NRCS Natural Resources Conservation Service

West Virginia Woodland Inventory Worksheet

Client:	Farm #:	Tract #:
Field(s):	Date:	Total Acres:
Designed By:	Location:	

Narrative Description of Stand and Landowners Objectives:

List trees and associated information from zigzag transect. See page 4 for additional instructions.

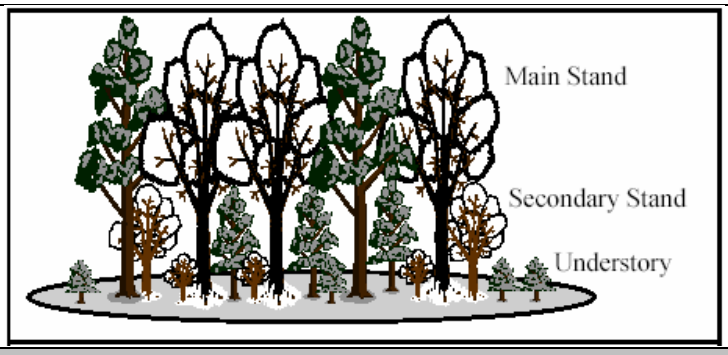
Tree No.	Species	Distance (ft) [1]	Diameter (in) [2]	Condition [3]	Grapevines (Y/N) [4]	Notes
1				P F G		
2				P F G		
3				P F G		
4				P F G		
5				P F G		
6				P F G		
7				P F G		
8				P F G		
9				P F G		
10				P F G		
11				P F G		
12				P F G		
13				P F G		
14				P F G		
15				P F G		
16				P F G		
17				P F G		
18				P F G		
19				P F G		
20				P F G		
TOTALS						
AVERAGE						

1. Distance – measure or pace the distance between trees (center to center). Average tree spacing is found by dividing the total of distances by the number of trees sampled.
2. Diameter – determine the diameter of the tree at breast height (4.5 feet above ground). Average stand diameter is obtained by dividing the total of diameters by the number of trees sampled
3. Condition – record the condition of each sampled tree as Good (G); Fair (F); or Poor (P) regardless of the species. Good = reasonably straight, clear stem with no serious damage. Poor = badly misshapen, limby, short stemmed or seriously damaged. Fair = an intermediate rating for trees that neither good nor poor.
4. Stands should have at least 5% of the trees on a per acre basis or 40 stems per acre before grapevine removal is practical.

SUMMARY	SOILS INFORMATION		
	SOIL TYPE	SPECIES	SITE INDEX
Diameter Range _____ inches dbh			
Species Makeup _____ ___% , _____ ___% _____ ___%			
Percentage of Trees with Grapevines_____% OR Number of Grapevines/Acre_____			
Overall Quality _____% Good _____% Fair _____% Poor			
Trees/Acre = 43,560 (Average Spacing)^2 or Table 2* _____			
Stocking Percent [(Appendix 3 - Figure 1) Forest Stand Improvement (666) Standard] _____			
Basal Area/Acre = (Average Diameter)^2 (0.005454) (Trees/Acre) or Table 3*_____			
Desired # Trees/Acre _____ Excess # Trees/Acre _____ (Tables 1 and 2)*			

* Refers to the tables found on the woodland information stick.

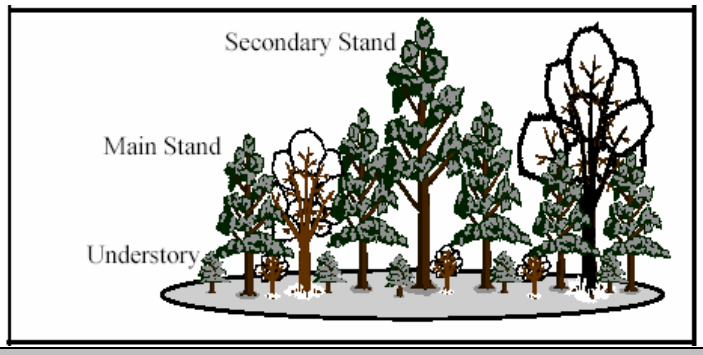
Check the graphic that most closely resemble the stand that is being inventoried.



