REGIONAL APPENDICES

A. Plot Establishment in the Northeast

B. Ownership Information

C. Current Regional Land Use Classes

D. Tally Procedures in the Northeast

E. Tables and Charts

F. Shrub and Vines Codes Species Codes for the Maine Inventory

G. Quality Control / Quality Assurance Program in the Northeast

H. Tally Record Guide

I. Special Studies

J. GPS User's Guide

K. PDR Troubleshooting Guide

Appendix A. Plot Establishment in the Northeast

This chapter describes how new sample plots are established and how remeasure sample plots are re-established. Most remeasure plots that are revisited during this inventory have previous starting point and course-to-plot information. On these plots, this previous information should be used and followed unless there has been considerable change to the area; or there is a more efficient way to access plot center. The course-to-plot information is updated at the time of each visit by the new crew to insure that the plot can be relocated. It is critical that all plots can be relocated without the aid of GPS by using standard compass and chaining procedures.

> "Surveying in forest land as compared with work done in towns and on farms is carried out under unfavorable circumstances. In the first place, timber and brush growth offer an obstruction to sighting; second, the work is often done far from a well supplied base; third, the limits of cost allowed are often the lowest practicable. These conditions have a strong effect upon the methods employed, and they also affect the choice of outfit. Equipment for such work should not usually be expensive, it should be as compact and portable as possible, and it should not be so delicate or so complicated as to be likely to get seriously out of order and so hold up a job." – *Austin Carey, Woodsman's Manual, Fourth Edition,1932.*

PLOT PHOTO ORIENTATION

The imagery used to aid in establishing sample plots can vary from state to state. Generally, when aerial photography is being used, it will most often be products from the National Aerial Photography Program (NAPP). NAPP products are usually 10" by 10" contact prints with a nominal scale of 1:40,000. They may be color infrared, or black and white.

When collected: All plots
Tolerance: No errors

The following procedures are used to orient the photography to magnetic north. The establishment of a photo reference line is required for all plots.

- Align the photograph so that the edge with the identification information is on top as you look at it. That edge is the northern edge of the photo.
- Select two features that can be identified on the photo; and on the ground, or on a topographic map. Individual trees, road intersections, straight sections of road, buildings, field edges, or unique locations along lakes and ponds, are good choices. Avoid railroad beds and power lines because of their effect on compasses.
- Using a pen, lightly connect the two selected features with a straight line (reference line). Be careful when writing on the photos as the emulsion of the photo can be easily scratched.
- Take a compass reading between the two selected features (magnetic azimuths are used). If using a topographic map, determine azimuth from map.
- Record the azimuth, and place an arrow at the end of the reference line, to show the direction of the azimuth.
- Record reference line and all photo calculations on page 4 of the plot record in the "Calculations" section.

STARTING POINT
The starting point (SP) marks the beginning of the traverse to sample plot center (PC) and is required for all plots.

When collected: All plots
Tolerance: See text below

An entire plot may be rated unsatisfactory if the SP is pinpricked incorrectly (i.e., off more than 1/50th of inch), or if the SP is difficult to locate. Selection guidelines should be followed closely for all starting points and witness trees. Pinpricks made by anything other than a fine pin or needle will not be tolerated. Pinpricks are to be labeled on the back of the photo, and the locations of the SP and witness trees well defined.

The SP should be:

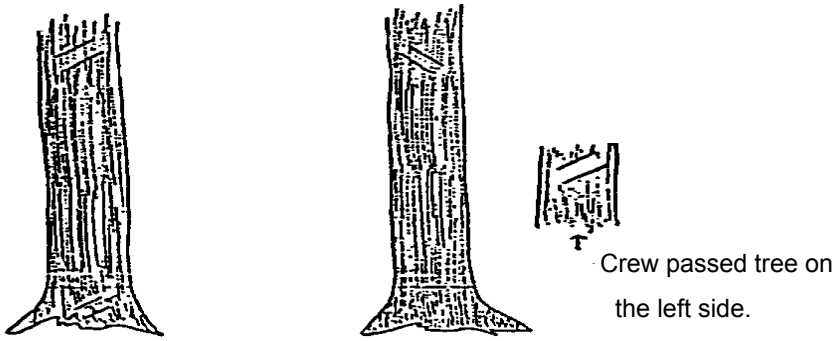
- Easily identifiable on both the plot photo and the ground
- Likely to remain unaltered prior to the next inventory
- Minimum of 200 ft from the plot whenever possible
- Pinprick and label it as SP on the back of the photo

Witness the starting point with two trees or other nearby features, and record the pertinent information. If SP and/or the witness features are trees, mark them with a bark scribe. Place two parallel diagonal scribe marks, each about 4 inches long and 4 inches apart, at 5-1/2 ft above ground, and near the ground, below an imaginary 1 ft high stump. The lower scribes are referred to as stump scribes. Place the stump scribes on the downhill side of the tree whenever possible. Scribe marks on witness trees will face the SP. (If the witness tree is located on a slope, stump scribes should be placed on the downhill side of the tree.) On SP trees, they will face the direction of approach so that future crews may readily find them. **Never place scribes of any type on trees located on a landowner's yard without permission from landowner.**

Make the scribe marks in the outer bark layer of the tree. **DO NOT CUT THROUGH THE CAMBIUM**. It is important that scribe marks be made carefully so that they do not expose or penetrate the cambium of the tree.

Scribe marks that penetrate the cambium may provide a vector for insects or disease. And, on thin-barked trees, can cause deformities that may interfere with diameter measurements at subsequent inventories. Use tree paint on thin-barked trees such as beech, and on smaller sized trees of all species.

Illustrations of Scribing



Witness tree Line tree

COURSE TO PLOT

There are two methods to establish a course to plot: aerial photography and Global Positioning System (GPS) coordinates.

When collected: All plots
Tolerance: See text below

A plot must be established at the correct location, and in a manner, which facilitates the sure and efficient return, by future crews. Distance to the plot, measured from the aerial photograph, should be within one half of one 1/50 of an inch, from the same measurement of an inspector. If GPS coordinates were used to determine course to plot, procedures as written in Appendix J should have been followed.

Although a compass line may not read the same as the inspector's, it must be accurate once it is established. Carefully check all calculations in the area provided on page 4 of the plot record. Draw and label the reference line and the traverse line on the face of the aerial photograph, if applicable. Again if GPS coordinates were used to determine course to plot, procedures as written in Appendix J should have been followed.

The tolerance for 100 ft chaining intervals varies from ± .5 ft to ± 2.0 ft, depending on the slope of the traverse and the density of ground cover. It is important that tapes be kept straight in both the horizontal and vertical planes when "chaining". Accuracy over the entire traverse should be within 2 ft per every 1000 ft of the calculated distance.

Slope corrections must be within ± 5 percent.
Line trees must be established and species must be identified correctly. If something other than a tree is referenced, it must be noted. Other line tree requirements are:

- DBH must be within 2 inches
- Distances must be within 2 ft
- Direction must be within a one hour interval

- Scribes must point in the correct direction

Make a note when the line crosses a stream, fence or boundary line.

Remeasure plots (SAMPLE KIND 5 – 8) were established and are re-established by using aerial photography. (See Note.) When plots are being re-established (i.e., old SP and course to plot no longer available), the original photography and photo scale is used, if available. Draw a thin line on the photograph connecting the SP and the PC. Measure the length of this line to the nearest 1/50 of an inch and multiply that number by the conversion factor (40 for 1:24,000 and 66.7 for 1:40,000 photograph). This is the distance to be traversed. Check your calculations carefully. Record the distance in the space provided in COURSE TO PLOT on page 3 of the plot record. **Any remeasure plot that has a new course-to-plot established must be documented with calculations, photo work and why the old course-to-plot was not used. Lack of documentation is considered unsatisfactory work. If a forested plot requires re-establishment,** it is important that the current crew get to the same ground location as the previous crew. If a crew has any difficulty in re-establishing a forested plot, they are to contact their field supervisor for assistance. If the plot cannot be relocated, then the field supervisor will authorize a replacement plot.

Warning: If a remeasure plot is located using the old course-to-plot information, do not calculate a new course-to-plot from SP and PC coordinates **unless this distance has been traversed on the ground.** The reason is that the calculated distance and azimuth from GPS coordinates has an associated error for SP to PC. If this new course-to-plot is not traversed, the next crew may not find the exact ground location especially if there has been major change to the area and witness trees and tally trees have been removed. The same is true for new plots. If you complete a course-to-plot and decide there is an easier route to the plot by creating a new SP, this new course-to-plot must be traversed on the ground.

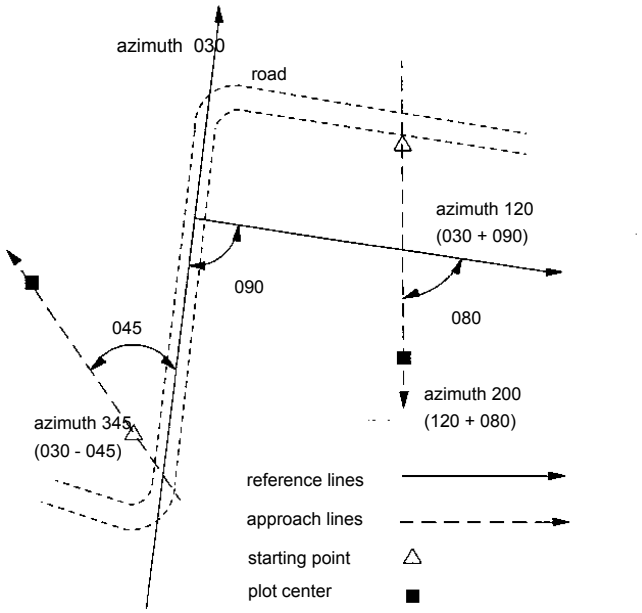
If the course-to-plot is not traversed on the ground, the plot record is noted (e.g., C to P not run).

Note: SK5 plots in DE, MD and WV that were SK1 on the last occasion were established from the coordinates on the plot record label. If these plots were "nonforest" and not established (i.e., PC coordinates were not taken at PC), then the label coordinates were recorded as the PC coordinates. Even though there was recorded course to plot information, this information was not used to determine PC coordinates or recorded as the PC coordinates. The reason is that the label coordinates for these plots represent the true ground location without any error. To re-establish this plot today simply verify that the old SP is still acceptable. If it is, simply transfer the previous course to plot information and the PC coordinates from the plot label. If the SP is not longer acceptable and new SP is established, calculate a new course to plot from the new SP coordinates and the PC label coordinates. However, the label coordinates are still recorded as the true PC coordinates unless you complete the traverse to PC and collect coordinates over PC.

PHOTO CALCULATIONS PROCEDURE

Extend the line from SP to PC so that it intersects with the reference line. With a protractor, measure, to the nearest degree, the angle between the two lines. Add or subtract this angle to the known azimuth of the reference line to determine the azimuth from SP to PC. If the two lines do not intersect, draw offset lines that will provide intersections. Check your calculations carefully. Record the azimuth in the space provided on page 3 of the plot record. Proceed with the traverse to PC.

Azimuth Calculations



New plots are established by using GPS coordinates. (See Appendix J for specific GPS unit instructions.)

For new plots established by GPS coordinates, crews must be within **100.0 ft** of the label coordinates for satisfactory plot establishment.

CHAINING TO THE PLOT
Using a compass and a 100 ft tape, begin the traverse to the plot. For all new plots, use the course to plot calculations from the previous section to eliminate any bias of the PC ground location. Two people, a head chainperson and a rear chainperson, are needed for accurate measurements. The head chainperson, by using a compass, must keep themselves and the tape on the correct bearing line at all times. In areas with dense undergrowth, or an extreme amount of slope, it will often be necessary for the rear chainperson to direct the traverse. Be careful to avoid tangles, loops, or bends in the tape.

Once the rear chainperson reaches the new station, select a tree (or other feature) for line reference. For trees record:

- Appropriate species code
- Diameter at breast height (DBH), estimated to the nearest even two-inch diameter class
- Estimated distance, in feet, from the station to the line tree
- Direction from the station to the line tree, using the clock system, with the direction of the traverse as 12 o'clock

Scribe line trees at about 5-1/2 ft high and facing the direction of approach. Slant the bottom of the scribes to the left "//" or the right "\\" to indicate which side of the line tree the crew passed. Stump scribes are not used on line trees.

Make note of when the line of travel crosses streams, fences, or other unique features. To avoid confusion with trees tallied on the sample plot, do not mark any line tree within the last 150 to 200 ft of the course.

In rough terrain, it may be necessary to "break chain", i.e., to use short sections of the tape to aid in holding a level line. Record descriptive notes in these cases. In mountainous country where horizontal distance cannot be chained directly, measure slope distances and convert to horizontal measurements as described in the next section.

CHAINING SLOPE DISTANCES

The forward chainperson proceeds up or down slope for the full length of the 100 ft tape. The rear chainperson then uses the clinometer to determine the slope percentage between his or her position and that of the forward chainperson. Knowing the percentage of slope and the distance (usually 100 ft), determine the slope correction from the prepared tables in Appendix 10. The rear chainperson then makes the adjustment by adding the proper distance to the nearest 1/10 ft to the 100 ft tape. Then the forward chainperson stretches the tape taut again along the slope and sets the new distance. Record the slope correction, in actual feet and tenths of feet, in the Course to Plot information found on page 3 of the plot records. Slope corrections are always added along the slope, never subtracted.

The example below illustrates how to record course to plot information on page 3 of the plot record.

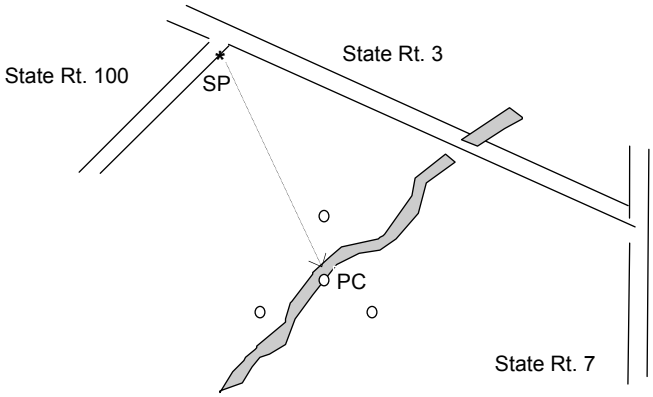
2.120 COURSE TO PLOT

DISTANCE			AZIMUTH			
351 FEET			200 DEG			
DIST	SC	SPP	DBH	DIS	DIR	NOTES
000	----	SP				
100	000	802	12	9	1	
160	-------- STREAM ---------					
200	024	403	8	2	10	1 OF 2
300	016	NO SCRIBE				
351	----	PC				

ESTABLISHING SUBPLOTS 2 - 4 WHEN SUBPLOT 1 IS INACCESSIBLE

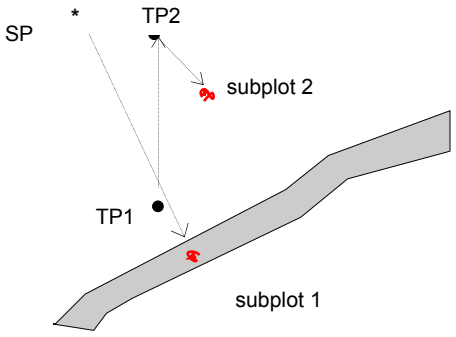
At times, subplot 1 can be inaccessible due to unsafe conditions such as heavily traveled roads or deep bodies of water. The following example illustrates how to locate subplots 2 - 4 when subplot 1 is inaccessible.

In the example on the next page, the stream is noncensus water that is too deep to access or cross. The crew establishing the plot does not know that the subplot is inaccessible until they encounter the stream while chaining from SP to PC.



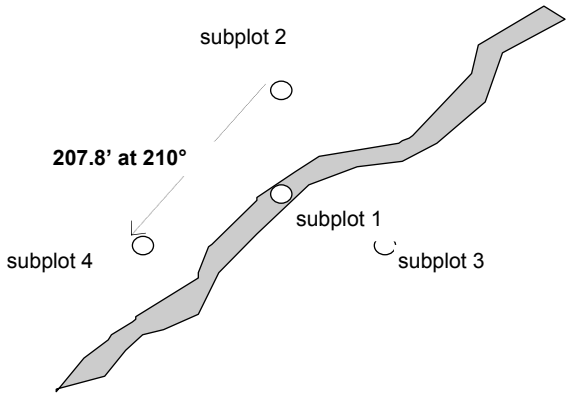
Originally, the course to plot was 534 ft at 150°. The crew chains 500 ft to the edge of the stream and they realize that they cannot occupy subplot 1.

To establish subplot 2 without occupying subplot 1, the crew should establish a turning point (TP1) at the 400 ft station of the course to plot and proceed due north for 120 ft. Here a second turning point (TP2) is established and the crew should proceed 134 ft at the original course to plot azimuth of 150°. This is the proper location of subplot 2. Note that TP1 could be established at any subplot along the original traverse as long as the distance from TP2 to subplot 2 is adjusted as well.

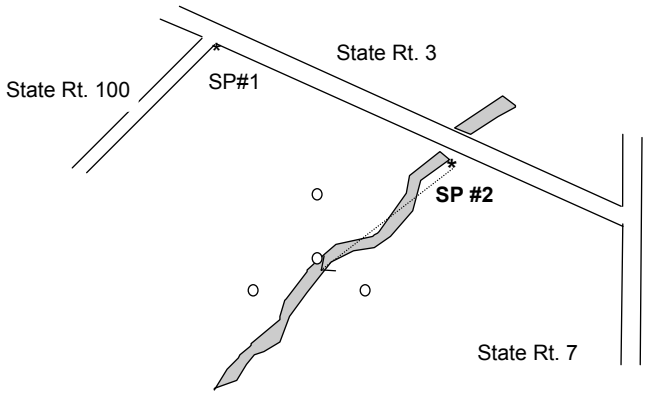


After completing the tally at subplot 2, subplots 3 and 4 now need to be established. Since the creek divides subplot 3 from the rest of the plot, and the stream cannot be safely crossed, subplot 3 will have to be accessed from the opposite side of the creek.

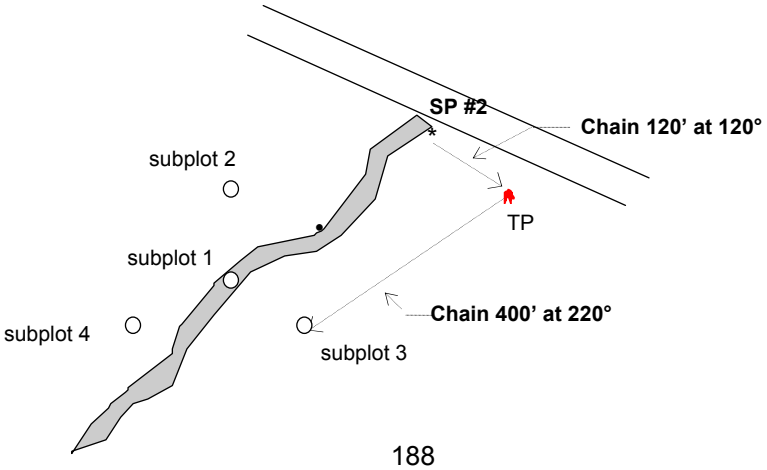
As for subplot 4, it can be accessed directly from subplot 2. The distance and azimuth from subplot 2 to subplot 4 is 207.8 ft at 210°. (See table in 3.140 on page 24.)



