick to obtain tree diameter.

To measure the merchantable height of a tree, pace out 66 feet from the base of the tree, to a point where the entire tree can be seen. Hold the tree scale stick so that the "Number of 16 foot log" sides faces you. The zero end should point toward the ground. Plumb the stick, at 25 inches from the eye. Sight the zero end to appear to rest at the stump height. **DO NOT MOVE YOUR HEAD OR THE STICK**. Look up the stick to point where the top of the last merchantable cut would be made in the tree. (Eight inch diameter or at the first major fork or other major defect.) Read saw logs to the nearest full one-half log.

Practice on pacing is needed to find the 66 foot point. The 25-inch distance from eye to stick is still the same as in measuring tree diameter.

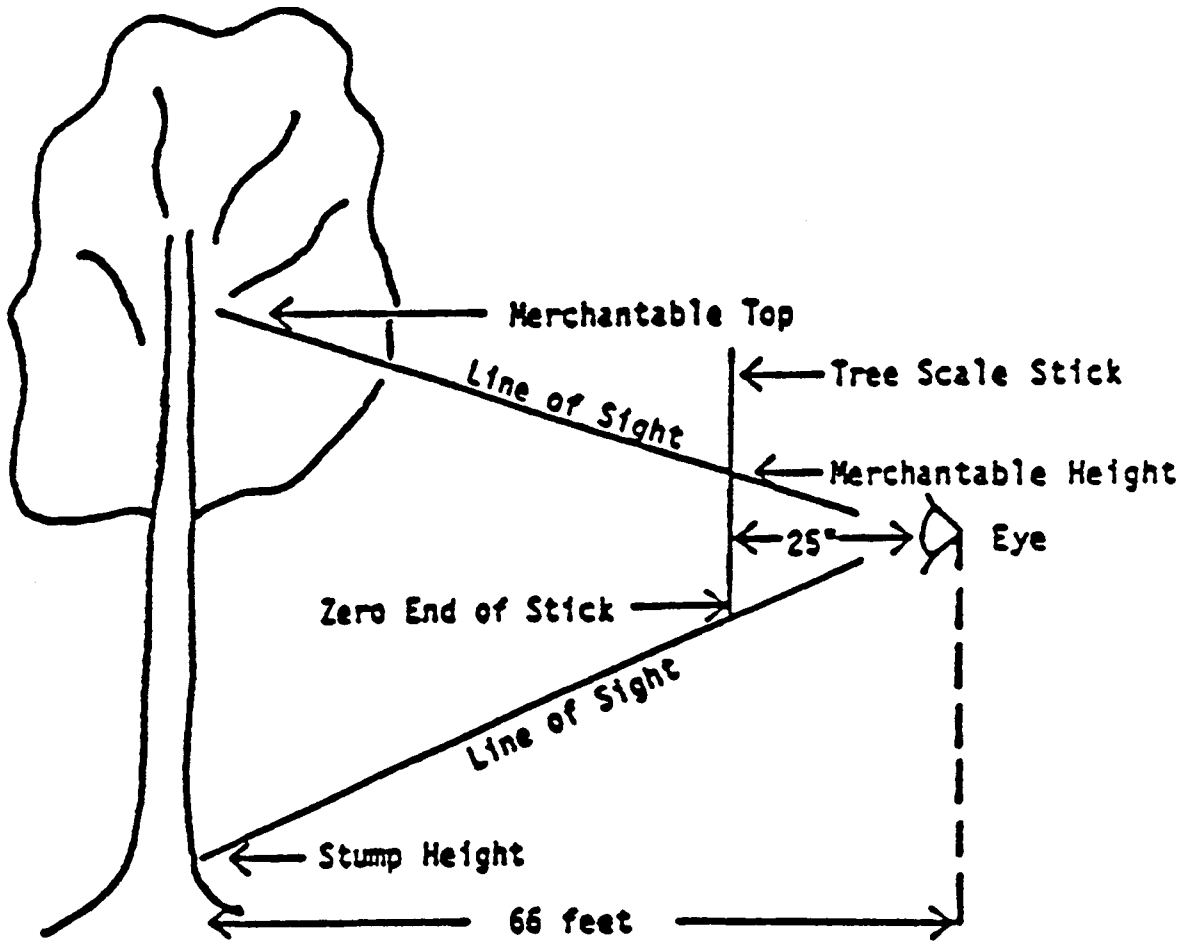


Figure 2. Method of using tree scale stick to obtain tree height.

VOLUME TABLE

The volumes in the table are composites of actual volumes, on an average basis, for the product indicated. Once the tree measurements are determined, read down the left hand column until you come to the row containing the tree diameter at breast height (DBH). Move across from left to right until you come to the column containing the tree merchantable height at the top. At the intersection of that row and column you will find the merchantable volume of the tree. Read and record each tree volume directly and separately. **For contest purposes, do not use the volume table on the tree scale stick.**

VOLUME (board feet) BY NUMBER OF USABLE 16-FOOT LOGS

DBH	1	1.5	2	2.5	3	3.5	4	4.5
10	36	48	59	66	73			
12	56	74	92	106	120	128	137	
14	78	105	132	153	174	187	200	
16	106	143	180	210	241	263	285	
18	136	184	233	274	314	344	374	
20	171	234	296	348	401	440	480	511
22	211	290	368	434	500	552	603	647
24	251	346	441	523	605	664	723	782
26	299	414	528	626	725	801	877	949
28	347	482	616	733	850	938	1027	1114
30	403	560	718	854	991	1094	1198	1306
32	462	644	826	988	1149	1274	1400	1518
34	521	728	934	1119	1304	1447	1590	1727
36	589	826	1063	1274	1485	1650	1814	1974