An occasional tree may be borderline between the main stand and the secondary stand. If, in your opinion, the tree offers significant competition to the tree in the main stand, consider it as part of the main stand.

Check One ☐
1

	Species	Extent [5]
Secondary		
Understory (CIRCLE ONE)		
Grazed Not Grazed		**D M S**
Grazed Not Grazed		**D M S**
Grazed Not Grazed		**D M S**

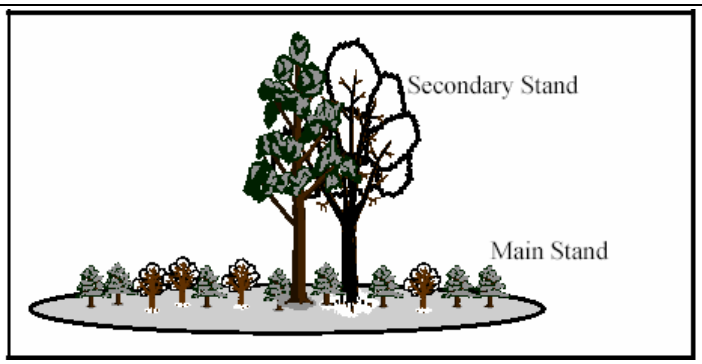


Do not separate large trees as a secondary stand unless they are considerably larger and clearly of an earlier generation than the trees of the main stand.

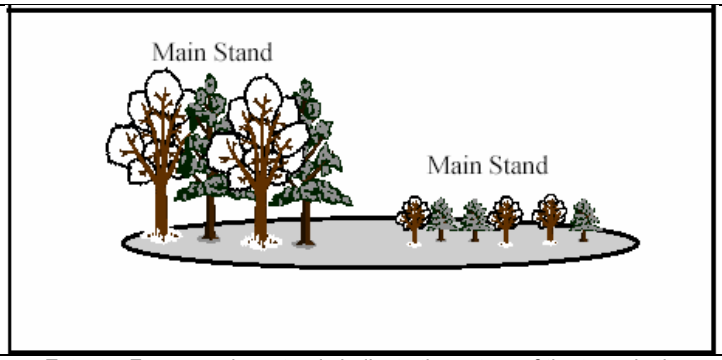
Check One ☐
2

	Species	Extent [5]
Secondary		
Understory (CIRCLE ONE)		
Grazed Not Grazed		**D M S**
Grazed Not Grazed		**D M S**
Grazed Not Grazed		**D M S**

NOTE: Additional choices appear on the following page.

	**If the larger trees are numerous, there may be a question as to which is the main stand. In case of doubt, consider the larger trees as the main stand.**	**Check One** ☐ **3**

	Species	**Extent** [5]
Secondary		
Understory (CIRCLE ONE)		
Grazed Not Grazed		**D M S**
Grazed Not Grazed		**D M S**
Grazed Not Grazed		**D M S**

	**A change in the main stand may show need for a field boundary and a separate inventory. Please complete a separate inventory for each stand.**	**Check One** ☐ **4**

5. Extent – For secondary stands indicate the nature of the trees in the secondary stand such as, "many suppressed trees" or "few scattered, spreading trees". For understory trees, make an appraisal at the 5th, 10th, 15th, and 20th sample trees. Dense (D) = 2/3 or more of the area is stocked; Medium (M) – 1/3 to 2/3 of the area is stocked; Sparse (S) = less than 1/3 of the area is stocked.

Practices that may be applicable:

Tree/Shrub Establishment (612) _____Acre(s)
Tree/Shrub Pruning (660) _____Acre(s)

Forest Site Preparation (490) _____Acre(s)
Forest Trails/Walkways (655) _____Acre(s)

Forest Stand Improvement (666)_____Acre(s)
Riparian Forest Buffer (391) _____Acre(s)

Use Exclusion (472) _____Acre(s)
Other _____ ( ) _____Acre(s)

Type of Treatment :

Expected Outcomes:

Zigzag Transect Procedure

The following procedures are used to conduct a zigzag transect. NOTE: More detailed information can be found in The Woodland Information Stick and Woodland Inventory Procedures (1977).