Finally to complete subplot 3, the crew will need to access this subplot from the other side of the stream. A second SP and course to plot is established using the aerial photography. (Note: If this procedure is followed for a new plot, you must first accurately pinprick the PC ground location and orient the photo.) Example below: SP #2 to PC is 400 ft at 220°.



However, we cannot occupy P.C. and the goal in establishing a second SP and course to plot is to establish subplot 3. This can be accomplished by proceeding 120° for 120 ft from SP #2 to a turning point. This turning point represents the relative location of subplot 3 to subplot 1. From the turning point, proceed on the calculated course to plot of 400 ft for 220° to locate subplot 3. This procedure uses the same techniques as used to locate subplot 2 from the original course to plot.



This is just one example to illustrate locating subplots without occupying subplot 1. Another method that can be utilized is using the GPS unit. In the above illustration, the coordinates at subplot 3 can be determined from the subplot 1 coordinates. Coordinates are then collected at SP #2. A course to plot can then be determined from these two sets of coordinates. However, caution must be used when establishing subplot 3 in this method. All GPS coordinates involve error. Therefore, prior to any data collection at subplot 3, crews should verify, the best they can, that they are the proper distance and azimuth from the other subplots.

Crews should implement a method that is most efficient given various conditions that exist on the photo and plot area.

Whenever subplots are established without occupying subplot 1, a detailed description of the methods used must be written in the PLOT NOTES and course to plot sections of the plot record. Photos with more than one SP and course to plot must be properly labeled. Also whenever subplot 1 is not physically occupied, the crew should monument one of the subplots (2-4) with witness trees and collect GPS coordinates at this point. These coordinates are recorded in the PLOT NOTES on page 4 of the plot record.

AT PLOT CENTER

For a new plot you will need to pinprick the PC ground location on the photography. (To accurately pinprick PC, use ground observation, photo reference line, topographic map, scale and stereoscope.) If you cannot accurately pinprick PC, the plot record should be noted. For example, “Accuracy of PC pinprick questionable due to extreme change and/or age of photography.” The PC pinprick is utilized for other office applications such as forest fragmentation studies and remote sensing.

Plot that is being remeasured, it is important to check to see where you are on the photograph. Although the previous instructions may have taken you right to plot center, the plot may still be in a different location than the one marked on the photograph. If you determine that the plot is located incorrectly on the photograph, correct the pinprick not the plot’s physical location. Changes should be documented on the back of the photograph and the PLOT NOTES.

When collected: All plots
Tolerance: See text below

PC must be located correctly and the PC witness trees must be accurately recorded, or the entire plot will be considered unsatisfactory. Also an entire plot may be rated unsatisfactory if the PC is pinpricked incorrectly (i.e., off more than 1/50th of inch).

For new plots established by GPS coordinates, crews must be within 100.0 ft of the label coordinates for satisfactory plot establishment.

For remeasured plots, the plot must be relocated at the same location that it was previously established. In the rare case when it appears that the previous crew established a plot in the wrong location it is important that it be reestablished at that same location. The data from such a plot can still be very useful. Complete the plot and bring the situation to the attention of the Field Supervisor.

If the ground location does not agree with the photo location, consider the following:

- Was the starting point correctly identified and marked on the photo?
- Was the photo distance measured correctly, or were the correct GPS coordinates used?
- Is the photo scale correct for the local area?

The scale of the photo can be determined by solving the following formula for X. Remember to convert the photo distance and the ground distance to the same units of measure.

$$\frac{1}{X} = \frac{\text{photo distance}}{\text{ground distance}}$$

If the actual scale of the photograph is 1:38,000, then the conversion factor would be 63.33 ft per .02 inches. For each 100 ft of traverse, this would be a 3.3 ft difference, less than calculated, from a nominal scale of 1:40,000.

- Are the reference line and course to plot azimuths correct?

An error of 1 degree would cause a 1.7 ft deviation, left or right, per 100 ft of traverse. A 5 degree error would, over a mile, end a course 20 ft behind and more than 460 ft to the right or left of the true location.

- Were slope corrections added along the course?

In previous inventories, a procedure of locating plots "by inspection" may have been practiced. In this procedure the crew that originally established the plot did not set up a course to plot with a distance and azimuth calculated from SP to PC. Most plots established in this matter were located immediately off a road edge or in small wood lots where locating PC directly from the photo seemed sufficient. **This procedure is no longer acceptable**. Plots determined to have been established by inspection will be rated as a failed plot.

Never locate plots "by inspection."

When a plot cannot be relocated, write a thorough description of where you looked and your conclusions. Most likely, a different crew, or a supervisor, will try to relocate the plot. This information will be very helpful to them.

Remeasured plots (SAMPLE KIND 5 – 8), where PC has never been established and witnessed, must match the old "office" pinprick location. (This pertains to remeasured plots where the original course-to-plot was established using photography and not GPS coordinates.) For example, the old photo pinprick indicates that the plot fell in cropland 200 ft from the edge. The old course-to-plot places you 200 feet into the forest. Do not establish the plot in the forest. Place a turning point in the course-to-plot so that the ground location matches the old photo location.

PLOT CENTER WITNESS
In the space provided, note that a wooden dowel was used to monument plot center.

When collected: All plots with accessible forest land
Tolerance: No errors

Select two witness trees that are:

- Close to the dowel and spaced approximately at right angles from the dowel.
- Easily recognized species that stand out from others in the area.
- At least 3 inches DBH -- larger if possible.
- Not expected to die, or be cut, in the next 10 years

For each witness tree, record:

- The horizontal distance, to the nearest **.1** (1/10) feet, from the dowel to the center of the base of the tree.
- The azimuth, to the nearest degree, from the dowel to the center of the base of the tree.
- The appropriate species code.
- The DBH (round measurement down to the last whole **.1** (1/10) inch)
- Under notes, anything distinctive about the tree, example: “forks at 4 ft", “clump of 3”, etc.

Enter the tree number if the witness tree is also a tally tree. This is determined during the tally procedure. If no witness trees are available, use some other features and record descriptive notes.

Any subplot that does not have at least two trees tallied on the subplot should be referenced. Subplot witnesses are used whenever there is a concern that the next crew may have a problem locating a subplot. Make complete notes of everything that you do so that it will be clear to the next crew.

Note: Wooden dowels are used to monument subplot centers and metal pins are used to monument microplot centers. If a dowel or pin cannot be placed, then it should be noted on the plot record.

PLOT DIAGRAMS
Use this space to show the location of contrasting condition classes, and any unique features on or near the plot that may be helpful in relocating the plot at the next inventory. It is important that condition class boundaries be sketched in accurately to avoid problems on the next inventory when these boundaries will be remeasured. **See Plot Diagram Rules in Appendix D.**

When collected: All plots
Tolerance: No errors

SKETCH MAP OF PLOT LOCATION
A sketch map of the general area surrounding the plot must be drawn for all plots.

When collected: All plots
Tolerance: See text below

Sketch maps should provide enough information so that a plot can be relocated without the use of the aerial photos or GPS coordinates. Details (bridges, rivers, trails, etc.) and mileage to an easily located intersection or reference point must be included. Inspectors check the quality of a sketch map by attempting to locate a plot with the sketch map. A plot that cannot be located due to a poor sketch will be considered unsatisfactory. Neatness and clarity are desired. Artwork is not necessary and is not required. A good sketch map should take no more than five to ten minutes to complete.

It must include:

- References to the two nearest towns;
- Names and/or numbers (if available) for all roads shown on the sketch along with house or box numbers, when appropriate;
- Intersections and other easily identified landmarks.
- Location of SP and PC.
- Record distances between road intersections from an originating intersection or town to SP. Distances are recorded in miles, tenth's of mile, chains, or feet.

OWNERSHIP AND PLOT LOCATION NOTES
Record any additional information regarding ownership, plot and/or subplot relocation.

> "Notes should be full and exact so as to furnish for the benefit of later comers a complete record of the work done. In the case of resurveys they should be particularly clear as to the old marks found, so that the evidence which governed in the resurvey may be a matter of record. This rule holds especially in regard to starting points and corners.…Notes should be so plainly and clearly written that any fairly intelligent man can understand them. They should be honest as well, not concealing actual errors....Errors are normal and to be expected. They grow out of imperfections in method that are imposed on the survey or by limitations in the matter of expense. Errors are not to be confused with mistakes or blunders." – *Austin Carey, Woodsman's Manual, Fourth Edition,1932.*

P3 Plot Establishment and Reconciliation

There is always a bit of confusion as to what needs to be tallied, reconciled, etc. on a P3 (former FHM) plot. The P3 tally guide for saplings and trees should alleviate some of the confusion for required variables. The other problem is the confusion of the multiple sample kinds for P3 plots. The following is an explanation by state and sample kind as what procedures should be followed for plot establishment and reconciliation, if applicable.

P3 Sample Kinds by State

Maine and Pennsylvania

- SK2 P3 Plot# ≥ 0001 – previously established annual P3 plot (**P3 annual remeasurement plot**)

Connecticut, Massachusetts, New Hampshire, New Jersey, New York, Ohio, Rhode Island and Vermont

- SK1 P3 Plot# ≥ 5000 – A new annual plot, never established (**new to P3)**
- SK1 P3 Plot# < 5000 – A previously established periodic FIA plot (**new to P3**)
- SK5 P3 – A previously established FHM 4-point plot by an old FHM crew *that may overlay an old periodic FIA plot* (**P3 remeasurement plot**). This SK is not valid in Ohio.

Maryland and West Virginia

- SK1 P3 Plot – A previously established periodic FIA plot (**new to P3**)
- SK5 P3 Plot – A previously established FHM 4-point plot by an old FHM crew *that may overlay an old periodic FIA plot* (**P3 remeasurement plot**).

Delaware

- SK5 P3 Plot – A previously established FHM 4-point plot by an old FHM crew *that may overlay an old periodic FIA plot* (**P3 remeasurement plot**).
- SK5 P3 intensified Plot – A previously established periodic FIA 4-point plot by an old FIA crew that has been converted to P3 for state use only. The additional P3 data is not used for national P3 reports. (**P3 remeasurement plot**).

Plot Establishment and Reconciliation Procedures by Sample Kind

- SK2 P3 Plot (**P3 annual remeasurement plot**) – Re-establish the plot and collect all the P2 and P3 variables required and reconcile tree and sapling data from provided reconcile sheet.

- SK1 P3 Plot (**new to P3**) – Establish the plot as any other new plot and collect all the P2 and P3 variables required.

- SK1 P3 Plot (previously established periodic FIA plot, **new to P3**) – The old FIA data is used only to relocate the plot. All other information is ignored and the plot is established as if it were a new P3 plot. **At subplot 1 assign new tree numbers to all trees** beginning with 001.

Note: There may be an FIA reconcile sheet associated with these plots. **Do not reconcile this FIA information**. Use the FIA reconcile sheet only to aid in re-establishing the plot.

- SK5 P3 Plot (**P3 remeasurement plot**) – Requires **reconciliation and relocation to the old FHM data** and not any previous periodic data from old FIA tally sheets. Reconcile all trees listed on the provided P3 (FHM) reconcile sheet including dead trees and saplings. Account for all new dead trees or snags. Do not tally new dead saplings. Assign tree numbers to new trees (first available new tree number = last previous FHM point tree number + 1).

  Note: There may be an FIA reconcile sheet associated with these plots. **Do not reconcile this FIA information**. You may also find that the FHM ground location and the FIA ground location do not match. The FHM location supersedes the FIA location. When these situations are encountered, make a notation on the tally sheet and contact Katherine Johnson at Newtown Square.

- SK5 P3 intensified Plot (**P3 remeasurement plot**) – Requires **reconciliation and relocation to the old periodic FIA data** and not any previous FHM data.

Appendix B. Ownership Data

The determination of ownership is used to code OWNER GROUP when CONDITION CLASS STATUS is 1 at plot center of subplot 1.

OWNERSHIP INFORMATION
Ownership is usually one of the first variables completed by a field crew. The process begins with a trip to the local tax office to review plat maps, examine aerial photos and interview the tax collector in an attempt to determine who is the owner of the property where the plot is located. Once the general location of a plot is known, attempt to contact the landowner for permission to install the plot and to confirm the landowner's complete mailing address.

It is frequently not possible or practicable to contact a landowner prior to installing a plot. However, **permission must be obtained if the property is posted against trespassing**. There may be other problems related to accessing a plot. Advance notice may be required to obtain keys, special permits, etc., prior to property access. Supervisors will provide assistance and instructions for these and other situations.

In situations where landowners cannot be contacted by phone or on site, a standard letter is sent by the state supervisor to request permission to access the plot. Included with the letter is a reply card for the owner with a preaddressed, postage paid envelope. If a reply is never received or a reply returns with no permission granted, the plot is indicated as denied access and data are recorded as written in Section 8. (See standard landowner letter at the end of this appendix.)

Although ownership information is only required for plots that are forested at plot center, it is often a good idea to collect ownership information on all of the plots in the county, or town, while you are at the tax office. This is especially true in states or regions where there is a relatively small amount of nonforest land. The time spent gathering this extra information during your first visit to the tax office will usually be a fraction of the time spent on a return visit after you discover that a previously nonforest plot has reverted to forestland.

When Collected: All plots with accessible forest land at plot center of subplot 1
Field width: Variable
Tolerance: No errors
MQO: At least 99% of the time
Values: Alpha/numeric

Enter the data as follows:

- Enter one (1) letter or character per space.
- If more space is needed, continue on the second line.
- If the first line is adequate for the name, begin the address on the second line and continue on through the third line if needed.
- **The fourth line is used only for the city or town, state, and zip code.**
- Enter the source of the information e.g., owner, town clerk, neighbor, tax maps, on the indicated line.
- On the last line, enter the identification numbers (township, plat number, lot number, deed number, etc.) of the information, if they are available.

INFORMATION QUALITY
Enter a code that best describes the reliability of the ownership information.

When Collected: All plots with accessible forest land at PC of subplot 1
Field width: 1 digit
Tolerance: No errors
MQO: At least 99% of the time
Values:

0 Unknown
1 Poor, somebody thought the owner was....
2 Good, source was neighbor or someone who was quite sure
3 Verified, information came from owner, tax maps, public agency, or more than one reliable source.

OWNER CONTACT
This area of the plot record covers several variables related to landowner contact. This information is very helpful when a sample plot has to be visited more than once. There is an area to document attempts made to contact a landowner, as well as the method that permission was obtained. There is also an area to indicate whether the property, where the center subplot is located, is posted to prevent trespassing. **These variables must be completed for all plots with forestland**, and may also be helpful on some of the nonforest plots. If applicable, complete all the information for this variable on the plot record.

When Collected: All plots with accessible forest land
Field width: Variable
Tolerance: No errors
MQO: At least 99% of the time
Values: Check Yes or No, or indicate appropriate information

Plots that Straddle Multiple Owners -- During the course of obtaining ownership information from public tax offices take special note of plots that are close to, or overlap, a parcel boundary. If these situations are noted during the ownership collection process and the name and address of the second landowner are acquired, then it becomes possible to ask permission of that landowner at the beginning of the process instead of risking delay and refusal after work on the plot has already begun. This may also be if help if delineating condition class by OWNER GROUP.

Note: Some publicly owned lands like national parks may require permits for access and data collection. Contact your field supervisor for assistance in obtaining permits.

United States Department of Agriculture
Forest Service
Noreastern Research Station
11 Campus Blvd., Suite 200
Newtown Square, PA 19073-3200

File Code: 4801
Date: *<February 24, 2003>*

<John & Jane Landowner>
<666 Briar Patch Rd.>
<Sometown, PA 12345>

Dear *<Mr. & Mrs. Landowner>*:

The USDA Forest Service, Forest Inventory & Analysis project is currently conducting a new statewide inventory of *<Pennsylvania's>* forest resources. Our unit is responsible for performing such inventories on approximately 100 million acres of federal, state, and private forestland across 13 Northeastern states. Their purpose is to provide information about our Nation's forest resources; what these resources are, how they are being used and how they are changing.

One of our sample areas is located on your property in <*Chester*> County, <*Pennsylvania*>. We would like your permission to visit this sample area so we can collect the data needed for this inventory.

In brief, our crews collect information on a plot approximately 0.6 acres in size. Such information includes size, volume, and quality of all tree species present, forest type, the presence of insects and disease, and other similar variables. This information will then be combined with data from other research sites across the state and a statistical report will be published soon thereafter. More information is available on our website: **http://www.fs.fed.us/ne/fia**

The locations of these research plots are chosen at random, and are not specific to individual landowners. All information about the landowner, as well as the location of the research site is kept confidential. We are not involved with property assessments or taxes, and we do not buy or sell timber or land.

Again, we would like your permission to visit this sample area so we can collect the data needed for this inventory. Please respond, whether you agree to participate in this inventory or not, by checking the appropriate space on the enclosed response sheet, and sending it back in the stamped envelope.

If you have any questions or comments or would like to further discuss any aspects of our inventory, feel free to contact me at your convenience. I may be reached at the address above, by phone at **<(XXX) XXX-XXXX>**, or by email at <*statesupervisor@fs.fed.us*>.

Thank you for your time and cooperation.

Sincerely,

<SUPERVISOR'S NAME>
Forester
Forest Inventory & Analysis

TO: USDA Forest Service; Forest Inventory & Analysis

From: ***<John & Jane Landowner>***

Re: Research Access

_____ Yes, you have permission to access my property to conduct research for the state inventory. I understand that the Forest Service is responsible for any injuries that may occur while their employees are on private land, and that I will be protected from any liability.

_____ No, I do not want to participate in the state inventory. Please do not access my property.

Appendix C. Current Regional Land Use Classes

The following land use definitions and codes contain new definitions and codes that are used to describe *Other Forest Land and Christmas Tree Plantations*. The concept *of Other Forest Land* is a significant departure from the way land use has previously been classified by FIA at the Northeastern Research Station. All field employees are advised to read this section carefully, and to ask questions if there are any concerns. It is your obligation to understand these instructions and apply them consistently.

****

All plots that change land use from the previous inventory are verified by the state supervisor or QA personnel by either a second field visit or review of plot records and photography. It is critical that land use is correctly classified so that change between the inventories can be assessed.

****

FOREST LAND
Land that meets the definition of accessible forest land as described in Section 2.2. Grazed woodlands, reverting fields, and pastures that are not actively maintained are included if the definition of accessible forest land is met.

Following are the forest land use definitions and codes. Use these codes in conjunction with CONDITION CLASS STATUS 1.

TIMBERLAND -- Code **20**

Forest land that is producing or capable of producing crops of industrial wood in excess of 20 cubic feet per acre per year, **and** is not withdrawn from timber utilization by statute or administrative designation. (Land withdrawn from timber utilization must be publicly owned land. See the definitions of Reserved, Unproductive Reserved, and Reserved Other Forest land.)

Note: Timberland may be nonstocked provided that neither any natural condition, nor any activity by humans, prevents or inhibits the establishment of tree seedlings.

OTHER FOREST LAND -- Code **30**

Forest land that is producing, or capable of producing, crops of industrial wood, but is associated with, or part of a nonforest land use. In the past, these areas would have been treated as inclusions in the nonforest land use because they were considered part of a development. Some examples of land that could be classified as other forest land are forested portions of city parks, forested land in highway medians and rights-of way, forested areas between ski runs, and forested areas within golf courses. Generally, although surrounded by nonforest development, these areas have not been developed themselves, and exhibit natural, undisturbed understories.

UNPRODUCTIVE OTHER FOREST LAND -- Code **31**

Other forest land that is incapable of producing 20 cubic feet per acre per year of industrial wood under natural conditions, because of adverse site conditions. Crews must include documentation of why the condition is considered unproductive in the PLOT NOTES.