Senior Tree Measurement Score Sheet					
County or Club		Group No.	Contestant's Name		
No.	Species 2 Pt.	DBH 3 pts.	#16 ft. logs 3 pts.	Board Feet	Score
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
Total board foot volume in plot					
Total board foot volume per acre					
(a) Subtotal of Tree Scores					
(b) Score for Volume Per Acre					
Total Score (a+b)					

Junior Tree Measurement Score Sheet					
County or Club		Group No.	Contestant's Name		
No.	Species 2 Pt.	DBH 4 pts.	#16 ft. logs 4 pts.	Board Feet	Score
1					
2					
3					
4					
5					
6					
7					
8					
Total board foot volume in plot					
Total board foot volume per acre					
(a) Subtotal of Tree Scores					
(b) Score for Volume Per Acre					
Total Score (a+b)					

COMPASS TRAVERSE

Introduction

Foresters are often required to estimate ground distances by the pacing method and to determine direction of travel using a compass. This exercise is designed to emphasize pacing and compass work. This will be accomplished by measuring a course of five lines. The lines may be level or slope up or down hill, and successive lines may or may not be continuous.

Pacing is an expedient, but crude, method of determining distance on the ground. It is very useful in cruising timber and running out land boundaries. A pace is two full steps. Heel to toe is not acceptable. On level, open ground, pacing can become fairly accurate with enough practice, but on slopes and brushy, or rocky, areas its accuracy diminishes. To correct for slope, in pacing, the following suggestions from the Forestry Handbook are provided:

In difficult terrain no attempt should be made to maintain a standard pace. Instead, allow for its inevitable shortening (downhill as well as uphill) by repeating the count at intervals. For example, on moderate slopes count every tenth pace twice: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 10, 11, etc. On steeper slopes it may be found necessary to repeat every fifth count: 1,2,3,4,5,5,6, etc. On the steepest slopes in very heavy brush, in swamps, or among boulders, every count may have to be repeated. Consistent accuracy in pacing under such conditions is attained only by practice and is maintained only by constant checking. (Forestry Handbook 1955. Page 17-1.)

Contest Rules

1. Each contestant should determine the number of paces he or she takes per 100 feet on a practice course prior to the contest.
2. Instructions will be given to the contestants before beginning the course. The exercise will be completed on an individual basis. Each contestant will measure the bearing and distance for each line, record the measurements on a score sheet, and return the score sheet to the official in charge.
3. Contestants may use only the following equipment:
 - a. Silva Ranger-type quadrant compass available from Forestry Suppliers, Inc. or Ben Meadows Co.
 - b. Pencil and clipboard
 - c. Course layout
 - d. Score sheet
 - e. Calculator
4. The course layout will consist of five (5) lines with marked corners. Set compass declinations on zero.
5. Contestants are required to use the correct two-letter designation with each bearing recorded on the score sheet - for example N 27 W
6. Each contestant will have twenty (20) minutes to complete the course.
7. A maximum of 20 points is possible for each of the five lines, 10 points for the correct bearing and 10 points for the correct distance. One-half point will be deducted for each degree of error in the bearing up to a maximum of 10 points per line. One-half point will be deducted for each foot of error in distance up to a maximum of 10 points per line. Contestants may receive a maximum total score of 100 points.

COMPASS TRAVERSE SCORE FORM					
County or Club		Group No.	Contestant's Name Jr__ Sr__		
Line	Bearing*	Points*	Distance*	Points*	Score
A-B					
B-C					
C-D					
D-E					
E-F					
Total Score					

Contestants should fill in the bearing and distance for each line.

***Do not write in box for points**

***Distance should be rounded to the nearest foot.**

***Bearing should be rounded to the nearest degree.**

INSECT AND DISEASE IDENTIFICATION

Introduction

Different insects have various requirements for food, habitat, and development. We have both beneficial insects and detrimental insects. Insects, or examples of their damage, will be displayed through specimen or photographs/slides. Spelling, including capitalization, must be the same as that on the Official List of Species to be correct.

Contestants will be asked to identify diseases that cause excessive dollar loss to the forest industry and society. Specimens will be selected and displayed which are representative of diseases and damage.

Contest Rules

1. Contestants will be required to identify twenty (20) insects, disease or damage specimens selected from the official lists. Contestants will be judged on the accuracy of identification and the spelling of the common names. Scientific names will not be required. Incomplete names will be counted as wrong, for example, caterpillar instead of eastern tent caterpillar.
2. Contestants will be given a specific amount of time to identify each specimen.
3. Five (5) points will be given for each correct common name. One (1) point will be deducted for each misspelled name. The common name must be the one used in the official list.
4. It is recommended that each team bring a magnifying glass.

OFFICIAL LIST OF INSECTS

<u>Common Name</u>	<u>Scientific Name</u>
Nantucket pine tip moth	<u>Rhyacionia frustrana</u> Comstock)
Locust borer	<u>Megacyllene robiniae</u> (Forester)
White pine weevil	<u>Pissodes strobi</u> (Peck)
Gypsy moth	<u>Lymantria dispar</u> (L.)
Eastern tent caterpillar	<u>Malacosoma americanum</u> (Fabricius)
Pine webworm	<u>Tetralopha robustella</u> (Zeller)
Fall webworm	<u>Hyphantria cunea</u> (Drury)
Black turpentine beetle	<u>Dendroctonus terebrans</u> (Oliver)
Ips engraver beetle	<u>Ips</u> spp.
Conifer sawflies	<u>Hymenoptera</u> : Diprionidae
Southern pine beetle	<u>Dendroctonu frontalis</u> (Zimmerman)
Pales weevil	<u>Hylobius pales</u> (Hbst.)
Periodical cicada	<u>Magicicada septendecim</u>

OFFICIAL LIST OF DISEASES

<u>Common Name</u>	<u>Scientific Name</u>
White pine blister rust	<u>Cronartium ribicola</u>
Oak wilt	<u>Ceratocystis fagacearum</u>
Chestnut blight	<u>Endothia parasitica</u>
Black knot	<u>Apiosporina morbosa</u>
Nectria canker	<u>Nectria galligena</u> or <u>Nectria magnoliae</u>
Dutch elm disease	<u>Ceratocystis ulmi</u>
Annosus root rot	<u>Heterobasidion annosum</u>
Brown spot needleblight	<u>Scirrhia acicola</u>
Fusiform rust	<u>Cronartium fusiforme</u>
Cedar-apple rust	<u>Gymnosporangium juniperi-virginianae</u>
Red heart	<u>Fomes pini</u>
Hypoxyton canker	<u>Hypoxyton</u> spp.
Artist conk	<u>Fomes applanatus</u>

Most of the insects and diseases listed are found in the following reference:

Insects and Diseases of Trees in the South. USDA Forest
Southern Region, General Report R8-GR 5, June 1985.