Step 1 – Select Main Stand

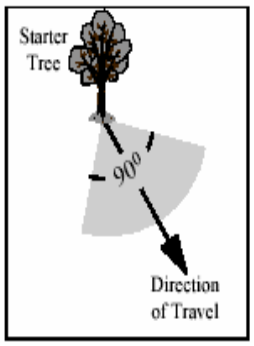
The main stand is usually made up of larger trees. There may be more than one general crown level. Beneath the main stand there is usually an understory of suppressed trees, advanced reproduction, or other plants. The client's principal concern should be with the main stand.

Step 2 – Choose a Route

Choose a route through the stand so you can sample a cross section. Generally, this can best be accomplished by traveling perpendicular to drainageways. On a sunny day you can use the sun as a direction marker by going toward it, away from it, or at some angle to or from it. A visible landmark can also be used as a direction marker. In plantations, alternate the direction of travel. Use the direction of the row for the first tree; go at 90° to the row for the second; use the direction of the row for the third, and so on.

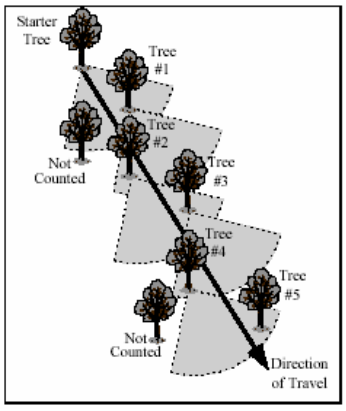
Step 3 – Select a Starter Tree

The starter tree may be any tree that is a part of the main stand. No measurements are made of the starter tree. It serves only as a point of beginning.



Eligible Trees

Locate the closest main stand tree, the center of which is within the angle defined by the 90° arc on the woodland information stick. When two eligible trees are equidistant, select the one closest to the direction of travel. Trees joined at the base are considered separate and both may be counted.



Zigzag Transect Analysis

Stand Diameter Calculation

Average stand diameter is obtained by dividing the total of diameters by the number of trees sampled.

The range of diameters can be determined by noting the smallest and largest of the trees sampled.

Average Tree Spacing Calculation

Average tree spacing is found by dividing the total of distances by the number of trees sampled.

Trees Per Acre Calculation

Determine the approximate number of trees per acre using Table 2 on the woodland information stick and the average distance between trees. The following equation can also be used: **Trees/Acre = 43,560/(Average Spacing)^2**

Basal Area Per Acre Calculation

Basal area per acre can be determined using Table 3 on the woodland information stick. For example, 10" trees spaced at D+8 spacing would have a basal area per acre of 73 square feet. The following equation can also be used: **Basal Area/Acre = (Average Diameter)^2 (0.005454) (Trees/Acre)**

Thinning Determinations

Refer to Table 1 on the woodland information stick. Example: The desired spacing for thinning an 8 inch oak / yellow poplar average diameter stand is D + 8 or 16 feet in this example. Then refer to Table 2 on the woodland information stick to determine the desired number of trees per acre. That would be 170 for the 16 foot spacing calculated above. The difference between the actual trees per acre (304) and the desired number of trees per acre (170) equals the approximate number of trees that should be removed from the stand (134) in a thinning operation.

Species Composition Analysis

An approximation of species composition can be made from the zigzag transect. For example: 10 yellow poplars were sampled out of 20 trees, indicating 50 percent yellow poplar stand composition.

Stand Condition Analysis

An approximation can be made of the percent of trees in poor condition in the same manner as used to get species composition. The percentage is not as important as making the landowner aware of the condition of the growing stock. The trees in poor condition can be slated for early removal to favor those in better condition. Transect information can reveal treatment needs and alternatives.