Note: Adverse conditions include sterile soils, dry climate, poor drainage, high elevation, steepness, and rockiness. Vegetation, if present, is widely spaced and scrubby, or tree growth cannot become established. These conditions can be due to forces of nature or human-caused disturbances.

RESERVED OTHER FOREST LAND -- Code **32**

Publicly owned other forest land, that is sufficiently productive to qualify as timberland, **and** is withdrawn from timber utilization by law.

UNPRODUCTIVE RESERVED OTHER FOREST LAND -- Code **33**

Publicly owned other forest land that is incapable of producing 20 cubic feet per acre per year of industrial wood under natural conditions, because of adverse site conditions, **and** is withdrawn from timber utilization by law. Crews must include documentation of why the condition is considered unproductive in the PLOT NOTES.

Note: Adverse conditions include sterile soils, dry climate, poor drainage, high elevation, steepness, and rockiness. Vegetation, if present, is widely spaced and scrubby, or tree growth cannot be established. These conditions can be due to forces of nature or human-caused disturbances.

UNPRODUCTIVE FOREST LAND -- Code **40**

Forest land that is incapable of producing 20 cubic feet per acre per year of industrial wood under natural conditions, because of adverse site conditions. Crews must include documentation of why the condition is considered unproductive in the PLOT NOTES.

Note: Adverse conditions include sterile soils, dry climate, poor drainage, high elevation, steepness, and rockiness. Vegetation, if present, is widely spaced and scrubby, or tree growth cannot become established. These conditions can be due to forces of nature or human-caused disturbances.

UNPRODUCTIVE RESERVED FOREST LAND -- Code **41**

Publicly owned forest land that is incapable of producing 20 cubic feet per acre per year of industrial wood under natural conditions, because of adverse site conditions, **and** is withdrawn from timber utilization by law. Crews must include documentation of why the condition is considered unproductive in the PLOT NOTES.

Note: Adverse conditions include sterile soils, dry climate, poor drainage, high elevation, steepness, and rockiness. Vegetation, if present, is widely spaced and scrubby, or tree growth cannot be established. These conditions can be due to forces of nature or human-caused disturbances.

RESERVED FOREST LAND – Code **50**

Publicly owned forest land that is sufficiently productive to qualify as timberland, but is withdrawn from timber utilization by law.

CHRISTMAS TREE PLANTATIONS

Historically, Christmas tree plantations were classified as forest land. However, Christmas tree plantations are now classified as nonforest land**. (See nonforest land use codes 87 and 88.)**

URBAN FOREST LAND -- Code **52**

Land that, except for its location, would ordinarily be classified as timberland. This land is either nearly (surrounded on three sides), or completely, surrounded by urban development, whether commercial, industrial or residential. This land meets all of the criteria for timberland, that is, at least one acre; capable of producing at least 20 cubic feet per acre per year of industrial wood; is not developed for some use other than timber production; is not reserved by a public agency. It is extremely unlikely that such land would be used for timber products on a continuing basis. Such land may be held for future development, or scheduled for development. (The timber that is present may be utilized only at the time of development.) The land may be undeveloped due to periodic flooding, low wet sites, steep slopes, or their proximity to industrial facilities that are unfavorable to residential development.

Forested areas within city parks are not urban forest land. They may be *Other Forest Land* if the requirements for *Other Forest Land* are met, otherwise, they would be nonforest land. City Parks cannot be classified as Urban Forest Land as it is currently defined.

NONFOREST LAND
Land that does not support, or has never supported, forests, and lands formerly forested where use for timber management is precluded by development for other uses (see Nonforest Land definition on page 49). Although there may be some stocking, the critical classification factor is the predominant use being made of the land. ***Do not confuse with urban forest land***.

NONFOREST LAND WITH TREES
This is a land use on which trees 5 inches DBH and larger are present within the “plot triangle,” but the predominant use is other than forest land. The plot triangle is formed by the 3 outer subplots and is used in photo interpretation to determine whether or not a plot is classified with or without trees. If there are multiple conditions on plot, assess only the portion of the plot triangle that occupies the condition. See Figure A and B.

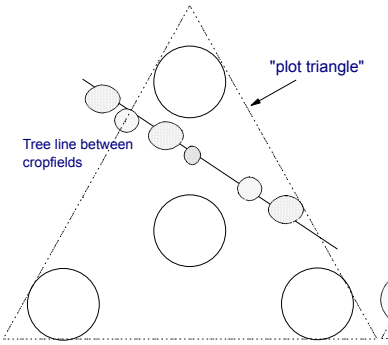


Figure A. Entire plot is classified as nonforest land with trees.

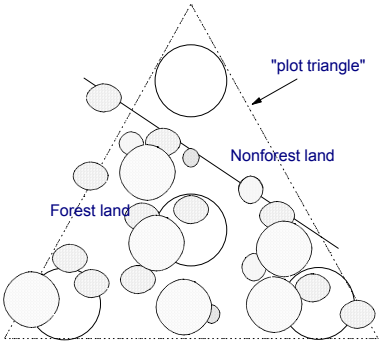


Figure B. Subplots 1, 3 and 4 classified as forest land. Subplot 2 classifed as nonforest land without trees.

Following are the nonforest land use definitions and codes. Use these codes in conjunction with CONDITION CLASS STATUS 2. Enter odd numbered codes for

nonforest land uses without trees and the even numbered codes for nonforest land with trees.

CROPLAND -- without trees Code **61** with trees Code **62**

Land that currently supports agricultural crops including silage and feed grains, bare farm fields resulting from cultivation or harvest, and maintained orchards and nurseries.

IMPROVED / MAINTAINED PASTURE – without trees Code **63** with trees Code **64**

Land maintained and used and for grazing (not including grazed cropland). Evidence of maintenance, besides the degree of grazing, includes condition of fencing, presence of stock ponds, periodic brush removal, seeding, or mowing. Land that generally has less than 10 percent stocking in live trees (established seedlings or larger trees), except that occasional large trees with the obvious function of providing shade for livestock, and small single trees or clusters of hawthorn or eastern redcedar should be ignored when determining stocking. Grazing should be so intense that forest reproduction (except for hawthorn and eastern redcedar) could not occur naturally -- this would be evident if all other vegetation were closely browsed.

IDLE FARMLAND -- without trees Code **65** with trees Code **66**

Former cropland or pasture that has not been tended within the last 2 years and that has less than 10 percent stocking with live trees, (established seedlings or larger trees) regardless of species. A field that is between crop rotations should not be called idle, however, cropland.

OTHER FARMLAND -- without trees Code **67** with trees Code **68**

Other farmland is all nonforest land on a farm excluding cropland, pasture, and idle farmland. It includes farm lanes, stock pens, and farmsteads. Specify the specific land use in the PLOT NOTES.

BOG (nonforest) -- Code **69**

Wet, spongy land characteristically having a thick layer of peat. It is rich in plant residues, usually acidic, and frequently surrounds a body of open water. Characteristic florae are sedges, heaths, and sphagnum.

Note: Bogs are not always nonforest. Some tree species such as black spruce can adapt to bog conditions. If the stocking requirement is met, the land is considered forest land. The decision as to whether the land is productive or unproductive will be made by the field crews.

MARSH -- Code **70**

A tract of soft wet land, often periodically inundated and always treeless. It is usually characterized by grasses, cattails or other monocotyledons (i.e., lilies, lady slippers, sedges).

SALT MARSH -- Code **71**

Flat land that is subject to intermittent or occasional overflow by salt water, containing water that is brackish to strongly saline. A salt marsh supports saltwater adapted plants that usually consist chiefly of grasses.

SWAMP (nonforest) -- Code **72**

Wet, spongy land saturated and sometimes partially or intermittently covered with water. Such land supports natural vegetation predominantly of shrubs, and/or trees.

Note: Swamps are not always nonforest. Some tree species readily adapt to the swamp conditions. If the stocking requirement is met, the land is considered forest land. The decision of whether the land is productive or unproductive will be made by the field crews. (LU 20 or 40)

RIGHTS - of - WAY -- without trees Code **73** with trees Code **74**

Highways, railroads, airports, pipelines, power lines, canals

Note: Driveways that are adjacent or within maintained housing areas are not considered R.O.W. Farmlanes that are adjacent or within cropland, pastures, idle farmland and other farmland are not considered R.O.W.

MINING and WASTE LAND -- without trees Code **75** with trees Code **76**

Surface mining, gravel pits, dumps, landfills, reclaimed mining areas

Note: Reclaimed mining areas are not always nonforest. Some trees such as black locust readily adapt to reclaimed areas. If the stocking requirement is met, the land is considered forest land. The field crews will make the decision of whether the land is productive or unproductive. Reclaimed mine areas should remain in this land use until either stocking is met for accessible forest land or another nonforest land use applies.

DEVELOPED RECREATION SITE -- without trees Code **77** with trees Code **78**

Parks, campgrounds, playing fields, athletic and sports tracks.

INDUSTRIAL / COMMERCIAL LAND -- without trees Code **79** with trees Code **80**

Supply yards, parking lots, shopping centers, factories, etc.

MULTIPLE FAMILY HOUSING -- without trees Code **81** with trees Code **82**

More than one family household per structure, for example, condominiums, townhouses, row houses and apartment buildings.

SINGLE FAMILY HOUSING -- without trees Code **83** with trees Code **84**

One family or person per structure

OTHER NONFOREST -- without trees Code **85** with trees Code **86**

The use of this land use requires a description in the PLOT NOTES.

CHRISTMAS TREE PLANTATIONS -- without trees Code **87** with trees Code **88**

Active Christmas tree plantation must show signs of annual shearing. Record tree species used in the plantation in the PLOT NOTES.

The following codes are for **"office use"** only. These two codes correspond to CONDITION CLASS STATUS 3 and 4.

CENSUS WATER – Code **91**

NONCENSUS WATER – Code **92**

Appendix D. Tally Procedues in the Northeast

This appendix covers items not addressed in the national field guide that are unique to the Northeast data collection.

ALTERNATES

During the initial establishment of the 5 Panel Cycle, occasionally it will not be possible to establish a specified sample plot due to inadequate previous plot records. When this happens, promptly notify your supervisor. If an alternate is warranted, the plot is sent and all office and field copies of the plot listings are updated to show the change. Once an alternate is selected, the original plot is no longer in the sample and requires only a notation as to why an alternate was requested. All "replaced" plots are returned to your supervisor when the county is complete.

CENSUS WATER

Apply one of the following rules and in the PLOT NOTES specifically identify the river, lake, or other body of water:

- If all or any portion of a remeasured plot is determined to be census water due to some change (physical or definitional) since the previous inventory, the plot is established and mapped.

- If a new plot's center (PC at subplot 1) falls on land and portions of the plot falls in census water, the plot is established and mapped.

- If a new plot's center (PC at subplot 1) falls in census water and portions of the plot falls on land, the plot is established and mapped.

- **If a new plot falls entirely in census water (i.e., all four subplots), an alternate is required.**

RESERVED LAND

Do not scribe trees on land that has been classified as reserved unless granted permission. Lacking such permission, witness the SP, line trees, and PC with other features or landmarks.

All accessible forest land that is designated as public ownership requires the verification as to whether or not the land use is reserved (see definitions for REGIONAL LAND USE CLASS 32, 33, 41 and 50). This land also qualifies as RESERVE STATUS equals 1. State supervisors may be able to provide a list of public lands and private organizations that may qualify as reserved.

It is important that verification is documented in the PLOT NOTES for all public ownership. Example:

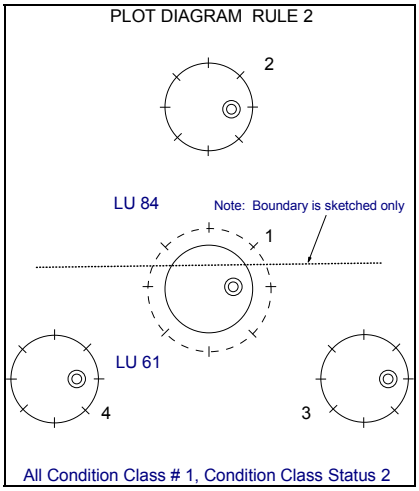
- Reserved forest – Hickory Creek Wilderness Area / Source – J. Smith, ANF – KT 04/19/01

- Not reserved / Source – J. Smith, ANF – KT 04/19/01)

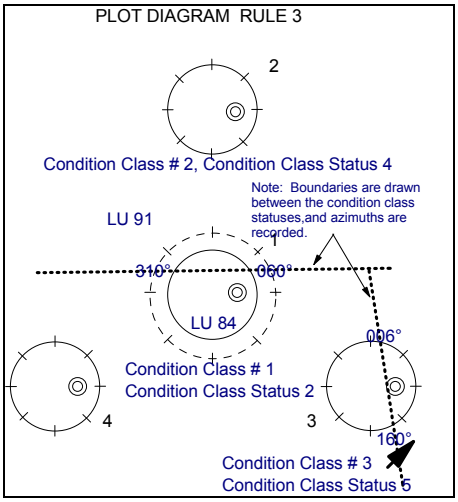
PLOT DIAGRAM RULES

1. **A plot diagram is not required** where CONDITION CLASS STATUS 2 is the same nonforest land use for all subplots. If a plot diagram is not attached to the plot record, then a description of the nonforest condition class is required in the PLOT NOTES. Example: All condition 1 / LU = 61 -- plot falls in cornfield.

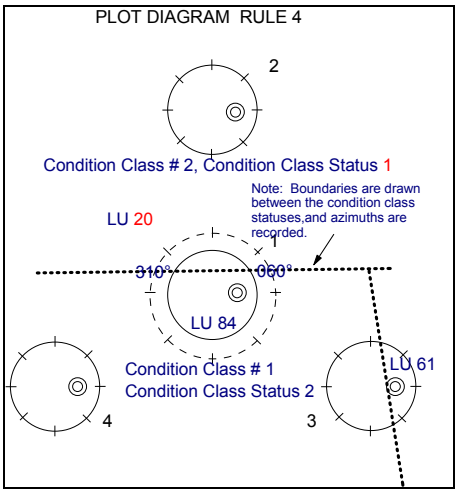
2. **A plot diagram is required** where CONDITION CLASS STATUS 2 is comprised of multiple nonforest regional land uses on the subplots and the crew can occupy the plot. A "quick-rough" map and labeling of these multiple nonforest land uses on the plot diagram is required. Recording the multiple nonforest land uses as separate nonforest condition classes and associated boundaries is not required. Note: The land use at plot center is recorded for the entire plot.



3. **A plot diagram is required** for plots that have a combination of CONDITION CLASS STATUS 2 through 5. Changes of condition class statuses, boundaries and other ground features are drawn and labeled on the plot diagram. All condition classes and associated boundaries are recorded.



4. **A plot diagram is required** for all plots with CONDITION CLASS STATUS 1. Changes of condition class statuses, boundaries and other ground features are drawn and labeled on the plot diagram. All condition classes and associated boundaries are recorded where multiple CONDITION CLASS STATUSES occur on the subplot. Note: At subplot 3 only one nonforest land use is recorded. The second nonforest land use is drawn only.



Note: In the situations where a plot diagram is required, the information from the diagram is helpful for remeasurement (i.e., relocating a plot) and to clarify "office" questions about the data. As with PLOT NOTES **the value of a good plot diagram cannot be overemphasized.**

REGULAR TALLY PROCEDURES

All subplots on SAMPLE KIND 1 and 8 plots, and subplots 2, 3, and 4 of SAMPLE KINDs 6 and 7 plots are all being established for the first time during this inventory. All trees 5 inches DBH and greater within the 24.0 ft subplot radius will be tallied as part of the regular tally procedure.

Microplots on SAMPLE KIND 1, 5 and 8 are being established for the first time during this inventory. All trees 1 inches DBH and greater within the 6.8 ft microplot radius will be tallied as part of the regular tally procedure.

RECONCILING THE PREVIOUS TALLY

During this inventory on SAMPLE KIND 6 and 7, the trees that fall on subplot 1 are the only trees that will be reconciled to the previous inventory. On SAMPLE KIND 2 and 5, the trees that fall on all 4 subplots will be reconciled to the previous inventory. Only trees 5 inches DBH and greater within the 24.0 ft subplot radius will be tallied, or reconciled, as part of the regular tally procedure. All trees that are further than 24.0 ft away from subplot center will be ignored or reconciled, even if they were tally trees at the last occasion. On SAMPLE KIND 2, the trees that fall on all 4 microplots will be reconciled to the previous annual inventory.

On remeasure plots that were previously classified as nonforest, if PC at subplot 1 is still nonforest, record any forest boundaries within the 24.0 ft subplot radius. Only trees 5 inches DBH and greater on forested subplots will be tallied. As well as trees 1 inch DBH or greater on forested microplots will be tallied. Give all trees a tree history of 22.

The following examples are common, simple situations. A correct reconciliation may be time demanding and complex. However, this is a critical part of the inventory. Training will be provided. Crews are to direct any questions to supervisors as soon as possible**.**

Examples:

1. The first tree to be tallied at subplot 1 is now an ingrowth, dead ingrowth, or previously missed tree. Assign the first available tree number and record the appropriate current data. If there were 35 trees on this subplot the last time, assign this tree number 036.

   The next tree tallied was tree number 001 at the last inventory. Since trees are no longer being renumbered each inventory, previous tally tree number 001 is current tree number 001.

2. The first tree on the old plot record was a 24-inch DBH sugar maple, followed by an 8-inch DBH beech. The beech is present and is the first live tree starting from an azimuth of 001. There is no evidence of the sugar maple. Check the area to the plot radius limit to see if there is a stump of the maple. Perhaps there is -- perhaps not. The maple was, and still is, tree number 001. The beech tree is tree number 002.

PREVIOUS TREE HISTORY CODES
On remeasured plot, reconcile trees have history codes that indicate they were survivors or ingrowth. In addition, trees that were assigned a tree history code of 24, 25, 31, 40, or 43 must now be assigned a new tree history code of 53 or 54, depending on whether or not they are still present. The codes that indicate these trees are highlighted below.

Note: The following are old history codes. They are provided here to serve as an aid and reference in the reconciliation process. There maybe significant differences between these codes and the current tree history codes. These codes should never be used during the current inventory!

Also note that the tree history codes used during the previous inventory differ slightly from history codes that we currently use. If the plot has a computer generated reconciliation form, use it to reconcile the tally on the plot. The codes shown on the computer generated reconciliation form have been adjusted to align with the old tree history codes with our current codes. If a reconciliation form is not available, use the plot record or printout from the last occasion to reconcile the tally. In those situations when it becomes necessary to refer to the old plot records, remember that there may be some minor differences in the history codes.

Survivors -- Live, previously measured or missed trees that are currently within the boundaries of a subplot.

Code	Definition
10	same live tree -- was in before, is in now

11 multiple stemmed tree -- the product of two previously measured trees that have grown together and are now treated as one tree (used in conjunction with codes 13 and 14)

12 tree was missed at last survey -- should have been tallied but wasn't, is now tallied

13 multiple stemmed tree -- the first of two previously measured tree that grew together, treated as one now

14 multiple stemmed tree -- the second of two previously measured trees that grew together, treated as one now

19 trees that are alive, but were incorrectly tallied as dead at the last occasion

Ingrowth -- Trees that are correctly being tallied for the first time.