Individual copies may be ordered from:

USDA Forest Service
Southern Region
1720 Peachtree Street, N.W.
Atlanta, GA 30367

Insect and Disease Identification Score Sheet		
County or Club	Group No.	Contestant's Name
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
		Total Score

Spelling & capitalization must be the same as the Resource Handbook to be correct.
Correct identification & spelling = 5 points Misspelling = 1 point off

FOREST EVALUATION CONTEST - A TEAM COMPETITION

Objectives

This contest has been developed to provide forestry teams an opportunity to discover the site factors and stand factors which effect the growth of forest crops. It is divided into four parts; I. Site Evaluation, II. Stand Evaluation, III. Recommended Practices, and IV. Forest Inventory.

Contest rules

1. Forestry teams will complete the forest evaluation contest as a group. This is not an individual event.
2. Teams will be given a specific period of time to complete each part of the contest.
3. Seventy-five (75) points are possible for each of parts I, II, III and IV, with a total of 300 points possible for the entire contest.

For part I sections A,B, C,D and E have a possible value of 15 points each.

For part II sections, A,B,C,D,E and F have a possible value of 12.5 points each.

For part III each correct answer is worth 5 points.

For part IV each correct answer in species, DBH, number of logs, volume and crown class is worth 3 points.

FOREST EVALUATION CONTEST STUDY GUIDE

SITE EVALUATION

The site is the habitat or environment in which a plant or plant community lives. There are a number of site factors that determine the desirability of a particular location for tree species. Some of the factors are soil depth, slope percent, aspect, and slope position. These factors can be used to determine the forest land capability class of a particular tract of land.

Soil depth is the distance from the soil surface down to unweathered rock or an impermeable layer which restricts water movement and root penetration. For contest purposes shallow soils are less than 24 inches deep, and deep soils are greater than 24 inches deep.

Slope percent is the number of feet of rise or fall in 100 feet of horizontal distance. For contest purposes slope percent is broken into the following categories: 0-20 percent, 20-40 percent and 40 percent plus. Slope percent can be measured with an Abney level or a clinometer. Figure 3 below illustrates a 24 percent slope



$$AC / AB \times 100 = \text{slope percent}$$

$$6 / 25 \times 100 = 24 \text{ percent}$$

Figure 3. Method of determining slope percent.

Aspect is determined by taking a compass reading while facing down a slope. The direction water would run gives the compass direction. Any slope facing north and east of a line extending from north 45 degree west to south 45 degree east is considered to have a desirable exposure. Any slope facing south and west of the same line is considered to have a less desirable exposure (see figure 4).

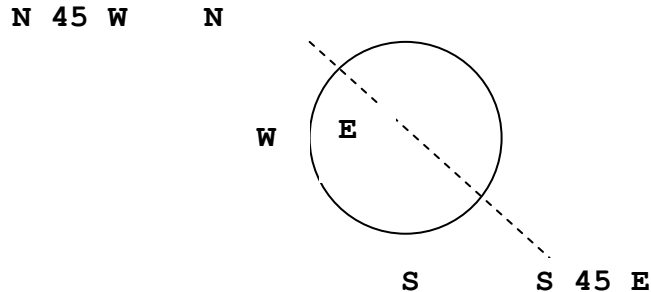


Figure 4. Method of determining aspect.

Slope position is determined only on hilly sites. The positions are classified as upper 1/3, middle 1/3 and lower 1/3. Ridge tops or level plateau and bottomlands are classified separately in land capability. Forest land capability classes are described below for the purpose of this contest:

Class I, Excellent has few limitation for tree growth. Most sites have little slope and no erosion problems. The soil is fertile and holds water well. It is well drained, but not droughty. These sites will produce timber well.

Class II, Good is usually gently sloping. In some cases there are drainage problems that affect tree growth.

Class III, Fair may be fairly steep. Soils may have low fertility and tend to be droughty.

Class IV, Poor may be very steep with shallow soil. Sites may be rocky, shady, have low fertility and be very dry.

FOREST STAND EVALUATION

Grazing damage is defined by the following three categories for the purpose of the contest: Severe - reproduction eaten and trampled out, soil compacted, and bark rubbed off large trees; Slight - animals have only slightly affected the condition of the forest; and None - no evidence of grazing damage.

Fire may be present as a destructive agent or a management tool. Wildfire can be very destructive particularly in hardwood forests. Destruction of the litter layer on the forest floor, crown scorch or burning of the foliage, and scalds or scars on the tree trunk are all evidence of wildfire damage. A Prescribed burn or controlled fire is a forest management tool which can be used to manage competing vegetation, prevent fuel accumulation, and improved wildlife habitat without damaging the crop trees.

Size distribution is classified into 4 categories for the purpose of this contest. In all-aged stands there may be 2 or more size classes represented. In many even-aged stands there will be only one size class. Specific size classes are defined as follows: stems 0-1 inch DBH - reproduction, stems 1-3 inches DBH - saplings, stems 3-12 inches DBH - poles, and stems more than 12 inches DBH - sawtimber.

Forest types have been defined by the Society of American Foresters since 1932. The recognition of forest types is necessary because different forest types require different management. For the purposes of this contest specific forest types have been grouped into the following general categories: pine, pine-hardwood, upland hardwood and bottomland hardwood.

Stand origin can vary from one stand to another, even though the stands are of the same forest type and size distribution. Timber stands may originate by several different means. Natural stands may arise from seed, or from sprouts. Sprout or coppice forests can become unhealthy because disease and decay organisms are sometimes transmitted from the parent trees to the sprouts through the root systems. Stands which originate from planted seedlings or seeds are called plantations. These stands may be of higher quality than their predecessors if genetically improved seeds or seedlings are used.

Stocking is a term used to describe how well the trees in a stand utilize the available space. A well-stocked stand is one in which the trees are well distributed, and all the space is utilized, but the trees still have room to grow. An understocked stand is one in which there are open spaces between the trees so that the stand will not produce its full potential. An overstocked stand is one which is so crowded that trees are growing very slowly, and so are dying because of too much competition.

RECOMMENDED PRACTICES

A list of forest practices appears on the Forest Evaluation Contest Score Sheet. Teams should consider each practice, and answer yes if they recommend applying the practice in the designated timber stand, or no if they don't recommend it. The practices recommended should be those which will improve the stand and enhance multiple-use.

Streamside Management Zone (SMZ) a flowing stream within the evaluation boundaries of the evaluation site.

FOREST INVENTORY

Species of each numbered tree should be listed using the common names from the Official Species List on page 4-5.

Diameter at breast height of each tree should be measured and recorded in 2-inch diameter classes.

Height in 16-foot logs of each tree should be measured and recorded to the 1/2 log.

Volume in board feet of each tree should be determined and recorded using the table on page 10.

Crown class of each tree should be determined and recorded as either dominant, co-dominant, intermediate, or suppressed. These crown classes are defined in the Glossary on page 35.

FOREST EVALUATION CONTEST SCORE SHEET

County or Club _____

Total Score _____

I. SITE EVALUATION: Circle (A) Depth, (B) Slope percent, (C) Aspect, and (D) Slope
 apply to the area.

Position as they

A. DEPTH OF SOIL	DEEP-24" OR MORE						SHALLOW-LESS THAN 24"					
	Rolling 0-20 %		Steep 21-40 %		Very Steep 41%+		Rolling 0-20 %		Steep 21-40 %		Very Steep 41 %+	
C. Aspect	NE	SW	NE	SW	NE	SW	NE	SW	NE	SW	NE	SW
D. Slope Position												
Bottom	I	II	I	II	I	II	I	II	I	III	II	III
Lower 1/3	I	II	I	II	I	III	I	III	II	III	III	IV
Middle 1/3	I	II	II	III	II	III	II	III	III	IV	IV	IV
Upper 1/3	II	III	III	III	IV	IV	III	IV	III	IV	IV	IV

E. Land Capability Class - determine the proper class by drawing a line down from the Aspect circled and across from the Slope Position circled. The number where these lines intersect indicates the capability class. Circle the proper class below.

1. Excellent 2. Good 3. Fair 4. Poor

Part I Score _____

II. FOREST STAND EVALUATION: Check the correct answers.

A. Grazing Damage Severe _____ Slight _____ None _____	D. Forest Type Pine _____ Pine- Hardwood _____ Upland Hardwood _____ Bottomland Hardwood _____	E. Stand Origin Seed _____ Sprout _____ Plantation _____
B. Fire Unburned _____ Wildfire _____ Prescribed Fire _____		F. Stocking Well-stocked _____ Understocked _____ Overstocked _____
C. Size distribution: (There may be more than one answer) Reproduction _____ Sapling _____ Pole _____ Sawtimber _____		

Part II Score _____

III. PRACTICES RECOMMENDED: (Write yes or no in each blank)

- 1. Leave alone to grow....._____
- 2. Thin stand for pulpwood, fuelwood or other products
leaving desirable trees to grow....._____
- 3. Fence area from livestock....._____
- 4. Have timber marked and estimated for harvest cutting....._____
- 5. Cut mature trees with farm labor for home use or sale....._____
- 6. Kill wolf trees, by girdling or injection, to provide
sunlight for natural reproduction. Where wolf trees
can be utilized, harvest instead of killing....._____
- 7. Cut heavily leaving seedtrees to restock the area....._____
- 8. Remove poorly formed and undesirable trees from stand....._____
- 9. Remove diseased and damaged trees from stand. If a seed
source is not available, replant the area....._____
- 10. Remove vines causing damage to trees....._____
- 11. Plant open areas with recommended trees....._____
- 12. Stream Side Management Zone (SMZ) should be recommended_____
- 13. Protect area from wildfire. Report fires that occur....._____
- 14. Provide food, cover and water for wildlife....._____
- 15. Prescribed burning is recommended....._____

IV. FORESTRY INVENTORY

Tree No.	Tree Species	Diameter (DBH)	Height in 16 ft logs	Bd ft Volume	Crown Class

Part IV Score _____

FORESTRY QUIZ

Objectives

The primary objective of the 4-H Forestry Quiz is to provide an opportunity for youth enrolled in 4-H Forestry projects to demonstrate their knowledge of forestry and related subject matter.

Contest Rules

1. Each contestant will complete the Forestry Quiz on an individual basis.
2. The quiz will consist of 33 questions. Questions may be true-false or multiple choice. Contestants should circle the correct answer to each question.
3. Three points will be given for each correct answer. The maximum number of points possible will be 100. One point will be given for name and county spelled correctly.
4. Each contestant will have thirty minutes to complete the quiz.
5. All questions on the quiz will come from the following references:
 - A. This Handbook
 - B. Be a 4-H Forester - Leaflet YANR-191
 - C. 4-H Forestry Program - Unit A - Trees
 - D. 4-H Forestry Program - Unit B - Forests

FORESTRY KNOWLEDGE BOWL

OBJECTIVES

The Forestry Bowl will provide an opportunity for teams of four contestants to demonstrate their knowledge of forestry and related subject matter in a competitive setting where attitudes of friendliness, fairness and excitement prevail.