20 live trees, not previously measured

21 live or dead tree, was tallied before but should not have been, is a tally tree now

22 live or dead tree, was on nonforest land, now on timberland (implies land use change)

23 live or dead tree, was on unproductive, reserved or urban forest land, now on imberland

24 dead tree or snag, too small to tally before but has grown to tally size and died since the previous inventory, is a tally tree now

25 dead tree, should have been tallied, was missed, has since died, and is now tallied

27 live or dead tree, was tallied as a sapling on the last occasion, is greater than five inches DBH now

29 live or dead tree, on sample kind 2 plot, that is located between the 49.0’ (1/6 acre) and 52.7’ (acre) radii

Removals -- Previously tallied trees that:

(a) have been harvested, killed or presumed to have been harvested during a cultural operation (logging, land clearing, TSI work, etc.)

or

(b) are no longer on timberland.

30 the location where the tree is, or was, is still forested; the tree has been killed, it can be standing or down

31* the location where the tree was is still forested, the tree has been removed (usually, a stump will be present)

32 the location where the tree is, or was, is now nonforest, the tree is alive, killed, or removed (if no longer alive, it is assumed that the cause of death is not natural mortality). If the tree is no longer present, use the old DBH, distance and azimuth.

33 the location where the tree is, or was, is now unproductive, reserved, or urban forest land. The tree is alive, or has been killed, but is still present (if no longer alive, it is assumed that the cause of death is not natural mortality).

34* the location where the tree is, or was, is now unproductive, reserved, or urban forest land -- the tree has been removed and is no longer present

Mortality -- Previously tallied trees that have died since the last inventory.

40 dead tree -- standing or down -- tree is still present; when DBH measurement is not possible, or current DBH is smaller than the previous DBH, use previous DBH for current

41* dead, down, disintegrated, no evidence remaining; previously measured trees that have died and are in advanced stages of decay, or any previously measured tree that cannot be accounted for

42 dead tree, standing or down, now located on nonforest land

43 dead tree, standing or down, now located on unproductive, reserved, or urban forest land

44* dead, down, disintegrated, no evidence remaining; the land where it was is unproductive, reserved, or urban forest

Other Trees

50* tree that was tallied before, but should not have been (was out), is still out this time, not tallied now

51* dead tree or snag at the previous occasion, is a snag now; tree was not a tally tree at the last occasion because dead trees and snags were not tallied then, tree definitely was not “missed” at the last occasion (check code 25).

53* trees with a previous tree history of 22, 31, 40, that are still present (standing or down)

54* trees with a previous tree history of 22, 31, 40, that are no longer present (no evidence of the tree remains)

55* trees that were tallied as being within the 49.0 ft. plot radius last time, and are now accurately measured as being beyond 49.0 ft. this time.

58* trees that were poletimber at the last occasion, were greater than 24.0 ft away from plot center, and are still poletimber beyond 24.0 ft.

59* trees that were sawtimber at the last occasion, were greater than 49.0 ft away from plot center, and are still beyond 49.0 ft.

70 trees that were properly tallied at the last occasion but were not included on the electronic history files due to a keypunching error.

* Trees with these previous history codes are not reconciled.

PREVIOUS TREES THAT ARE NOT ON THE HISTORY FILE

Occasionally the history files used in the portable data recorder (PDR) tally program are incorrect. These errors must be detected and corrected. To do so, all remeasured plots must be reconciled to the printed or handwritten plot records from the last occasion. The history files that are transferred to the data recorder cannot be relied upon to be complete. A check of the current tally against the previous tally must be completed for each plot.

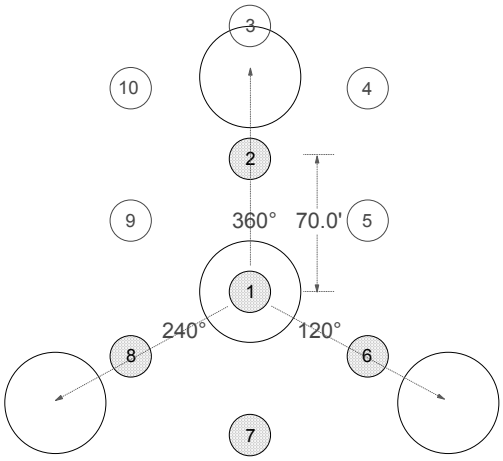
If you identify a tree that was tallied correctly at the last occasion but is not contained in the plot history file, enter the previous TREE NUMBER that is on the plot record and assign the appropriate TREE HISTORY. You will also need to enter the PREVIOUS DBH, PREVIOUS TREE CLASS / MERCHANTABILITY CLASS, and PREVIOUS LAND USE. This information is also on the previous plot record.

This procedure may vary depending on the PDR tally program. Contact Newtown Square for current procedures.

SPECIAL INSTRUCTIONS FOR THE OHIO INVENTORY – SAMPLE KIND 8

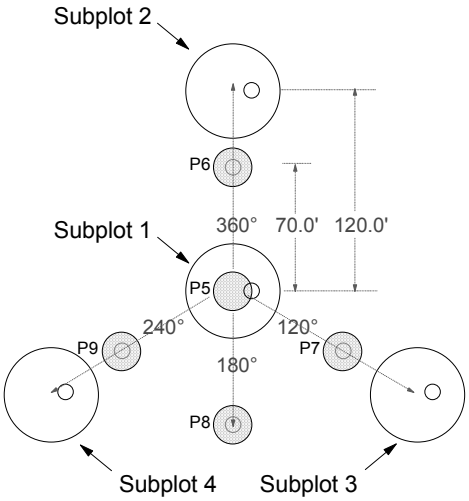
During the last periodic Ohio inventory the majority of the plots established were a 10-point design. 37.5 BAF prisms were used to sample the trees on each of the ten points. For the new inventory, the national 4-subplot design will overlay this 10-point design. **In order to establish a growth, removal and mortality estimates, a partial remeasurement on five of the ten points will be completed during the first 5-year cycle of the Annual Forest Inventory.** The previous "prism" points to be reconciled are 1, 2, 6, 7 and 8. (See Figure 1)

Figure 1: 10-point with 4-subplot overlay



On the plot record and data recorder "prism" points 1, 2, 6, 7 and 8 will be renumbered as 5, 6, 7, 8 and 9. The national 24 ft fixed radius subplots will continue to be numbered 1 through 4. (See Figure 2)

Figure 2: New numbers for prism points



The following tree variables will be collected on the "prism" points:

- TREE RECORD NUMBER
- SPECIES
- TREE HISTORY
- DBH
- TREE CONDITION CLASS
- TREE CLASS
- MERCHANTABILITY CLASS
- PREVIOUS DBH
- PREVIOUS TREE CLASS / MERCHANTABILITY CLASS
- NOTES

In addition, ingrowth (trees 5-in and greater at DBH) will be measured on a microplot (6.8 ft radius) located at point center (PC). Even though point 5 is concentric with subplot 1, it will be necessary to complete a separate tally for these ingrowth trees. The tree variables on the "ingrowth" microplots will be the same as the "prism" points. (See Appendix H, Ohio Tally Guide).

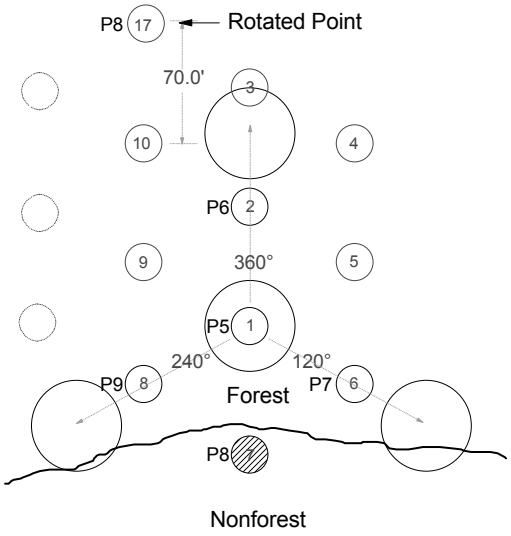
Note: Even though you are not recording tree grade, lengths and culls, these variables need consideration prior to assigning tree class and merchantability class.

Crews will be supplied with a printout of the previous tally trees to be reconciled from these points. Since these were prism tallies, it is important to realize that **"prism" trees may be located 70 ft or more from PC depending on the DBH and percent slope.** E.g., A tree with a 40-in DBH, no slope, has a limiting "horizontal" distance of 56.8 ft.; same tree, 60% slope, has a limiting "slope" distance of 66.2 ft. Since the tally was dependent on the limiting distance, large diameter trees could occur on multiple points. **To reconcile "prism" points, the horizontal distance is measured from PC to the center of the tree at DBH.**

On the last occasion crews tallied the points in order from one to ten. Each point was located 70 ft and 360°, 120°, 240°, or 300° from the last point. In addition all ten points were located in the same condition. The condition was defined at plot center of point 1. Points that fell in contrasting conditions were rotated from the highest non-rotated point.

For example, point 1 through 10 fell in forest land except for point 7 (P8). The first location to establish this rotated point would be 70 ft at 360° from point 10, then at 240°, and finally at 300°. (If point 10 did not yield a location, then the same procedure was followed at point 9 at 240°, etc. This procedure was continued until the point could be established in the same condition as point 1.) The point was then renumbered as point 17 (P8) to indicate the rotation, and the new point location was documented on the plot diagram. (See Figure 3)

Figure 3: "Old" point rotation procedure



On this occasion complete the “regular” tally at subplot 1, and then complete the “partial” tally of point 5. The previous trees from “prism” point 5 within the 24 ft radius of PC at subplot 1 will require a second tally to complete the reconciliation. It is important that all “like” tree variables match between subplot 1 and point 5. The remainder of the subplots and “prism” points should be completed as field conditions warrant. I.e., A crew may find it more efficient to complete subplot 2 before completing “prism” point 6 or vice versa.

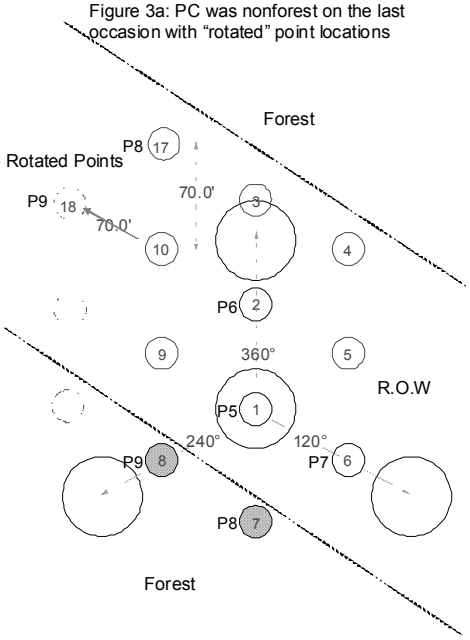
Plots where PC was nonforest on the last occasion and is still nonforest at PC, nothing needs to be done with the prism points. Install the current 4 subplot design.

Plots where PC was nonforest on the last occasion and is now forest at PC, then all 5 prism points requires a tally of the 6.8 ft microplot. Tree history 22 (live or dead tree, that was on nonforest land, and is now accessible forest land) is used for these trees. Installation of the current 4 subplot design is also completed.

Since on the last occasion PC determined the land use for the entire plot, any prism point that fell outside a nonforest land use would have been rotated to match the same land use at PC. For nonforest plots these rotated prism points were never established. To locate these rotated prism points today, use the old 10-point plot design and make a determination where these rotated points would have been placed based on any markings on the old plot record, old photography and current ground conditions. This will not be easy and could be time consuming depending on the situation. If it is impossible to determine where the rotated points are to be located due to indistinct boundaries, use the standard prism point locations and proceed with the tally.

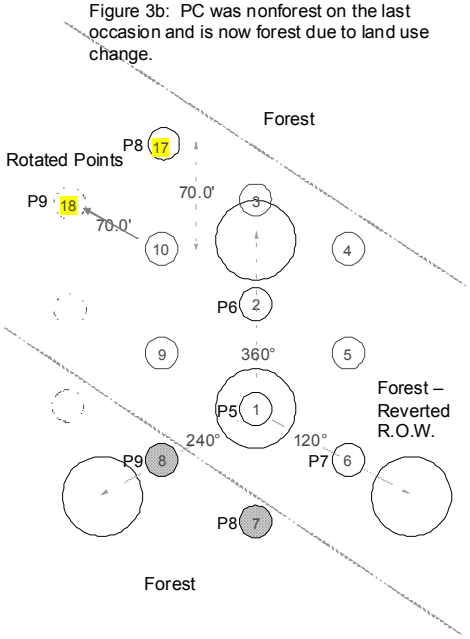
For example, on the last occasion PC fell in a R.O.W. The entire plot was called nonforest (land use 73). Even though the prism points were not established, 2 out of the 10 prism points fell in forest land and would have been rotated into the nonforest land use. These points would have been 17 and 18 rotated from point 10. (See Figure 3a)

Figure 3a: PC was nonforest on the last occasion with "rotated" point locations



Today, the R.O.W is no longer maintained and has reverted back to forest. Therefore, prism points renumbered as P5, P6, P7, P8 and P9 must be visited. P5, P6 and P7 are still at the standard location of the 10-point plot design, but P8 and P9 are not. These 2 points are at the rotated position as illustrated in Figure 3a and 3b.

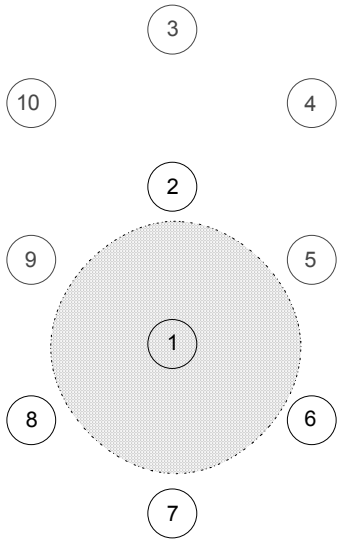
Figure 3b: PC was nonforest on the last occasion and is now forest due to land use change.



SPECIAL INSTRUCTION FOR THE NEW YORK INVENTORY

During the last periodic New York inventory the majority of the plots established were a 10-point design. After the 10-point reconciliation was completed, a 1/5-acre overlay was completed at point 1. (See Figure 4).

Figure 4: 10-point with 1/5 acre overlay



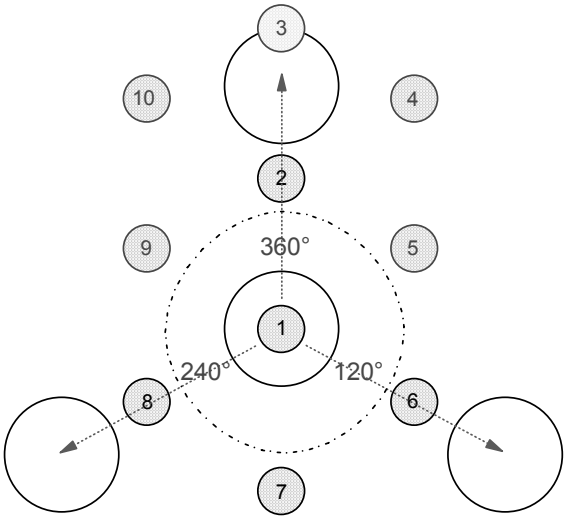
Note: Each of the 10 points are located at 70 ft from another point at either 360°, 120°, 240° or 300°. 1/5 acre plot radius is 52.7 ft.

On the last occasion only minimal tree data was collected on the overlay. These variables were the following:

- TREE RECORD NUMBER
- SPECIES
- HORIZONTAL DISTANCE
- AZIMUTH
- DBH
- TREE CONDITION CLASS
- TREE CLASS
- MERCHANTIBILITY CLASS
- NOTES

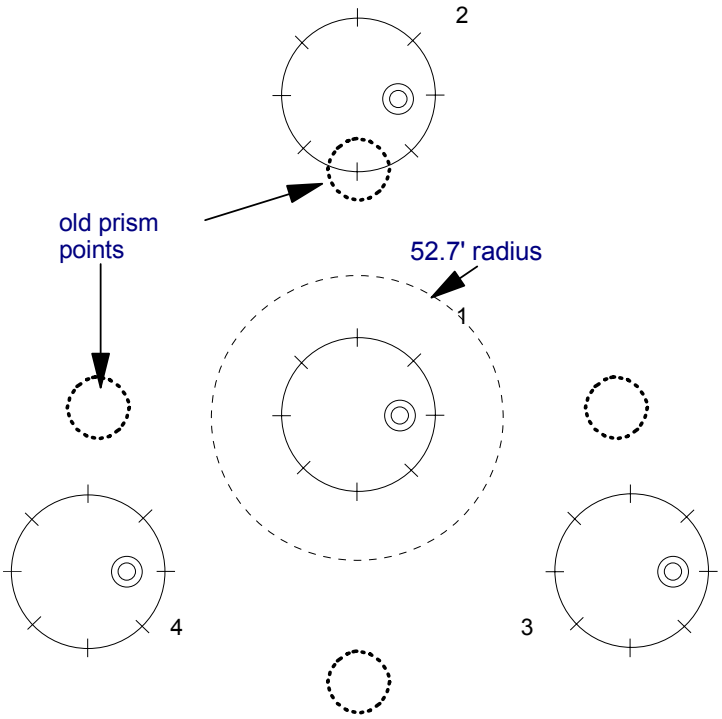
On this occasion only the trees from the 1/5-acre overlay are reconciled at subplot 1. Crews will be supplied with a history data of the previous tally trees to be reconciled from the 1/5-acre overlay within subplot 1. All plot variables are collected. Additional tally from the old 10-point design will be ignored. However, this information will be attached to the plot record and may aid you in relocating the plot. (See Figure 5)

Figure 5: 10-point with1/5 acre and new 4-subplot overlay



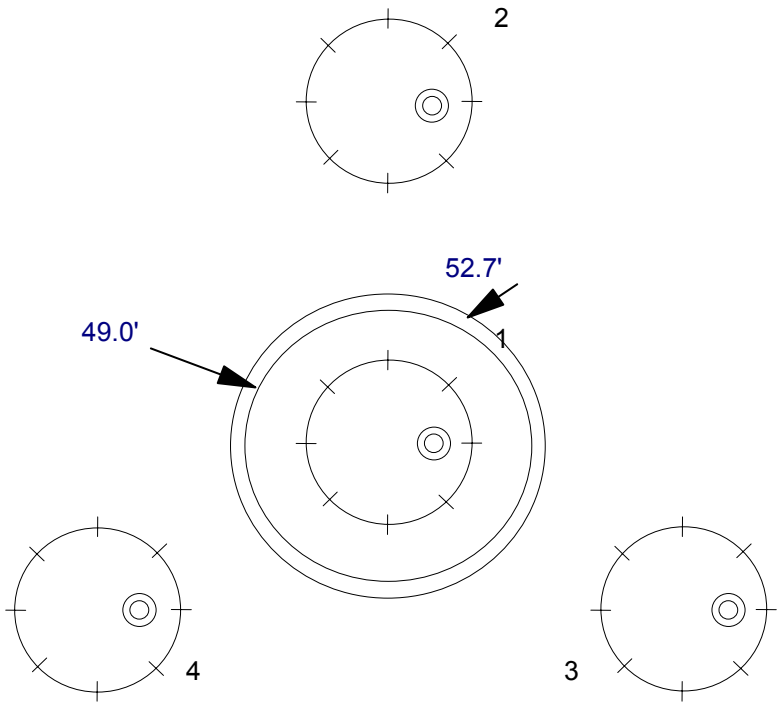
OTHER PREVIOUS PLOT DESIGNS – Additional figures 6 through 8 are to aid in relocating remeasure plots.