Pairings for the competition bracket will be determined by the total of the top three quiz scores for each team. The team with the highest total score will be the top seed, while the team with the lowest total score will be the bottom seed.

EQUIPMENT

Panels -- Two interconnecting panels, each to accommodate four contestants plus a moderator panel with suitable controls are to be used. The equipment will be checked prior to the start of each round of competition.

Time keeping device -- A stop watch or other appropriate device is to be used.

Score keeping device -- This may be a blackboard or flip chart.

Questions -- A packet of questions for each round shall be prepared in advance. If there are several acceptable answers to a question, all answers shall be listed.

Setup -- See diagram on page (27) for a sample bowl contest setup.

OFFICIAL

Moderator (Quiz Master) -- The moderator assumes complete direction of all rounds, asks all questions, designates contestants to answer questions, accepts or reject all answers unless over-ruled by the referee judges, but may seek interpretation of questions which are ruled on unanimously.

Referee Judge -- One or two judges may be used.

Time-keepers -- One or two time-keepers will be used to indicate to the moderator the expiration of the time allowed in which to answer questions. The time-keepers may be one or both of the referee judges.

Score-keepers -- One or two individuals will keep score on each round.

PROCEDURE OF PLAY

Starting the Contest

1. Teams are assembled and seated at their respective panels. A team must have three (3) members to be an official team.
2. The team captains shall be seated nearest the moderator.
3. The question packet is opened by the moderator.

Part I

4. A coin is tossed to determine which team captain will answer the first question.

5. The second question will be answered by the captain of the opposing team. Succeeding questions will be asked alternately of each team, and rotated among team members, until all questions has been asked.
6. Only the designated team member may answer the question. The member has 10 seconds to **begin** the answer.
7. If the answer is correct, 10 points will be awarded the team. No points will be given for partial or incorrect answers.

Part 2

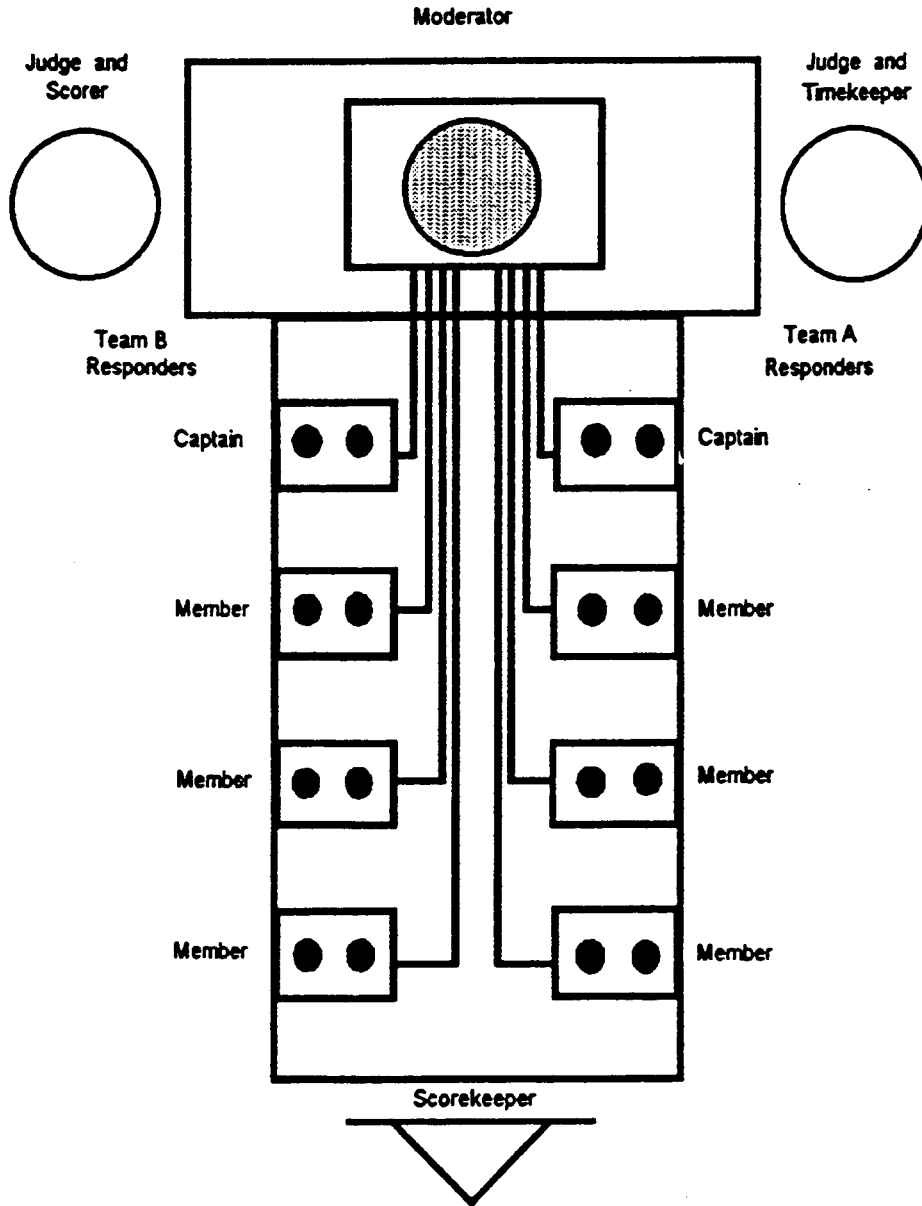
8. Part 2 begins with the moderator reading a toss-up question (as with all succeeding questions) until a contestant activates a buzzer.
 - a. If a buzzer is activated during the reading of any question, the moderator immediately will cease reading the question and the contestant activating the buzzer shall begin the answer based on that portion of the question read.
 - b. If the answer given is incorrect, or no answer is given, **five (5) points are taken from that team's score** and the moderator repeats the question. The opposing team then has 10 seconds for any member to activate the buzzer and answer the question. If the answer is incorrect, 5 points will be taken from that team's score. No team consultation is permitted.
9. At the completion of the reading of a question or when a buzzer is activated, ten (10) seconds are permitted in which to begin an answer. The answer will be given by the contestant activating the buzzer. No consultation on toss-up questions is permitted. It shall be the responsibility of the moderator to determine if an actual answer is started within this ten-second period.
10. If the time in which to answer a question elapse without a contestant activating the buzzer, the question is discarded.

Completing the Contest

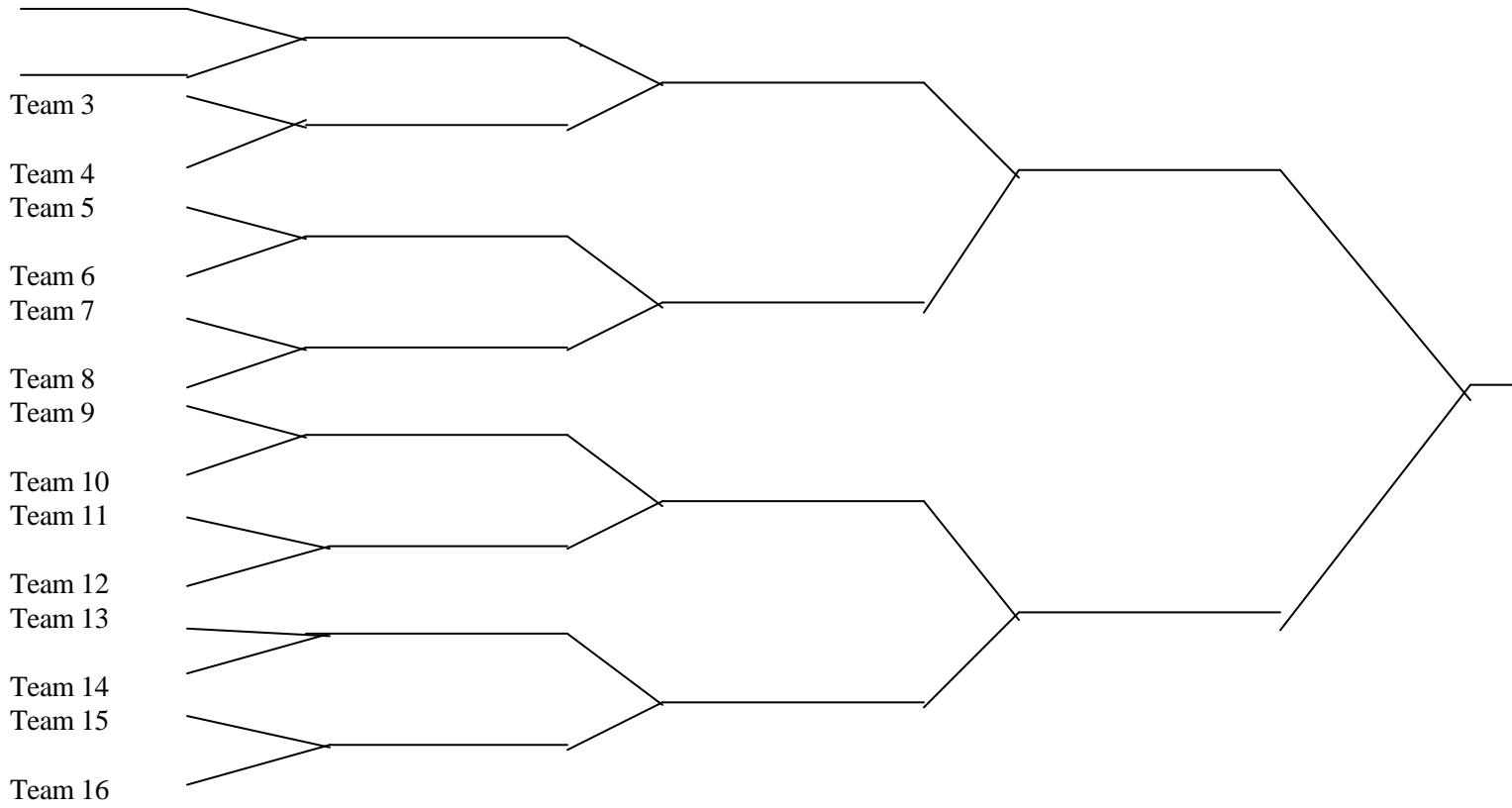
1. The moderator will continue reading toss-up and until all tossup questions have been asked or 30 minutes have elapsed, whichever comes first, except the last round which may last 45 minutes or less.
2. Following the final question, the scores of the two score-keepers shall be compared. If there is disagreement as to the score of the game, the score that is tabulated on the written score card will be used.

SUGGESTED BOWL SETUP

(see below)



Forestry Bowl Bracket



This bracket is determined by the total of the top three quiz scores for each team.