Figure 6: Old OH & PA 1/5 acre
with new 4-subplot overlay



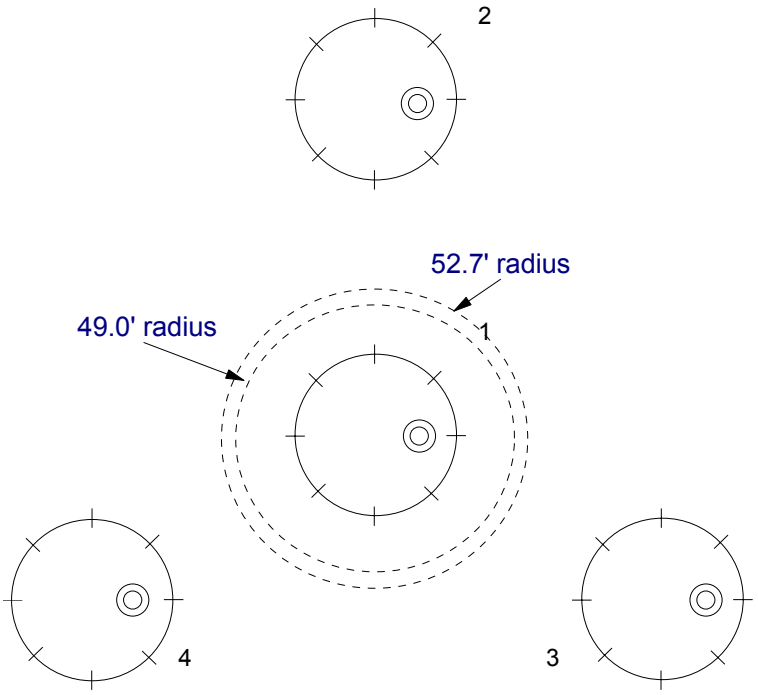
Note: Plots established in OH & PA on the previous occasion, consisted of a 1/5th acre with variable radius points located 98.4 ft at 360°, 90°, 180° and 270° from point 1.

Figure 7: Old New England Plot Design



Note: Plots established in New England on the previous consisted of the current 4-subplot design overlaid on either 1/5th acre or 1/6th acre

Figure 8: Old ME or NY 1/5th or 1/6th acre plot with new 4-subplot overlay

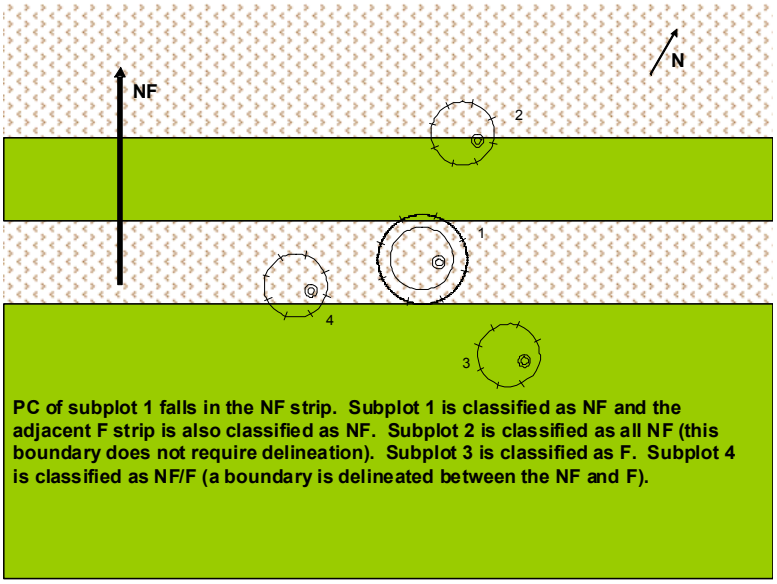


Note: Plots established in ME & NY on the previous occasion, consisted of either a 1/5th or 1/6th acre plot.

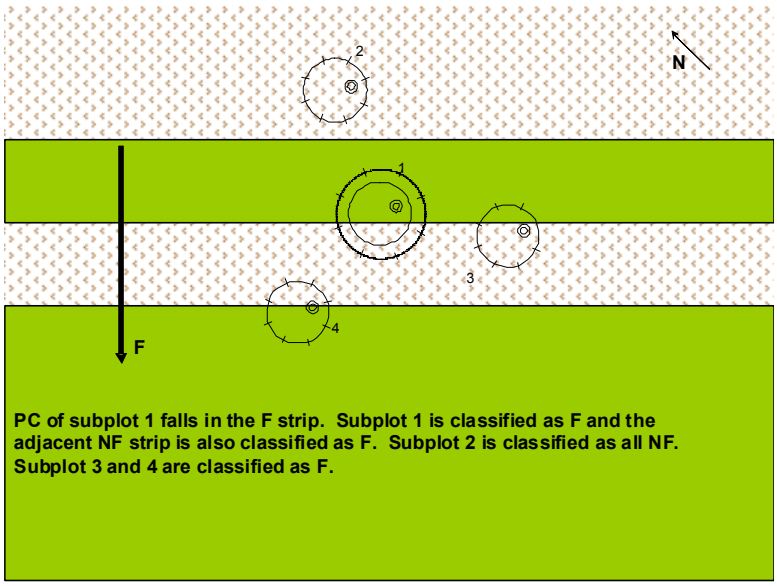
On the following pages are 4 examples on how to apply" Exception Rule 7b" from Section 2.4. Note: Not all plot scenarios are shown.

From Figure 2

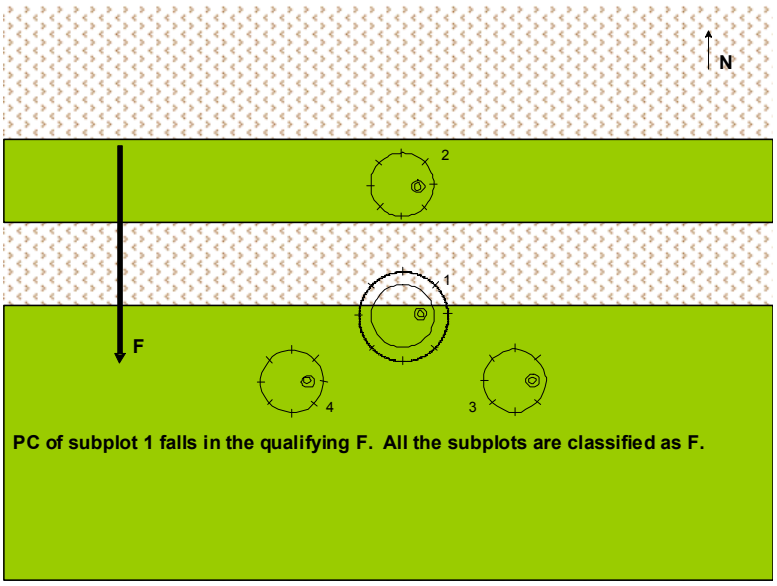
Example 1



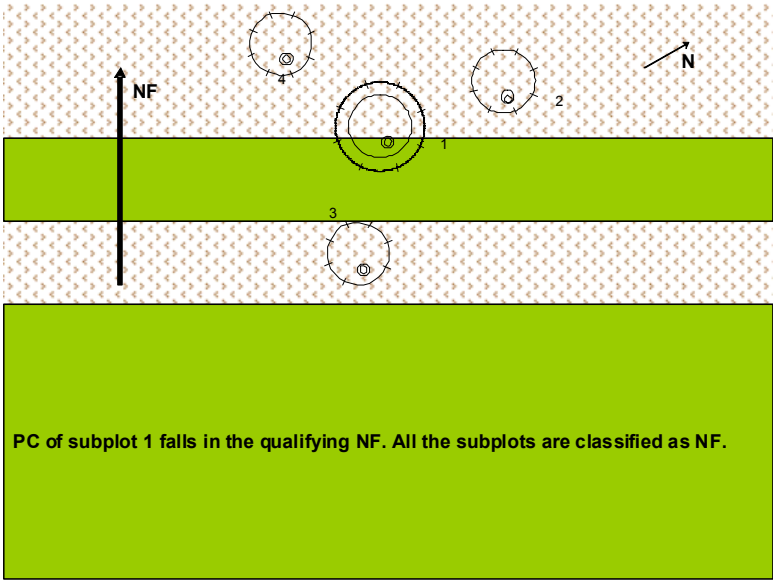
Example 2



Example 3



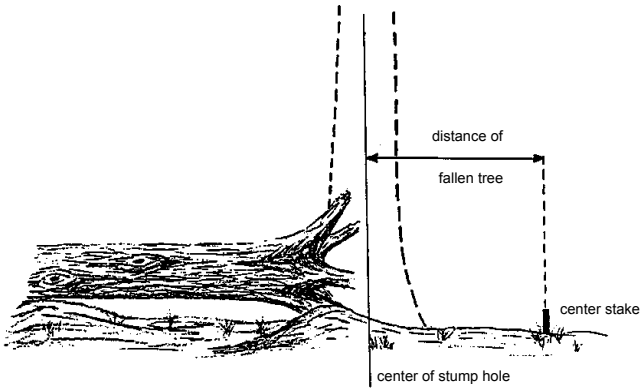
Example 4


NF
N
1
2
3
4
PC of subplot 1 falls in the qualifying NF. All the subplots are classified as NF.

The following paragraphs are additional instructions on horizontal distance measurement for trees that lean, windthrown or on steep terrain.

A leaning tree is determined to be "in" or "out" of a plot radius by measuring the horizontal distance from plot center, to the center of the tree at the base. The direction that the tree leans is of no consequence.

For a down and windthrown tree measure the horizontal distance to the spot where the center of the tree would have been if the tree was still standing; i.e., measure the distance to the center of the stump, or ground cavity See illustration below.



A tree on steep terrain, occasionally, cannot be accurately measured by taking a direct horizontal distance. When this happens, the slope distance (measured parallel to the ground) and the percent slope (measured with a clinometer and this too is parallel to the ground) from subplot center to the tree will be needed to calculate the horizontal distance. See Figure 9. The formula for calculating the horizontal distance is as follows:

$$\frac{\text{measure slope distance to tree}}{\text{100 ft slope distance}} = \frac{\text{horizontal distance to tree}}{\text{100 ft horizontal distance}}$$

For example, a tree has a slope distance of 23.9 ft and the slope is 48 %. Using the Slope Correction table in Appendix RA-E you find that the correction for 100 ft with 48 % slope is 10.9 ft.

All that's left is to solve the equation:

$$\frac{\text{23.9 ft}}{\text{110.9 ft}} = \frac{\text{horizontal distance to tree}}{\text{100 ft}}$$

Solve for the horizontal distance, HD = 21.6 ft.

Note: If TALLY is available, the POPUP MENU contains a horizontal distance utility. For this utility enter the measured slope distance and the percent slope and the utility calculates a horizontal distance.

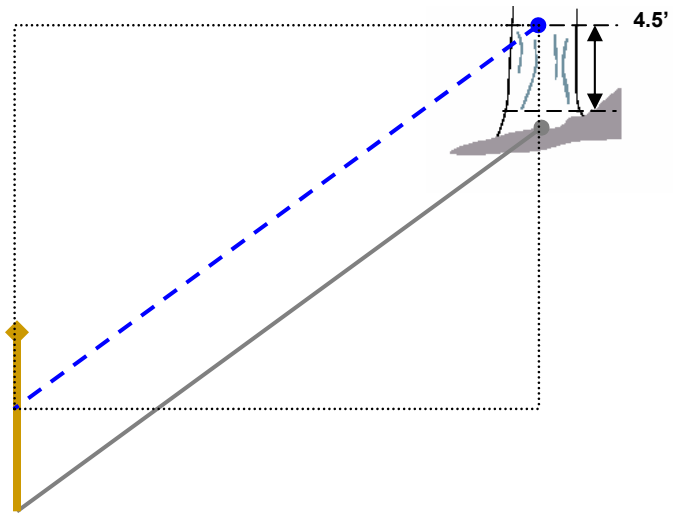


Figure 9: A slope distance (dashed line) is measured parallel to the ground from the subplot center to the center of the tree and percent slope is measured along this dashed line (slope distance).

There is an alternative method to measure the slope distance and percent slope as shown in Figure 10. Either measurement method will yield a horizontal distance when applied to the formula on the previous page or entered into the horizontal distance utility in TALLY.

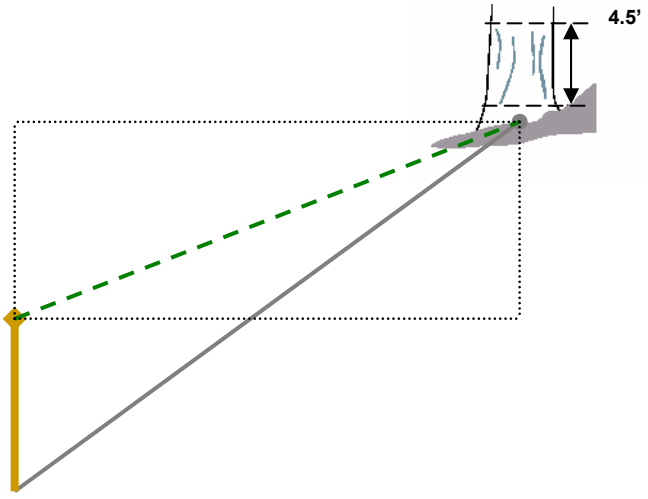


Figure 10: A slope distance (dashed line) is measured from the subplot center to the center of the tree and percent slope is measured along the dashed line (slope distance.)

Horizontal Distance -- then and now

What should be recorded for the horizontal distance on a remeasured subplot or microplot? Horizontal Distance has 2 functions: 1) Determine whether trees are in or out, and 2) relocate a tree/sapling for remeasurement.

Subplot
If a previous tree is located on the "inner" ring of the subplot (i.e., 00.1 to 23.0 ft), then only change the previous recorded distance if it is does not meet the current 1.0 ft tolerance. Example, if the previous distance was recorded as 15.2 and the current distance is now 16.0, the previous value is satisfactory. There is no need to change this value unless the previous distance causes current on the ground confusion like trees located in a clump. In these situations it may make sense to change these distances even if the previous distances are within tolerance.

If a previous tree is located on the "outer" ring of the subplot (i.e., 23.1 to 24.0 ft), then only change the previous distance if it is greater than the current 0.2 ft tolerance. Trees that were previously recorded as 23.9 ft or 24.0 ft should be examined closely. If these trees are now recorded as 24.1 or 24.2, then these trees should be considered out. (Note: Crews should be careful when re-establishing subplots where the dowel or pin is gone so that the cause for a tree to be out was not due to subplot re-establishment.) Crews working on extreme slopes should examine all trees on the outer ring to verify that they are indeed in or now out. On a similar note, trees that were determined to be out (i.e. "x" trees) on the last occasion should be reexamined on this occasion to verify that they are indeed out.

Microplot
If a previous sapling's recorded distance is within the 0.2 ft tolerance, then no change to distance is required. Saplings that were previously recorded as 6.7 ft or 6.8 ft should be examined closely. If these saplings are now recorded as 6.9 or 7.0, then these saplings should be considered out. (Note: Crews should be careful when re-establishing subplot and microplots where the dowel or pin is gone so that the cause for a sapling to be out was not due to subplot or microplot re-establishment.) Saplings that were determined to be out on the last occasion should be reexamined on this occasion to verify that they are indeed out. Note: Saplings should not be given an “x” when determined to be outside the 6.8 ft radius since these saplings may eventually become tallied trees.

What about azimuth? The same logic applies. Change only those azimuths that exceed the current 5 degree tolerance unless the previous azimuth causes current on the ground confusion like trees located in a clump. It may make sense to change these azimuths even if the previous azimuths are within tolerance

Finally, the QA staff are not to deduct points on a QC report unless the value exceeds the tolerance as described in the field guide. Note to crews: If the QA staff determines a tree to be in or out, then points will be deducted from QC report. This usually results in an unsatisfactory report. However, if the QA staff determines it is unreasonable to fail a plot based on a single missed or overlooked tree due to plot conditions, then they can overturn an unsatisfactory report.

Appendix E. Tables and Charts

HARDWOOD TREE GRADES			
GRADING FACTORS	**GRADE 1**	**GRADE 2**	**GRADE 3**
Length of grading zone (ft)	Butt 16	Butt 16	Butt 16
Length of grading section[a] (ft)	Best 12	Best 12	Best 12
Minimum DBH (in)	16[b]	13	11
Minimum DIB at the top of the grading section (in)	13[b] 16 20	11[c] 12	8
Clear cuttings on 3rd best face[d] minimum length (ft) number on face (max) yield in face length (min)*	 7 5 3 2 5/6	 3 3 2 3 4/6	 2 unlimited 3/6
Cull deduction, including crook and sweep but excluding shake, maximum w/in grading section (%)	9	9[e]	50

[a] Whenever a 14- or 16-ft section of the butt log is better than the best 12-ft section, the grade of the longer section will become the grade of the tree. This longer section, when used, is the basis for determing the grading factors, such as diameter and cull deduction.

[b] In basswood and ash, DIB at the top of the grading section may be 12-in and DBH may be 15-in.

[c] Grade 2 trees can be 10-in DIB at the top of the grading section if otherwise meeting suface requirements for small grade 1's.

[d] A clear cutting is a portion of a face free of defects, extending the width of the face. A face is one-fourth of the surface of the grading section as divided lengthwise.

[e] 15% crook and sweep, or 40% total cull deduction are permitted in grade 2 if size and surface of grading section qualify as grade 1. If rot shortens the required clear cuttings to the extent of dropping the butt log to grade 2, do not drop the tree's grade to 3 unless the cull deduction for rot is greater than 40%.

*Minimum Yield in Face Length			
Face Length	Grade 1 Min. Yield	Grade 2 Min. Yield	Grade 3 Min. Yield
12-ft	10-ft	8-ft	6-ft
14-ft	11.7-ft	9.3-ft	7-ft
16-ft	13.3-ft	10.7-ft	8-ft

LOG SURFACE ABNORMALITIES THAT ARE DEFECTS IN HARDWOOD LOGS

Adventitious bud cluster	Hole extending into the bole
Bulge, butt or stem	Embedded metal
Bump	Limb
Burl	Knot
Butt scar	Knot overgrowth
Canker	Overgrowth following insect damage or bird peck[1]
Conk	Seam, crack, split[2]
Flute	Wound extending into the bole

[1] There must be four bird pecks within a square foot to affect the tree grade. First, determine the tree grade without the bird pecks. If the tree grade is determined to be 1 or 2, then down grade the tree by one grade. If the tree graded out to be a 3 or 4 without the bird pecks, then ignore them as defects and record the initial tree grade.

[2] A straight seam, crack, or split can be placed on the edge of one face and ignored. This fixes the location of all other faces and defects.

TIE AND TIMBER GRADE 4	
GRADING FACTORS	**SPECIFICATIONS**
Position in tree	Butts and uppers
Scaling diameter (in)	8-in DIB and larger
Length, w/o trim (ft)	12-ft and longer
Clear cuttings	No requirements (not graded on cutting basis)
Maximum sweep allowance	One-fourth DIB of small end for half logs, and one-half DIB for logs 16-ft long
Sound surface defects - Single knots	Any number, if none has an average collar[a] diameter that is more than one-third of the log diameter at the point of occurrence.
Whorled knots	Any number, provided the sum of the collar diameters does not exceed one-third the log diameter at the point of occurrence.
Knots	Any number not exceeding knot specifications, if they do not extend more than 3-in into the contained tie or timber.
Unsound surface defects[b]	Any number and size, if they do not extend into contained tie or timber. If they extend into contained tie or timber, they shall not exceed size, number, and depth of limits for sound defects.