Highest total score = top seed

Lowest score = bottom seed

ALABAMA FORESTRY FACTS

Forestry's Effects on the Alabama Economy

- Forestry is Alabama's #1 industry
- Forestry generates approximately \$13 billion for Alabama each year
- Forestry generates approximately \$4.2 billion in Alabama wages each year
- Over 170,000 Alabamians are employed directly or indirectly by the Forestry industry
- The above statement represents about 10% of Alabama's total work force
- There are over 1,100 Forest Manufacturing operations in the state
- Hunting and Fishing, activities which rely heavily on Alabama's healthy forest lands, generate over \$600,000 in taxes, license fees, hunting rights and equipment sales every year
- The Forest industry averages \$800 to \$900 Million a year in capital spending in Alabama
- Alabama forest product companies inject approximately \$1.9 Billion into local communities in the form of payroll

Forestry Presence in Alabama

- 22 Million acres of land in Alabama, or 2/3 of the state, is covered in forest land
- Alabama currently has around 23 Billion cubic feet of timber "in the bank"
- There are twice as many trees in Alabama today as there were 50 years ago
- For every tree harvested in the state of Alabama, five are planted
- In 1990, 3,150 trees were planted for every baby that was born
- Alabama forest consist of 35% pine, 45% hardwood, and 20% mixed pine and hardwood
- There are approximately 200 species of bird living in Alabama forests
- 71% of Alabama forest are owned by private, non-industrial land owners

Other Forestry Facts

- On average, each person in the United States uses enough tree product each year to make a tree 100 feet tall and 16 inches in diameter
- One acre of healthy trees can generate approximately 5,600 lbs. of wood in one year

Source: Alabama Forestry Association

GLOSSARY

Abney Level - An instrument used to determine the percent of slope of a site.

Aspect - A compass reading taken facing down a slope in the direction water would run, gives the compass direction of a slope.

Best Management Practices (BMPs) - A practice or combination of practices, that is determined by a state to be the most effective, practicable means of preventing or reducing the amount of pollution generated by nonpoint sources (such as managed forests) to a level compatible with water quality goals.

Clinometer - Height measuring device.

Conservation - Gifford Pinchot, a turn of the century forester closely associated with President Teddy Roosevelt, applied the word to describe a natural resource philosophy. It meant "wise use." Through the years it has taken on an extended meaning that really says "wise use over a period of time." The time factor forces us to consider the consequences of current use compared to future use.

Coppice - A stand of forest originating from the stumps or roots of trees previously cut. Most hardwood species sprout readily when cut young. Very few conifers will sprout from the stump.

Crown Class - Tree crowns are classified as to the position in which they are found. The following are the main generally recognized classes.

Dominant - Trees with crowns that extend above the average of the tree crowns and receives light from directly above and some from the sides.

Co-Dominant - Trees with crowns that form the general level of the crown cover and receive full light from the top, but very little from the sides.

Intermediate - Trees that are shorter than the two preceding classes but with some branches extending into the general crown cover. Receives little light from above and none from the sides.

Suppressed - Trees with crown entirely below the general crown level and receiving no direct light either from above or below.

Cull - Tree or log of merchantable size, but no market value.

DBH - Diameter of a tree at breast height or 4 1/2 feet above ground.

Duff - Often referred to as litter which is made up of materials of the upper layer of the forest floor. This includes freshly fallen leaves, twigs and slightly decomposed organic matter.

Erosion - The wearing away of the soil and minerals by climatic agents such as wind and water.

Exposure - That portion of the slope that is directly in the path of wind, rain, and sun. That part of a slope open to action of the elements.

Forest Land Capabilities - The productivity of the land as it is affected by particular location or position on a slope.

Forest Types - A classification of species indicating the majority of the species represented in an area.

Germination - This process occurs when viable seed meet favorable conditions that will allow it to grow.

Girdle - To chop or remove a strip of bark or a section of wood containing the food-carrying tissue of a tree in an even strip from the perimeter of the tree or twig.

Harvest - The removal of marketable products from the forest.

Mature Tree - A tree that has reached a maximum growth that the forest manager decides is a merchantable product.

Multiple-Land-Use - A term used to indicate the management of timber, wildlife, and recreation in an integral, consolidated program.

Merchantable Height - A term used to indicate the marketable length of a tree.

National Forests - These differ from National Parks in that recreation is not their only use. Recreation may be a primary use in some part of the national forest. For example, there are more acres of wilderness areas in national forests than national parks. The national forest system administers 154 forests and 19 grasslands. On most national forest land, timber, water, wildlife, recreation, and grazing are compatible resources. These are managed for productive and sustained yields according to the land's capability.

National Parks - The National Park Service was established by Congress to promote and regulate the use of national parks, monuments, and reservations and to conserve the scenery and the natural and historic objects and the wildlife therein. The Park Service administers 295 separate areas. The Service manages some areas for historical or recreational uses. Each of the 35 national parks was established to preserve an unique natural area for our enjoyment and study. National parks are confused with national forests.

Old Growth - This term describes eastern forests and virgin western forests with trees over 100 years of age.

Partial Cut - Method of cutting mature trees, ex. shelterwood cut, selection cut, or seed tree cut.

Pole - A young tree that is 3 to 12" in DBH.

Prescribe Burn - Controlled burning to enhance forest management techniques in silviculture, wildlife management, fire hazard control, etc.

Preservation - In natural resources, other than wood preservation, this term is related to land use. The meaning stems from 19th century land reserves wherein areas and resources were set aside for limited or restricted use and development. Preservation often restricts land to recreation or scientific study. Preservation may be contrasted to the principle of multiple use which rather intensively develops one or more of an area's resources.

Reproduction - A natural establishment of seedlings or sprouts 0-1" DBH.

Residual Stand - That portion of trees left after any partial cut.

Sanitation Cutting - The removal of dead, damaged or susceptible trees; essentially to prevent the spread of pests or pathogens and so promote forest hygiene.

Sapling - A young tree less than 3" DBH. The minimum size is usually placed at 1" DBH.

Seedling - A tree grown from seeds.

Silviculture - A term used to indicate the establishment, development, care, and reproduction of stands of timber.

Site - The combination of biotic, climatic, and soil conditions with the ecological factors of an area to produce forests or other vegetation.

Slope Position - A particular location on a slope as upper, middle, or lower slope; ridge top; or bottom land. A specific topographic location.

Sprout - A tree originating from a root or stump.

Stocking - A measure of the proportion of the area actually occupied by trees.