[a] Knot collar is the average of the vertical and horizontal diameters of the limb, or knot swelling, as measured flush with the surface of the log.

[b] Interior defects are not visible in standing trees. They are considered in grading cut logs. No interior defects are permitted except one shake not more than one-third the width of the contained tie or timber, and one split not more than 5-in long.

EASTERN WHITE PINE TREE GRADES				
GRADING FACTORS	**GRADE 1**	**GRADE 2**	**GRADE 3**	**GRADE 4**
Minimum DBH (in)	9	9	9	9
Maximum weevil injury in butt 16-ft section (number)	None	None	2 Injuries	No limit
Minimum face requirements on butt 16-ft section	Two full length or four 50% length good faces[1]. (In addition, knots on balance of faces shall not exceed size limitations for Grade 2 sections.)	NO GOOD FACES REQUIRED. Maximum diameter of knots on 3 best faces: **SOUND RED KNOTS** not to exceed 1/6 of scaling diameter or 3-in maximum[2]. **DEAD OR BLACK KNOTS**, including overgrown knots, not to exceed 1/12 scaling diameter and 1-1/2-in maximum	NO GOOD FACES REQUIRED. Maximum diameter of knots on 3 best faces: **SOUND RED KNOTS** not to exceed 1/3 of scaling diameter of 5-in maximum[2]. **DEAD OR BLACK KNOTS**, including overgrown knots, not to exceed 1/6 scaling diameter and 2-1/2-in maximum	Includes all trees not qualifying for Grade 3 or better and judged to have at least 1/3 of their gross volume in sound wood suitable for manufacture into standard lumber.
Maximum sweep or crook in butt 16-ft section (%)	20	30	40	No limit
Maximum total scaling deduction in 16-ft section (%)	50	50	50	No limit

After the tentative grade of the section is established from face examination, the section will be ***reduced one grade*** whenever the following defects are evident[3]:

CONKS, PUNK KNOTS AND PINE BORER DAMAGE ON THE SURFACE OF THE SECTION

Degrade one grade if present on one face.
Degrade two grades if present on two faces.
Degrade three grades if present on three to four faces.

If the final grade of the grading section is 1, 2 or 3, examine the tree for weevil injuries in the merchantable stem ***above*** 16-ft. If the total apparent weevil damage exceeds 3, degrade the tree grade one below the section grade[3]. Otherwise the tree grade is the same as the final section grade.

[1] Trees under 16-in DBH require four full length good faces.
[2] Scaling diameter is estimated at the top of the 16-ft grading section.
[3] No tree will be designated below Grade 4 unless net tree scale is less than one-third of gross tree scale.

WHITE PINE COLLAR DIAMETER LIMITS FOR RED AND BLACK KNOTS				
SCALING DIAMETER (D.I.B. inches)	**GRADE 1 AND 2**		**GRADE 3**	
	BLACK KNOTS 1/12th	**RED KNOTS 1/6th**	**BLACK KNOTS 1/6th**	**RED KNOTS 1/3rd**
7	7/12"	1 - 1/6"	1 - 1/6"	2 - 1/3"
8	2/3"	1 - 1/3"	1 - 1/3"	2 - 2/3"
9	3/4"	1 - 1/2"	1 - 1/2"	3"
10	5/6"	1 - 2/3"	1 - 2/3"	3 - 1/3"
11	11/12"	1 - 5/6"	1 - 5/6"	3 - 2/3"
12	1"	2"	2"	4"
13	1 - 1/12"	2 - 1/6"	2 - 1/6"	4 - 1/3"
14	1 - 1/6"	2 - 1/3"	2 - 1/3"	4 - 2/3"
15	1 - 1/4"	2 - 1/2"	**2 - 1/2" MAX**	**5" MAX**
16	1 - 1/3"	2 - 2/3"		
17	1 - 5/12"	2 - 5/6"		
18	**1 - 1/2" MAX**	**3 MAX"**		

Red knots – Visibile branches, stubs or sockets that are from living branches or branches that have recently died. They are intergrown with the surrounding wood and contain no rot.

Black knots – Visible branches, stubs or sockets that do not conform to the definition of red knots.

Overgrown knots – Identified by a distinctive circular/ellipitical pattern in the bark and are treated the same as dead knots.

Average diameter of red and black knots – Measured at the point where the limb would normally be trimmed from the main stem. For red knots measure only the heartwood portion of the knot. For black knots measure the whole limb.

The following tree grading table is based on log grades. Tree grades have never been developed for these softwood species.

SPRUCE, FIR, CEDAR, TAMARACK AND HEMLOCK				
Minimum Merchantability Specifications for Grade 1				
DIB (small end of log)	**Length (2-ft multiples w/o trim)**	**Total Deduction**	**Sweep Permitted**	**Other Requirements***
6" - 12"	12' - 16'	50%	25%	Sound knots not over 2" in diameter permitted. Shake permitted up to 20% of gross scale if not combined with other serious defect.
13" +	12' - 16'	50%	25%	Sound knots not over 3" in diameter permitted. Shake permitted up to 20% of gross scale if not combined with other serious defect.

* One branch or sound knot that exceeds the diameter limitations is permitted to meet Grade 1 specifications. This is a Northeast allowance.

Note: Shake is not visible on standing trees and cannot be used as a grading criteria.

SOUTHERN PINE TREE GRADES (All pines except White Pine.)			
FACE LENGTH	**GRADE 1**	**GRADE 2**	**GRADE 3**
16-ft grading section	3 or 4 clear faces	1 or 2 clear faces	No clear faces

After the tentative grade is established, the tree will be ***reduced one grade*** for each of the following:

Sweep - Degrade any tentative Grade 1 or 2 tree one grade if sweep in the lower 12-ft of the grading section amounts to 3 or more inches and equals or exceeds one-fourth the DBH.

Heart rot - Degrade any tentative Grade 1 or 2 tree one grade if conks, punk knots, or other evidence of advanced heart rot is found anywhere on the tree stem.

Note - No tree can be degraded below Grade 3, provided the total scaling deductions for sweep and/or rot do not exceed two-thirds the gross scale of the tree. Trees with total scaling deductions in excess of two-thirds are classified as cull (Grade 5).

A face is one-fourth the circumference of the 16-ft grading section and extends the full length of the grading section. Clear faces are those free from knots measuring more than 1/2-in in diameter, overgrown knots of any size, and holes more than 1/4-in in diameter. Faces may be rotated, if necessary, to obtain the maximum number of clear faces on the grading section.

PERCENT OF CUBIC-FOOT CULL VOLUME FOR *ALL TREES* BY 4-FT SECTIONS & LOCATION IN THE TREE									
LENGTH (FT)	**1ST**	**2ND**	**3RD**	**4TH**	**5TH**	**6TH**	**7TH**	**8TH**	**9TH**
8	57	43							
12	42	32	26						
16	30	26	23	21					
20	26	23	21	19	11				
24	24	21	18	17	10	10			
28	21	19	17	16	10	9	8		
32	20	18	16	14	10	8	7	7	
36	19	16	14	13	9	8	8	7	6
40	17	15	13	12	9	8	7	7	6
44	16	14	12	11	9	7	7	7	6
48	15	13	12	10	8	7	7	6	6
52	14	12	11	9	8	7	6	6	6
56	13	11	10	9	8	6	6	6	6
60	12	11	10	9	7	6	6	6	6
64	11	10	9	9	7	6	6	6	5
68	10	10	9	8	6	6	6	5	5
72	10	9	8	8	6	6	6	5	5
	10TH	**11TH**	**12TH**	**13TH**	**14TH**	**15TH**	**16TH**	**17TH**	**18TH**
40	6								
44	6	5							
48	6	5	5						
52	6	5	5	5					
56	6	5	5	5	4				
60	5	5	5	5	4	4			
64	5	5	5	5	4	4	4		
68	5	5	5	4	4	4	4	4	
72	5	4	4	4	4	4	4	4	4

PERCENT OF BOARD-FOOT CULL OF *HARDWOOD SAWTIMBER* BY 4-FT SECTIONS & LOCATION IN THE TREE								
LOG (FT)	**1ST**	**2ND**	**3RD**	**4TH**	**5TH**	**6TH**	**7TH**	**8TH**
1 (16)	29	26	24	21				
1-1/2 (24)	19	18	16	16	16	15		
2 (32)	15	14	13	13	12	12	11	10
2-1/2 (40)	12	12	11	11	10	10	9	9
3 (48)	12	10	10	9	9	9	8	7
3-1/2 (56)	10	10	9	9	9	8	8	7
4 (64)	9	9	9	8	8	7	7	7
	9TH	**10TH**	**11TH**	**12TH**	**13TH**	**14TH**	**15TH**	**16TH**
2-1/2 (40)	8	8						
3 (48)	7	7	6	5				
3-1/2 (56)	7	6	5	5	4	3		
4 (64)	6	6	5	5	4	4	3	3

PERCENT OF BOARD-FOOT CULL OF *SOFTWOOD SAWTIMBER* BY 4-FT SECTIONS & LOCATION IN THE TREE								
LOG (FT)	**1ST**	**2ND**	**3RD**	**4TH**	**5TH**	**6TH**	**7TH**	**8TH**
1 (16)	33	27	21	19				
1-1/2 (24)	26	20	16	15	12	11		
2 (32)	21	17	14	12	10	9	9	8
2-1/2 (40)	19	15	12	10	9	8	7	7
3 (48)	16	13	11	10	8	7	7	6
3-1/2 (56)	13	12	10	9	7	7	6	6
4 (64)	10	9	9	8	7	7	6	6
	9TH	**10TH**	**11TH**	**12TH**	**13TH**	**14TH**	**15TH**	**16TH**
2-1/2 (40)	7	6						
3 (48)	6	6	5	5				
3-1/2 (56)	6	5	5	5	5	4		
4 (64)	6	5	5	5	5	4	4	4

METHODS OF DETERMINING SCALING DEDUCTION

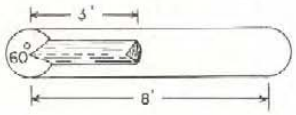
(Examples based on an 8-foot log with 20-inch scaling diameter)

If section of bole is affected, deduct percent of log length affected.

Example: $\frac{2}{8}$ = 25 percent cull

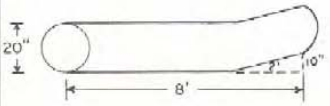
If sector is affected, multiply percent of circle times percent of length.

Example: $\frac{60^\circ}{360^\circ} \times \frac{3}{8}$ = 6% cull



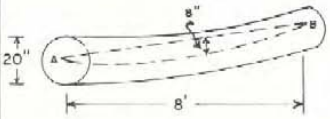
For a crook, multiply proportion of diameter displaced times proportion of log length affected by crook.*

Example: $\frac{10}{20} \times \frac{2}{8}$ = 12% b.f. cull



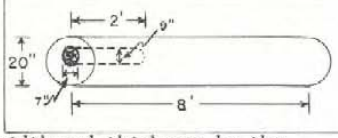
For a sweep, determine sweep departure and subtract 1" for 8' logs or 2" for 16' logs. Divide by log diameter.

Example: $\frac{8-1}{20}$ = 35% b.f. cull**



For interior cull, square out interior cull as a percent of total volume of the section. For bd. ft. cull, add 1" to width and to thickness; for cu. ft. cull, use actual dimensions of rot. For bd. ft. cull divide width and thickness by the scaling diameter (ave. d.i.b., small end) minus 1; for cu. ft. cull, divide by scaling diameter. Multiply fractions by percent of log affected.

Example: $\frac{8 \times 10}{(20-1)^2} \times \frac{2}{8}$ = 6% cubic-foot cull



* No reduction of cubic-foot volume will be made.

** If a straight line between A and B falls outside the bark, the affected section is over 50% cull in board feet.

HOW TO DETERMINE THE LENGTH OF A SIDE WHEN THE INTERIOR ANGLE IS KNOWN (SOLVING FOR RIGHT TRIANGLES)

Many times it will be easier to measure along the edge of a potential contrasting condition than across. The following steps and table can be used to determine when the width across an interior corner angle becomes 120 ft wide.

1. Determine interior angle of corner.

2. Refer to table below to find limiting distance along edge of condition.

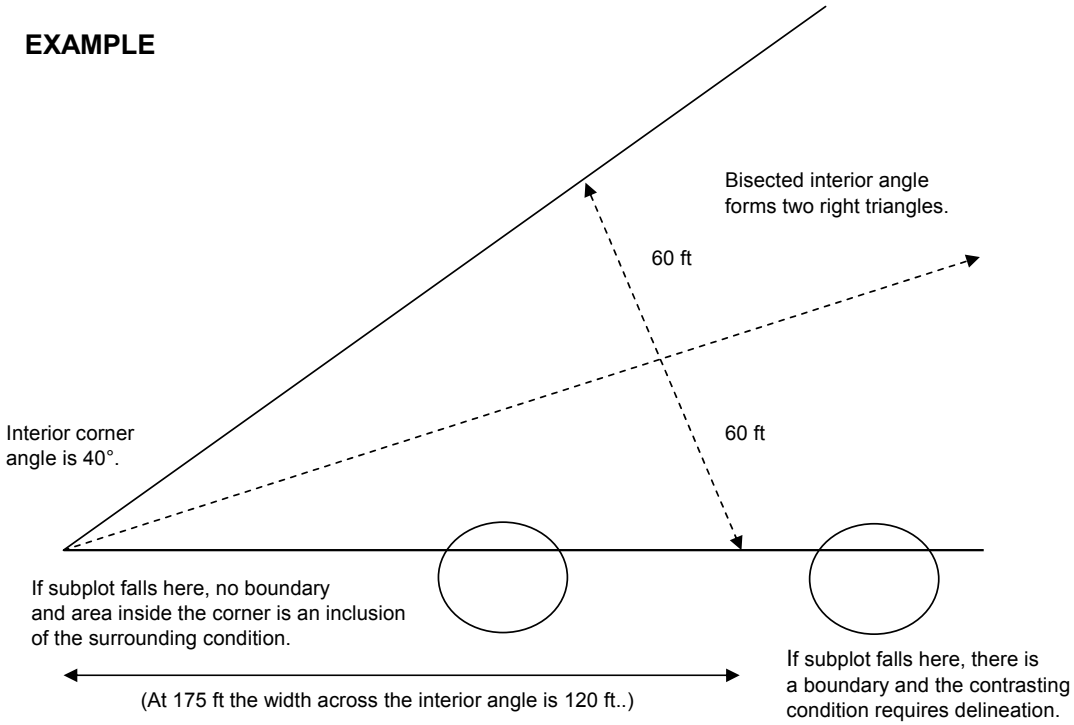
Interior Angle of Corner	Limiting Distance (FT)	Interior Angle of Corner	Limiting Distance (FT)
88	86.4	58	123.8
86	88.0	56	127.8
84	89.7	54	132.2
82	91.5	52	136.9
80	93.3	50	142.0
78	95.3	48	147.5
76	97.5	46	153.6
74	99.7	44	160.2
72	102.1	42	167.4
70	104.6	40	175.4
68	107.3	38	184.3
66	110.2	36	194.2
64	113.2	34	205.2
62	116.5	32	217.7
60	120.0	30	231.8

The following formula was used to create the preceding table.

Liminting Distance = 60 / SIN (Interior Angle x .5)

See example on next page.

EXAMPLE


Bisected interior angle
forms two right triangles.
60 ft
60 ft
Interior corner
angle is 40°.
If subplot falls here, no boundary
and area inside the corner is an inclusion
of the surrounding condition.
If subplot falls here, there is
a boundary and the contrasting
condition requires delineation.
(At 175 ft the width across the interior angle is 120 ft..)

SLOPE CORRECTION TABLE									
% SLOPE	Chaining Distances								
	120.0	100.0	98.4	60.0	52.7	49.0	37.2	34.6	24.0
1 - 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
6	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0
8	0.4	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1
10	0.6	0.5	0.5	0.3	0.3	0.2	0.2	0.2	0.1
12	0.9	0.7	0.7	0.4	0.4	0.4	0.3	0.2	0.2
14	1.2	1.0	1.0	0.6	0.5	0.5	0.4	0.3	0.2
16	1.5	1.3	1.2	0.8	0.7	0.6	0.5	0.4	0.3
18	1.9	1.6	1.6	1.0	0.8	0.8	0.6	0.6	0.4
20	2.4	2.0	1.9	1.2	1.0	1.0	0.7	0.7	0.5
22	2.9	2.4	2.4	1.4	1.3	1.2	0.9	0.8	0.6
24	3.4	2.8	2.8	1.7	1.5	1.4	1.1	1.0	0.7
26	4.0	3.3	3.3	2.0	1.7	1.6	1.2	1.1	0.8
28	4.6	3.8	3.8	2.3	2.0	1.9	1.4	1.3	0.9
30	5.3	4.4	4.3	2.6	2.3	2.2	1.6	1.5	1.1
32	6.0	5.0	4.9	3.0	2.6	2.5	1.9	1.7	1.2
34	6.7	5.6	5.5	3.4	3.0	2.8	2.1	1.9	1.3
36	7.5	6.3	6.2	3.8	3.3	3.1	2.3	2.2	1.5
38	8.4	7.0	6.9	4.2	3.7	3.4	2.6	2.4	1.7
40	9.2	7.7	7.6	4.6	4.1	3.8	2.9	2.7	1.8
42	10.2	8.5	8.3	5.1	4.5	4.1	3.1	2.9	2.0
44	11.1	9.3	9.1	5.6	4.9	4.5	3.4	3.2	2.2
46	12.1	10.1	9.9	6.0	5.3	4.9	3.7	3.5	2.4
48	13.1	10.9	10.7	6.6	5.8	5.4	4.1	3.8	2.6
50	14.2	11.8	11.6	7.1	6.2	5.8	4.4	4.1	2.8
52	15.3	12.7	12.5	7.6	6.7	6.2	4.7	4.4	3.1
54	16.4	13.7	13.4	8.2	7.2	6.7	5.1	4.7	3.3
56	17.5	14.6	14.4	8.8	7.7	7.2	5.4	5.1	3.5
58	18.7	15.6	15.4	9.4	8.2	7.6	5.8	5.4	3.7
60	19.9	16.6	16.4	10.0	8.8	8.1	6.2	5.8	4.0
62	21.2	17.7	17.4	10.6	9.3	8.7	6.6	6.1	4.2
64	22.5	18.7	18.4	11.2	9.9	9.2	7.0	6.5	4.5
66	23.8	19.8	19.5	11.9	10.4	9.7	7.4	6.9	4.8
68	25.1	20.9	20.6	12.6	11.0	10.3	7.8	7.2	5.0
70	26.5	22.1	21.7	13.2	11.6	10.8	8.2	7.6	5.3
72	27.9	23.2	22.8	13.9	12.2	11.4	8.6	8.0	5.6
74	29.3	24.4	24.0	14.6	12.9	12.0	9.1	8.4	5.9
76	30.7	25.6	25.2	15.4	13.5	12.5	9.5	8.9	6.1
78	32.2	26.8	26.4	16.1	14.1	13.1	10.0	9.3	6.4
80	33.7	28.1	27.6	16.8	14.8	13.7	10.4	9.7	6.7
82	35.2	29.3	28.9	17.6	15.5	14.4	10.9	10.1	7.0
84	36.7	30.6	30.1	18.4	16.1	15.0	11.4	10.6	7.3
86	38.3	31.9	31.4	19.1	16.8	15.6	11.7	11.0	7.7
88	39.8	33.2	32.7	19.9	17.5	16.3	12.4	11.5	8.0
90	41.4	34.5	34.0	20.7	18.2	16.9	12.8	12.0	8.3
92	43.1	35.9	35.3	21.5	18.9	17.6	13.3	12.4	8.6
94	44.7	37.2	36.6	22.3	19.6	18.2	13.9	12.9	8.9
96	46.3	38.6	38.0	23.2	20.4	18.9	14.4	13.4	9.3
98	48.0	40.0	39.4	24.0	21.1	19.6	14.9	13.8	9.6
100	49.7	41.4	40.8	24.9	21.8	20.3	15.4	14.3	9.9

FOREST LAND PRODUCTIVITY GUIDE

The table below may be used by field crews to assist in the determination of unproductive forest land; that is, land on which the potential productivity is less than 20 cubic feet of industrial wood per acre, per year.

From an increment boring, determine the age class of a tree that is located on the site in question. For example, a 27 year old black spruce in the 20 year age class must be at least 9 feet tall if the site is to be considered as being productive. **Sample trees must be representative of the site.** The factors of drainage, soils, elevation, and exposure must also be considered.

Total height in feet at upper limit of the unproductive site class

AGE CLASS	BLACK SPRUCE HEIGHT	BLACK ASH HEIGHT	RED MAPLE HEIGHT	CHESTNUT OAK HEIGHT
20	8	12	10	12
30	13	21	17	21
40	19	29	24	29
50	25	34	32	34
60	30	39	37	39
70	33	45	43	45
80	39	50	49	50
90	41	53	53	52
100	43	57	57	56
110	47	60	60	57
120	50	60	61	58
130	51	61	61	59
140	52	62	62	60
150	53	63	62	--
160	--	64	63	--
170	--	65	63	--
180	--	65	63	--

Appendix F. Shrub and Vine Species Codes for the Maine Inventory

DECIDUOUS SHRUBS

Add a 9 prefix to each 3-digit code listed below. Eg., 9350

Code	Common name	Genus	Species
350	**Alder spp.**	**Alnus**	**spp.**
352	speckled alder	A.	rugosa
353	Hercules club	Aralia	spinosa
365	**chokeberry spp.**	**Aronia**	**spp.**
366	**azalea spp.**	**Azalea**	**spp.**
368	**barberry spp.**	**Berberis**	**spp.**
381	buttonbush	Cephalanthus	occidentalis
458	New Jersey tea	Cleanothus	americanus
465	sweet pepperbush	Clethra	alnifolia
475	fringetree	Chionanthus	virginicus
485	sweetfern	Comptonia	peregrina
492	alternate-leaved dogwood	Cornus	alternifolia
493	silky dogwood	C.	amomum (obliqua)
494	round-leaved dogwood	C.	rugosa (circinata)
496	gray-stemmed, or panicled dogwood	C.	racemosa (paniculata)
497	red-osier dogwood	C.	stolonifera
501	American hazelnut	Corylus	americana
502	beaked hazelnut	C.	cornuta (rostrata)
525	leatherwood	Dirca	palustris
535	autumn olive, or Russian olive	Elaeagnus	angustifolia
549	**huckleberry spp.**	**Gaylussacia**	**spp.**
585	witch-hazel	Hamamelis	virginiana
592	large-leaf holly	Ilex	montana (monticola)
593	winterberry holly	Ilex	verticillata
604	**fetter-bush spp.**	**Leucothoe**	**spp.**
609	common spicebush	Lindera	benzoin
635	**bush honeysuckle spp.**	**Lonicera**	**spp.**
637	**male-berry, staggerbush spp.**	**Lyonia**	**spp.**
643	sweet gale	Myrica	gale
644	bayberry	Myrica	pensylvanica
685	mountain-holly	Nemopanthus	mucronatus
725	ninebark	Physocarpus	opulifolius
845	**buckthorn spp.**	**Rhamnus**	**spp.**
856	**azalea (deciduous) spp.**	**Rhododendron**	**spp.**
864	winged sumac	Rhus	copallina
865	smooth sumac	R.	glabra
866	staghorn sumac	R.	typhina
868	poison sumac	R.	vernix
870	**currant, gooseberry spp.**	**Ribes**	**spp.**
905	**Rose spp.**	**Rosa**	**spp.**
915	**briar, bramble, dewberry spp.**	**Rubus**	**spp.**
925	American elderberry	Sambucus	canadensis
926	red-berried elderberry	S.	racemosa
929	**shrub willows spp. (all other willows not indicated in tree codes**	**Salix**	**spp.**
937	**spirea spp.**	**Spirea**	**spp.**
982	American bladdernut	Staphylea	trifolia

Code	Common name	Genus	Species
983	**Blueberry spp.**	**Vaccinium**	**spp.**
985	**Viburnum spp.**	**Viburnum**	**spp.**
986	maple-leaved viburnum	V.	acerifolium
987	hobblebush viburnum	V.	alnifolium
988	wild raisin, withe-rod	V.	cassinoides
989	arrowwood	V.	dentatum
990	nannyberry	V.	lentago
991	blackhaw	V.	prunifolium
992	highbush cranberry	V.	trilobum
994	common prickly-ash	Zanthoxylum	americanum
997	**unknown or not listed**		

If species is not listed, use generic genus code.

EVERGREEN SHRUBS

Add a 9 prefix to each 3-digit code listed below. Eg., 9045

Code	Common Name	Genus	Species
045	leatherleaf	Chamaedaphne	calyculata
061	common juniper	Juniperus	communis
232	Canada yew	Taxus	canadensis
357	bog rosemary	Andromeda	glaucophylla
605	sheep laurel	Kalmia	angustifolia
606	mountain laurel	K.	latifolia
607	swamp laurel	K.	polifolia
608	Labrador tea	Ledum	groenlandicum
642	wax myrtle	Myrica	cerifera
855	**rhododendron spp.**	**Rhododendron**	**spp.**
945	sweetleaf	Symplocos	tinctoria
998	**unknown or not listed**		

If species is not listed, use generic genus code.

DWARF SHRUBS

Add a 9 prefix to each 3-digit code listed below. Eg., 9363

Code	Common Name	Genus	Species
363	bearberry	Arctostaphylos	uva-ursi
364	alpine bearberry	Arctous	alpinus
441	striped pipsissewa	Chimaphila	maculata
442	pipsissewa	Chimaphila	unbellata cisatlantica
498	bunchberry	Cornus	canadensis
547	creeping snowberry	Chiogenes	hispidula
548	teaberry	Gaultheria	procumbens
603	diapensia	Diapensia	lapponica
615	twinflower	Linnaea	borealis americana
618	alpine azalea	Loiseleuria	procumbens

675	partridgeberry	Mitchella	repens
677	three-toothed cinquefoil	Potentilla	tridentata
981	**cranberry spp.**	**Vaccinium**	**spp.**
996	**unknown or not listed**		

If species is not listed, use generic genus code.

VINES

Add a 9 prefix to each 3-digit code listed below. Eg., 9451

Code	Common Name	Genus	Species
451	hog peanut	Amphicarpa	bracteata
454	ground-nut	Apois	americana
455	American bittersweet	Celastrus	scandens
477	clematis sp.	Clematis	spp.
636	vine honeysuckle	Lonicera	spp.
715	Virginia creeper	Parthenocissus	quinquefolia
867	poison ivy	Rhus	radicans
934	Greenbrier spp.	Smilax	spp.
993	Grape spp.	Vitis	spp.
995	**unknown or not listed**		

If species is not listed, use generic genus code.

Appendix G. Quality Control / Quality Assurance Program in the Northeast

Our resource inventories are designed to satisfy specified precision objectives. Much of our resource information comes from a very small sample of actual ground conditions. Our sampling system is statistically sound. The sample plots selected will satisfy the stated precision objectives, if the ground data is free of errors. While there is no way in which the latter can be completely assured, it is obvious that field errors must be kept to a minimum. This objective can be accomplished by establishing and adhering to a Quality Control / Quality Assurance (QC/QA) Program. By setting standards and monitoring fieldwork, we can prevent or at least detect and correct errors, and eliminate the repetition of most errors.

After the initial training period, periodic inspections will be made of every crew's fieldwork. Inspections are the most important mechanism for assuring quality data. Every plot installed has a chance to be inspected. The overall goal shall be to inspect at least 10% of the plots installed. The number of errors detected will determine frequency of inspections. All instances of error will be analyzed and discussed with the crew concerned. Three distinct types of inspections are done: hot checks, cold checks and blind checks. For each type of check, there are national minimal targets: 2 % for hot, 5 % for cold, and 3% for blind.

Hot checks (QA status 7) are normally done as part of the training process. Quality control at the time of data collection is the easiest method for identifying errors. Hot checks are informal, allowing for one-on-one interaction between the trainer and the trainee. Errors encountered during hot checks are corrected.

Cold checks (QA status 2) are done on regular intervals throughout the field season, but may be more frequent for less experienced crews, and less frequent for experienced crews. The inspectors shall select from completed plots to perform cold checks. It is discretion of the inspector as to which variables are checked. Inspectors should use judgment to concentrate their efforts on the variables that are more likely to contain errors. Errors encountered during cold checks are corrected.

Blind checks (QA status 6) need to be performed in a systematic manner to yield statistically valid data to evaluate the accuracy and repeatability of each variable. Blind checks are to be completed by qualified inspections crews only. Prior to the field season a random selection of plots will be determined at Newtown Square for blind checks. Field crews will not be informed as to which plots have been selected for blind checks. Inspection crews will complete these plots within 2 weeks of the plot completion by the field crew. A blind check must contain a complete set of variable measurements, and the data set must be maintained separately from the original data. No corrections of original data are permitted.

Many of the entries for variables on the tally record are, or can be, obtained by measurements. When those measurements can be repeated with uniform results by several individuals, it is proper to set close tolerance limits that define acceptable data.

There are also many variables that require some degree of subjective evaluation. The attributes with the greater subjectivity should have broader tolerance limits. While it would be desirable for every crew to have the exact same entries for all such variables, it is not a realistic goal. However, it is possible, and should be the goal of all crews, to assign any given variable a similar value on a scale of values. For example, if the scale of possible values is 1 through 5, it is reasonable to expect that all crews would be within ± one level on the scale.

There are also variables designed to be answered yes/no, present/absent, or other entries that require other mutually exclusive answers. Often the answer depends on the amount of time spent examining the area. Crews are not expected to find needles in haystacks: they are expected to complete every required variable, as best they can, based on their training, instructions received, and evidence on the plot.

The time required to complete a plot will vary with access, terrain, amount of tally, and numerous other factors. In the past, the average on-plot time has been three to four hours. Supervisors will monitor progress and goals, and minimum acceptable performance levels will be adjusted as conditions warrant. The first priority of all crews will be quality work, performed safely.

Crews will be informed of any errors detected in their work. They will be expected not to repeat those errors. The goal of this QA/QC program is to insure that all field data is of the highest possible quality. If any variable of the field tally procedure is unclear, ask your supervisor for clarification.

COMPLETENESS
It is the responsibility of each crew to complete all variables before leaving the sample plot. Appendix H of the field guide contains guides and examples for many plot situations. The guides indicate which variables must be completed. There will be no excuse for incomplete data unless there are very unusual circumstances, and those circumstances have been explained in the PLOT NOTES of the tally record.

When plot data is collected and stored with the aid of a portable data recorder (PDR); the *TALLY* program will ensure that many required variable for a plot are completed, but there are many important questions that are still answered on the tally records. It is incumbent upon the crew to make sure that all required variables are completed before leaving the sample plot.

LEGIBILITY
Tally records are the basis for the inventory. Tally records that are not legible will be considered as evidence of unsatisfactory work. If the recorded data is not legible enough to be processed correctly it is useless, no matter how accurate it may have been.

A BASIC EDIT FOR COMPLETENESS AND OBVIOUS ERRORS MUST BE MADE BEFORE LEAVING THE PLOT.

FIELD EDIT
The quality control process begins with the initial field edit by the crew. A crew is expected to complete an edit after the completion of each subplot and a final plot edit before leaving the plot area. If a crew is using a PDR, then data errors should be at a minimum.

The current *TALLY* edit routine lists “warning” and “error” messages. When a crew reviews the message list, they can either accept or change data with warnings. Errors indicate conflicting or invalid data. These require the data to be changed unless the crew believes the error message is wrong. If the latter is true, a crew needs to contact their supervisor.

Before leaving the plot, complete a thorough edit to make sure that all required fields are complete, all entries are reasonable, and all photo work is complete. Enter the three-digit code that identifies the person that edited the plot for errors and completeness. This is usually done by the person who cruised the plot.

When Collected: All plots

FIELD EDIT / MONTH
Record the month that the edit was completed.

When collected: All plots
Field width: 2 digits
Tolerance: No errors
MQO: At least 99% of the time
Values:

January	01	May	05	September	09
February	02	June	06	October	10
March	03	July	07	November	11
April	04	August	08	December	12

FIELD EDIT / DAY
Record the day of the month that the edit was completed.

When collected: All plots
Field width: 2 digits
Tolerance: No errors
MQO: At least 99% of the time
Values: 01 to 31

FIELD EDIT / YEAR
Record the year that the edit was completed

When collected: All plots
Field width: 2 digits
Tolerance: No errors
MQO: At least 99% of the time
Values: $\geq$ 03

OFFICE EDIT
As the name implies an office edit is completed off plot by the field crew, QA staff or a state supervisor. All paper tally records and printouts are reviewed for errors. If an error is correctable in the office, the correction is made with a red pencil, initialed by the editor and dated. If an error cannot be corrected in the office, the crew will need to return to the plot to correct the error.

When a county is completed and sent to Newtown Square, Information Management personnel review all plots and modify the electronic plot file, if applicable. **It is very important that all corrections are clearly marked, so there is no room for misinterpretation.**

Before returning the plot to the main office (i.e., Newtown Square), complete a thorough edit to make sure that all required fields are complete, all entries are reasonable, and all photo work is complete. This is usually done by a crew leader, QA staff, or field supervisor. Enter the three-digit code that identifies the person that edited the plot for errors and completeness.

When Collected: All plots

OFFICE EDIT / MONTH
Record the month that the edit was completed.

When collected: All plots
Field width: 2 digits
Tolerance: No errors
MQO: At least 99% of the time
Values:

January	01	May	05	September	09
February	02	June	06	October	10
March	03	July	07	November	11
April	04	August	08	December	12

OFFICE EDIT / DAY
Record the day of the month that the edit was completed.

When collected: All plots
Field width: 2 digits
Tolerance: No errors
MQO: At least 99% of the time
Values: 01 to 31

OFFICE EDIT / YEAR
Record the year that the edit was completed**.**

When collected: All plots
Field width: 2 digits
Tolerance: No errors
MQO: At least 99% of the time
Values: $\geq$ 03

Appendix H. Tally Record Guide

On the seven page sample record there are several variables that may require entries, either coded or written, by the field crews.

Where a numbered variable requires a coded entry, the number of digits required for that entry is indicated by the number of X's immediately below the variable number on the sample record. Some variables require measurements to decimal fractions of inches or feet. For those items, it is understood that the last digit represents a decimal fraction. For example, a tree DBH of 23.4 inches is coded as 234. **The decimal points are never placed in coded entries**.

The entries for some variables will have been made in the office. These are usually variables **1.01NE** through **1.3** and **1.5+NE**. These entries may be incorrect, but do not change any previously made entry without the approval of your supervisor.

Notes should be recorded as often as needed to clarify coded entries and to explain unusual or unique situations. Notes are also used to direct attention to anything about a particular plot that the crews think is important now, or may be important when the plot is remeasured during the next inventory. If necessary, attach extra sheets of notes. **The value of notes cannot be overemphasized!** Suffice it to say that a few notes are made at a fraction of the cost that would be involved in going back to a plot to answer questionable data.

Take a moment to read the statement printed on the inside cover of this document. Even though it was written more than sixty years ago, this statement still applies to everything that we do today. Field data collection is the most important part of this inventory. Everything that comes afterward is dependent on a complete and accurate set of data.

The information to be recorded on the sample record is determined by the category of plot (SAMPLE KIND) and the PLOT STATUS assigned by the field crew. Examples of the specific data variables needed for each category of plot appear on the following pages.

Note: When using the portable data recorder the following information is displayed from plot history files stored in the data recorder memory: plot identification and previous tree information (SUBPLOT NUMBER, TREE RECORE NUMBER, SPECIES, HORIZONTAL DISTANCE, AZIMUTH, PREVIOUS TREE CLASS / MERCHANTABILITY CLASS, PREVIOUS DBH, and PREVIOUS REGIONAL LAND USE CLASS). In general, the variables that specifically apply to the previous inventory and the current inventory (such as SPECIES, HORIZONTAL DISTANCE and AZIMUTH) are the variables that may be changed.

Note: On the Tree Data tally guide, the field titled TREE CLASS will also serve to collect MERCH CLASS information on Ohio SK 8 remeasurement of “prism” points 5 – 9. It has been renamed as TREE CLASS / MERCH (OH). When applied to this special remeasurement, the field becomes 2-digits. TREE CLASS is recorded as the 1st digit and MERCH CLASS is recorded as the 2nd digit. When this field is not being used for the OH SK 8 remeasurement, it remains a single digit field for TREE CLASS only.