Streamside Management Zone - (SMZ) a strip of land adjacent to a water body or stream channel where soils, organic matter and vegetation are managed to protect the physical, chemical and biological integrity of surface water adjacent to and downstream from forestry operations. A SMZ also may be called a "filter strip" or "buffer zone".

Sustained Yield - Management of a forest stand to provide a constant supply of timber and revenue.

T.S.I. - Timber Stand Improvement. Any practice designed to improve a stand of timber by removal of vines, culls, and undesirable species.

Wilderness - In the strictest sense, this means that an area that has never been developed by man. A 1964 Wilderness Act defined it thus: "A Wilderness, in contrast with those areas where man and his own works dominated landscape, is hereby recognized as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor and does not remain." In common use the word is associated with these undeveloped areas and those set aside with little development. In some cases man-made items are dismantled to reduce the area to a primitive state. Under these broader uses some roadless areas are considered wilderness when the access is limited to hiking, canoeing, or horseback riding and the use is set aside for recreation. To most of the general public, wilderness experiences are gained in a number of settings involving wild but not necessarily true Wilderness areas.

Wild Fire - Fires burning out of control regardless of how or why they are started.

Wolf Tree - A tree that occupies more than its fair share of growing space.

A SUMMARY OF FEDERAL LAWS AFFECTING FORESTRY

Laws form the basis for using and managing our nation's forests. Since 1890, more than 140 laws affecting forestry have been passed by the United States Congress and signed by the President. In the early years most laws enabled or authorized the protection and management of the nation's forests. Many of the laws passed in recent years restrict or regulate the use and management of these forests. Some of the more important Federal laws are described below.

Creative Act of 1891 - Authorized the President of the United States to set aside public lands bearing forests as public reservations commonly called Forest Reserves.

Organic Administration Act of 1897 - Provided the Forest Reserves, later to be called National Forests, were established to improve and protect the forests, to secure favorable conditions of water flow, and to furnish a continuous supply of timber.

Transfer Act of 1905 - Transferred the administration of the Forest Reserves from the United States Department of the Interior to the United States Department of Agriculture.

Twenty-five Percent Fund Act of 1908 - Established the procedure for paying the states twenty-five percent of the monies received from national forest timber sales to benefit public schools and public roads in counties where national forests are located. These payments are made in lieu of taxes.

Weeks Law of 1911 - Authorized purchasing and adding to the National Forest System forested, cut-over, or denuded lands within the watersheds of navigable streams which are necessary to regulate the flow of navigable streams or to produce timber.

Smith-Lever Act of 1914 - Established a Federal-State cooperative extension program to provide education for the public in agricultural and natural resources.

Clarke-McNary Act of 1924 - Authorized technical and financial assistance to the states for forest fire control and for production and distribution of forest tree seedlings. (Sections 1 through 4 were repealed by the Cooperative Forestry Assistance Act of 1978).

McSweeney-McNary Act of 1928 - Authorized a comprehensive Forest Service research program. (This act was repealed and supplanted by the Forest and Rangeland Renewable Resources Research Act of 1978.)

Multiple Use-Sustained Yield Act of 1960 - Established a policy of multiple use, sustained yield management for the renewable resources of the National Forest System.

McIntyre-Stennis Act of 1962 - Established a cooperative forestry research program for state land-grant colleges and universities.

Clean Air Act of 1963 - Gave the Federal government enforcement powers regarding air pollution for the first time. This act and subsequent amendments impact the forest industry by affecting prescribed burning for forest management and emissions from forest products manufacturing plants.

Wilderness Act of 1964 - Established the National Wilderness Preservation System by setting aside sections of federal forest land as wilderness.

National Environmental Policy Act of 1969 - Required that environmental considerations be incorporated into all Federal policies and activities, and that all Federal agencies prepare environmental impact statements for any actions significantly affecting the environment.

Federal Water Pollution Control Act Amendments of 1972 - Established as a national objective restoring and maintaining the chemical, physical, and biological integrity of the nation's water, and required area wide planning to prevent future

water pollution that could be associated with growth, development, and land use, including timber management.

Endangered Species Act of 1973 - Provided for the protection and conservation of threatened and endangered fish, wildlife, and plant species. Directs all Federal agencies to utilize their authorities and programs to further the purpose of the Act.

National Forest Management Act of 1976 - Established additional standards and guidelines for managing the national forests, including directives for national forest land management planning and public participation.

Cooperative Forestry Assistance Act of 1978 - Authorized the Secretary of Agriculture to work in cooperation with State Foresters in nine cooperative forestry assistance programs. Among these programs is the Forestry Incentives Program, a federal cost-share program designed to encourage the management of private forest lands.

Renewable Resources Extension Act of 1978 - Authorized expanding the forest and rangeland renewable resources portion of the extension education program.

Forest and Rangeland Resources Extension Act of 1978 - Authorized expanding forest and rangeland renewable resources research.

Reforestation Tax Incentives (part of the Recreational Boating Safety and Facilities Improvement Act of 1980) - Provided tax credits and deductions for landowners who reforest their property, as an incentive to encourage reforestation.

Food Security Act of 1985 (1985 Farm Bill) - Established the Conservation Reserve Program. The program was designed to conserve 40 to 45 million acres of highly erodible cropland by paying landowners to plant permanent vegetative cover, such as grass or trees, and maintain that vegetative cover for 10 years.

Food, Agriculture, Conservation, and Trade Act of 1990 (1990 Farm Bill) - Established the Forest Stewardship Program, a program designed to encourage multiple resource forest management on nonindustrial private forest lands. A companion program, the Stewardship Incentives Program, was designed to provide cost-share assistance funding to encourage the implementation of management practices.

Coastal Zone Act Reauthorization Amendments of 1990 - Required that states with Coastal Zone Management Programs develop and implement Coastal Nonpoint Pollution Control Programs to control sources of nonpoint pollution (including managed forests) which impact coastal water quality.