	PLOT DATA												CURRENT			PREVIOUS										
	CYCLE	PANEL	STATE	UNIT	COUNTY	PLOT NUMBER	PLOT STATUS	PLOT NONSAMPLED REASON	SAMPLE KIND	PHASE	PREVIOUS PLOT NUMBER	FIELD GUIDE VERSION	YEAR	MONTH	DAY	YEAR	MONTH	DISTANCE TO IMPROVED ROAD	WATER ON PLOT	TERRAIN POSITION	QA STATUS	CREW TYPE	CRUISER	TALLY
	1.0.1NE	1.0.2N	1.1	1.1.1NE	1.2	1.3	1.4	8.3.5	1.5+NE	1.5.1NE	1.6	1.7	1.8.1	1.8.2	1.8.3	1.8.4NE	1.8.5NE	1.10	1.11	1.11.1NE	1.12	1.13	1.13.1NE	1.13.2NE
	x	x	xx	x	xxx	xxxx	x	xx		x	xxxx	xx	xxxx	xx	xx	xxxx	xx	x	x	x	x	x	xxx	xxx
Sampled w/ forest (Plot Status = 1)	◆	◆	◆	◆	◆	◆	1		1	◆		◆	◆	◆	◆			■	■	■	◆	◆	◆	◆
	◆	◆	◆	◆	◆	◆	1		2, 5-8	◆		◆	◆	◆	◆	●	●	■	■	■	◆	◆	◆	◆
	◆	◆	◆	◆	◆	◆	1		3	◆	◆	◆	◆	◆	◆			■	■	■	◆	◆	◆	◆
Sampled nonforest (Plot Status = 2)	◆	◆	◆	◆	◆	◆	2		1	◆		◆	◆	◆	◆						◆	◆	◆	◆
	◆	◆	◆	◆	◆	◆	2		2, 5-8	◆		◆	◆	◆	◆	●	●				◆	◆	◆	◆
	◆	◆	◆	◆	◆	◆	2		3	◆	◆	◆	◆	◆	◆						◆	◆	◆	◆
Nonsampled (Plot Status = 3)	◆	◆	◆	◆	◆	◆	3	◈	1	◆		◆	◆	◆	◆						◆	◆	◆	◆
	◆	◆	◆	◆	◆	◆	3	◈	2, 5-8	◆		◆	◆	◆	◆	●	●				◆	◆	◆	◆
	◆	◆	◆	◆	◆	◆	3	◈	3	◆	◆	◆	◆	◆	◆						◆	◆	◆	◆

◆ All plots

■ All accessible forest land

● Remeasure plots

▣ Nonforest

◈ Nonsampled

	CONDITION DATA																																			
	DELINEATING VARIABLES										NON-DELINEATING VARIABLES																										
															DISTURBANCE						TREATMENT															
	CONDITION CLASS NUMBER	CONDITION CLASS STATUS	CONDITION NONSAMPED REASON	CURRENT REGIONAL LAND USE	RESERVED STATUS	OWNER GROUP	FOREST TYPE	STAND SIZE CLASS	REGENERATION STATUS	TREE DENSITY	OWNER CLASS	PRIVATE OWNER IDUSTRIAL STATUS	ARTIFICIAL REGENERATION SPECIES	STAND AGE	DISTURBANCE 1	DISTURBANCE YEAR 1	DISTURBANCE 2	DISTURBANCE YEAR 2	DISTURBANCE 3	DISTURBANCE YEAR 3	TREATMENT 1	TREATMENT YEAR 1	TREATMENT 2	TREATMENT YEAR 2	TREATMENT 3	TREATMENT YEAR 3	PHYSIOGRAPHIC CLASS	TIMBER MANAGEMENT CLASS	STAND HISTORY	STAND STRUCTURE	STOCKING CLASS
	2.4.1	2.4.2	2.4.3	2.5.0NE	2.5.1	2.5.2	2.5.3	2.5.4	2.5.5	2.5.6	2.5.7	2.5.8	2.5.9	2.5.10	2.5.11	2.5.12	2.5.13	2.5.14	2.5.15	2.5.16	2.5.17	2.5.18	2.5.19	2.5.20	2.5.21	2.5.22	2.5.23	2.5.23.1NE	2.5.23.2NE	2.5.23.3NE	2.5.23.4NE
	x	x	xx	xx	x	xx	xxx	x	x	x	xx	x	xxxx	xxx	xx	xxxx	xx	xxxx	xx	xxxx	xx	xxxx	xx	xxxx	xx	xxxx	xx	xx	x	x	x
Forest land	◆	1		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	ME	■
Nonforest	◆	2		▣																											
Noncensus water	◆	3																													
Census water	◆	4																													
Nonsampled	◆	5	◈																												

◆ All plots

■ All accessible l

● Remeasure plots

▣ Nonforest

◈ Nonsampled

ME MAINE only

	SUBPLOT DATA										
	SUBPLOT NUMBER	SUBPLOT STATUS	SUBPLOT NONSAMPLED REASON	SLOPE CORRECTION FROM S1 TO S2, S3 OR S4	SUBPLOT CENTER CONDITION	MICROPLOT CENTER CONDITION	SUBPLOT SLOPE	SUBPLOT ASPECT	SNOW / WATER DEPTH	CROWN CLOSUE -- MAINE	SUBPLOT CONDITION LIST
	3.1	3.2	3.3	3.3.1NE	3.4	3.5	3.6	3.7	3.8	3.9	3.10
	x	x	xx	xxx	x	x	xxx	xxx	xx	x	xxxx
Sampled w/ forest	◆	1		■	◆	◆	■	■	■	ME	◆
Sampled nonforest	◆	2			◆	◆					◆
Nonsampled	◆	3	◈		◆	◆					

BOUNDARY DATA							
SUBPLOT NUMBER	PLOT TYPE	BOUNDARY CHANGE	CONTRASTING CONDITION CLASS NUMBER	LEFT AZIMUTH	CORNER AZIMUTH	CORNER DISTANCE	RIGHT AZIMUTH
4.2.1	4.2.2	4.2.3	4.2.4	4.2.5	4.2.6	4.2.7	4.2.8
x	x	x	x	xxx	xxx	xx	xxx
o	o	o	o	o	o	o	o

If SUBPLOT CONDITION LIST indicates more than one CONDITION CLASS NUMBER, then BOUNDARY DATA is required.

SITE TREE DATA				
CONDITION CLASS LIST	SPECIES	DIAMETER	TOTAL LENGTH	AGE AT DIAMETER
7.2.1	7.2.2	7.2.3	7.2.4	7.2.5
xxxxx	xxxx	xxx	xxx	xxx
■	■	■	■	■

◆ All plots

■ All accessible forest land

● Remeasure plots

◈ Nonsampled

ME MAINE only

o All boundaries

SEEDLING DATA			
SUBPLOT NUMBER	SPECIES	CONDITION CLASS NUMBER	SEEDLING COUNT NUMBER
6.1	6.2	6.3	6.4
x	xxxx	x	xxx
■	■	■	■

SEEDLING DATA			
SUBPLOT NUMBER	SPECIES	CONDITION CLASS NUMBER	SEEDLING COUNT NUMBER
6.1	6.2	6.3	6.4
x	xxxx	x	xxx
■	■	■	■

MAINE SHRUB & VINE DATA			
SUBPLOT NUMBER	SPECIES	CONDITION CLASS NUMBER	SEEDLING COUNT NUMBER
6.5.1NE-ME	6.5.2NE-ME	6.5.3NE-ME	6.5.5NE-ME
x	xxxx	x	xx
ME	ME	ME	ME
ME	ME	ME	
ME	ME	ME	

MAINE SHRUB & VINE DATA				
SUBPLOT NUMBER	SPECIES	CONDITION CLASS NUMBER	SEEDLING COUNT NUMBER	
6.5.1NE-ME	6.5.2NE-ME	6.5.3NE-ME	6.5.5NE-ME	
x	xxxx	x	xx	
ME	ME	ME	ME	Shrubs
ME	ME	ME		Dwarf shrubs
ME	ME	ME		Vines

■ All accessible forest land

ME MAINE only

◆ All trees ■ New trees **S** Sawtimber ● Live or dead trees **L** Live trees **D** Dead trees **ME** MAINE only

TREE AND SAPLING DATA																																
SUBPLOT #	TREE RECORD #	SPECIES	HORIZONTAL DISTANCE	AZIMUTH	PREVIOUS TREE STATUS	PRESENT TREE STATUS	RECONCILE	STANDING DEAD	TREE HISTORY	DIAMETER	DIAMETER CHECK	CONDITION CLASS #	TREE CONDITION CLASS	TREE GRADE	SAWLOG LENGTH	BOLE LENGTH	TOTAL LENGTH	ACTUAL LENGTH	LENGTH METHOD	BOARD FOOT CULL	BF SOUNDNESS	CUBIC FOOT CULL	CF SOUONDNESS	CROWN CLASS	COMPACT CROWN RATIO	CAUSE OF DEATH	MORTALITY YEAR	DECAY CLASS	TREE CLASS	PREVIOUS DBH	PREVIOUS TREE CLASS / MERCHANTABILITY CLASS	PREVIOUS LAND USE	TREE NOTES
5.1	5.2	5.8	5.5	5.4	5.6	5.7	5.7.1	5.7.2	5.7.3NE	5.9	5.10	5.3	5.10.1NE	5.10.2NE	5.10.3NE	5.10.4NE	5.12	5.13	5.14	5.14.1NE	5.14.2NE	5.14.3NE	5.14.4NE	5.15	5.17	5.19	5.20	5.21	5.23.1NE	5.8.1	5.24.1NE	5.24.2NE	5.28
x	xxx	xxxx	xxx	xxx	x	x	x	x	xx	xxx	x	x	x	x	xx	xx	xxx	xxx	x	xx	x	xx	x	x	xx	xx	xxxx	x	x	xxx	xx	xx	xxx
	Live saplings 1.0-in to < 5.0-in DBH being tallied for the 1st time on SK 1, 5, 6, 7 and 8 (all subplots).																																
◆	■	■	■	■		■				■	■	■						ME	ME					■	■								■
	Live trees ≥ 5.0-in DBH being tallied for the 1st time on SK 1 & 8 (all subplots) and SK 6 & 7 (subplots 2 -4).																																
◆	■	■	■	■		■				■	■	■	1 - 3	S	S	■	■	■	■	S	S	■	■	■	■				1 - 4				■
	Standing dead trees ≥ 5.0-in DBH being tallied for the 1st time on SK 1 & 8 (all subplots) and SK 6 & 7 (subplots 2 -4).																																
◆	■	■	■	■		■				■	■	■	4 - 5	S	S	■		■		S	S	■	■					D	5				■
	Standing snags ≥ 5.0-in DBH being tallied for the 1st time on SK 1 & 8 (all subplots) and SK 6 & 7 (subplots 2 -4).																																
◆	■	■	■	■		■				■	■	■	7 - 8					■										D	6				■
	The following tally guide based on TREE HISTORY applies to all trees on SK 2 (all subplots/microplots), 5 (all subplots), 6 (subplot 1 only) and 7 (subplot 1 only).																																
◆	●	●	●	●		●	0		00	●	●	●												L	L								●
◆	●	●	●	●	1	1			10	●	●	●	●	S	S	●	●	●	●	S	S	●	●	L	L				●	●	●	●	●
◆	●	●	●	●		●	●		11	●	●	●	●	S	S	●	L	●	L	S	S	●	●	L	L	D	D	D	●				●
◆	●	●	●	●		1	3		12	●	●	●	●	S	S	●	●	●	●	S	S	●	●	L	L				●				●
◆	●	●	●	●	1	0	8		13																						●	●	●
◆	●	●	●	●	1	0	8		14																						●	●	●
◆	●	●	●	●	1	0	8		15																						●	●	●
◆	●	●	●	●		●	●		16	●	●	●	●	S	S	●	L	●	L	S	S	●	●	L	L	D	D	D	●				●
◆	●	●	●	●	1	0	8		17																						●	●	●
◆	●	●	●	●		●	●		18	●	●	●	●	S	S	●	L	●	L	S	S	●	●	L	L	D	D	D	●				●
◆	●	●	●	●	2	1			19	●	●	●	●	S	S	●	●	●	●	S	S	●	●	L	L				●	●	●	●	●
◆	●	●	●	●		1	●		20	●	●	●	●	S	S	●	●	●	●	S	S	●	●	L	L				●				●
◆	●	●	●	●	1	●		D	21	●	●	●	●	S	S	●	L	●	L	S	S	●	●	L	L	D	D	D	●	●	●	●	●
◆	●	●	●	●		●	1		22	●	●	●	●	S	S	●	L	●	L	S	S	●	●	L	L	D	D	D	●				●
◆	●	●	●	●	1	●		D	23	●	●	●	●	S	S	●	L	●	L	S	S	●	●	L	L	D	D	D	●	●	●	●	●
◆	●	●	●	●		2	●		24	●	●	●	●	S	S	●	L	●	L	S	S	●	●	L	L	D	D	D	●				●
◆	●	●	●	●		2	●		25	●	●	●	●	S	S	●	L	●	L	S	S	●	●	L	L	D	D	D	●				●
◆	●	●	●	●	●	1		D	27	●	●	●	●	S	S	●	L	●	L	S	S	●	●	L	L	D	D	D	●	●	●	●	●
	Note: If STANDING DEAD =1 and TREE CONDITION CLASS = 7 or 8, record only those variables that are required for SNAGS.																																

ST	UNIT	CNTY	PLOT #
xx	x	xxx	xxxx
◆	◆	◆	◆

◆ All trees ■ New trees **S** Sawtimber ● Live or dead trees **L** Live trees **D** Dead trees **ME** MAINE only

TREE AND SAPLING DATA

SUBPLOT #	TREE RECORD #	SPECIES	HORIZONTAL DISTANCE	AZIMUTH	PREVIOUS TREE STATUS	PRESENT TREE STATUS	RECONCILE	STANDING DEAD	TREE HISTORY	DIAMETER	DIAMETER CHECK	CONDITION CLASS #	TREE CONDITION CLASS	TREE GRADE	SAWLOG LENGTH	BOLE LENGTH	TOTAL LENGTH	ACTUAL LENGTH	LENGTH METHOD	BOARD FOOT CULL	BF SOUNDNESS	CUBIC FOOT CULL	CF SOUONDNESS	CROWN CLASS	COMPACT CROWN RATIO	CAUSE OF DEATH	MORTALITY YEAR	DECAY CLASS	TREE CLASS	PREVIOUS DBH	PREVIOUS TREE CLASS / MERCHANTABILITY CLASS	PREVIOUS LAND USE	TREE NOTES
5.1	5.2	5.8	5.5	5.4	5.6	5.7	5.7.1	5.7.2	5.7.3NE	5.9	5.10	5.3	5.10.1NE	5.10.2NE	5.10.3NE	5.10.4NE	5.12	5.13	5.14	5.14.1NE	5.14.2NE	5.14.3NE	5.14.4NE	5.15	5.17	5.19	5.20	5.21	5.23.1NE	5.9.1	5.24.1NE	5.24.2NE	5.28
x	xxx	xxxx	xxx	xxx	x	x	x	x	xx	xxx	x	x	x	x	xx	xx	xxx	xxx	x	xx	x	xx	x	x	xx	xx	xxxx	x	x	xxx	xx	xx	xxx
◆	●	●	●	●	1	2		1	30	●	●	●	●	S	S	●		●	L	S	S	●	●			80	D	D	●	●	●	●	●
◆	●	●	●	●	1	2		0	30			●														80	D			●	●	●	●
◆	●	●	●	●	1	3			31			●														80	D			●	●	●	●
◆	●	●	●	●	1	3			32			●														80	D			●	●	●	●
◆	●	●	●	●	1	●		D	33	●	●	●	●	S	S	●	L	●	L	S	S	●	●			80	D	D	●	●	●	●	●
◆	●	●	●	●	1	3			34			●														80	D			●	●	●	●
◆	●	●	●	●	●	0	9		38			●																		●	●	●	●
◆	●	●	●	●	●	0	9		39			●																		●	●	●	●
◆	●	●	●	●	1	2		1	40	●	●	●	●	S	S	●		●	L	S	S	●	●			D	D	D	●	●	●	●	●
◆	●	●	●	●	1	●	●	0	41			●														D	D			●	●	●	●
◆	●	●	●	●	1	3			42			●														D	D			●	●	●	●
◆	●	●	●	●	1	2		1	43	●	●	●	●	S	S	●		●	L	S	S	●	●			D	D	D	●	●	●	●	●
◆	●	●	●	●	1	●	●	0	44			●														D	D			●	●	●	●
◆	●	●	●	●	●	0	●		50																					●	●	●	●
◆	●	●	●	●	2	2		1	53	●	●	●	4,5	S	S	●		●		S	S	●	●			00	0000	D	5	●	5/0-2	●	●
◆	●	●	●	●	2	2		1	53	●	●	●	7,8					●										D	6	●	●	●	●
◆	●	●	●	●	2	●		D	54			●																		●	●	●	●
	Note: If STANDING DEAD =1 and TREE CONDITION CLASS = 7 or 8, record only those variables that are required for SNAGS.																																
	Tally guide based on PRESENT TREE STATUS for live saplings, "no status" saplings, dead saplings standing or down, and removed saplings on SK 2 plots.																																
◆	●	●	●	●	1	0	5 - 9		●			●																		●		●	●
◆	●	●	●	●	1	1			●	●	●	●						ME	ME					●	●					●		●	●
◆	●	●	●	●	1	2			●			●														●	●			●		●	●
◆	●	●	●	●	1	3			●			●														●	●			●		●	●

SK 8 Ohio Tally Guide for the Partial 10-Pt Remeasurement on "Prism" Points 5, 6, 7, 8 & 9
(Tree Histories 12, 21, 25, & 50 should be used with caution.)

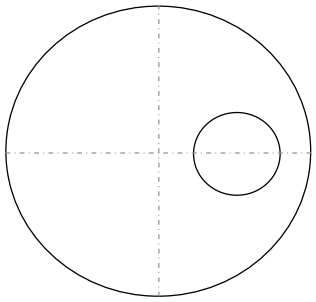
◆ All trees ■ New trees **S** Sawtimber ● Live or dead trees **L** Live trees **D** Dead trees **ME** MAINE only

TREE AND SAPLING DATA																																	
SUBPLOT #	TREE RECORD #	SPECIES	HORIZONTAL DISTANCE	AZIMUTH	PREVIOUS TREE STATUS	PRESENT TREE STATUS	RECONCILE	STANDING DEAD	TREE HISTORY	DIAMETER	DIAMETER CHECK	CONDITION CLASS #	TREE CONDITION CLASS	TREE GRADE	SAWLOG LENGTH	BOLE LENGTH	TOTAL LENGTH	ACTUAL LENGTH	LENGTH METHOD	BOARD FOOT CULL	BF SOUNDNESS	CUBIC FOOT CULL	CF SOUNDNESS	CROWN CLASS	COMPACT CROWN RATIO	CAUSE OF DEATH	MORTALITY YEAR	DECAY CLASS	TREE/MERCH CLASS (OH)	PREVIOUS DBH	PREVIOUS TREE CLASS / MERCHANTABILITY CLASS	PREVIOUS LAND USE	TREE NOTES
5.1	5.2	5.8	5.5	5.4	5.6	5.7	5.7.1	5.7.2	5.7.3NE	5.9	5.10	5.3	5.10.1NE	5.10.2NE	5.10.3NE	5.10.4NE	5.12	5.13	5.14	5.14.1NE	5.14.2NE	5.14.3NE	5.14.4NE	5.15	5.17	5.19	5.20	5.21	5.23.1NE	5.9.1	5.24.1NE	5.24.2NE	5.28
x	xxx	xxxx	xxx	xxx	x	x	x	x	xx	xxx	x	x	x	x	xx	xx	xxx	xxx	x	xx	x	xx	x	x	xx	xx	xxxx	x	xx	xxx	xx	xx	xxx
	Reconcile all previously measured trees on Points 5, 6, 7, 8 & 9.																																
◆	●	●	●	●					10	●			●																●	●	●	●	●
◆	●	●	●	●					19	●			●																●	●	●	●	●
◆	●	●	●	●					21	●			●																●	●	●	●	●
◆	●	●	●	●					23	●			●																●	●	●	●	●
◆	●	●	●	●					30	●																			●	●	●	●	●
◆	●	●	●	●					31																					●	●	●	●
◆	●	●	●	●					32																					●	●	●	●
◆	●	●	●	●					33	●			●																●	●	●	●	●
◆	●	●	●	●					34																					●	●	●	●
◆	●	●	●	●					38																					●	●	●	●
◆	●	●	●	●					39																					●	●	●	●
◆	●	●	●	●					40	●			●																●	●	●	●	●
◆	●	●	●	●					41																					●	●	●	●
◆	●	●	●	●					42																					●	●	●	●
◆	●	●	●	●					43	●			●																●	●	●	●	●
◆	●	●	●	●					44																					●	●	●	●
◆	●	●	●	●					50																					●	●	●	●
◆	●	●	●	●					53	●			●																6	●	●	●	●
◆	●	●	●	●					54																					●	●	●	●
	Tally new trees on a 6.8 ft microplot located at PC for Points 5, 6, 7, 8 & 9.																																
◆	●	●							12	●			●																●				●
◆	●	●							20	●			●																●				●
◆	●	●							22	●			●																●				●
◆	●	●							24	●			●																●				●
◆	●	●							25	●			●																●				●

ST	UNIT	CNTY	PLOT #
xx	x	xxx	xxxx
◆	◆	◆	◆

◆ All plots

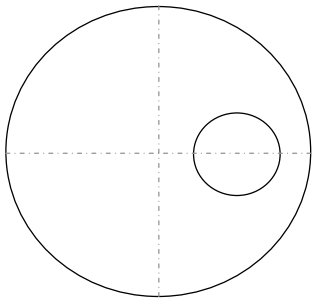
PLOT DIAGRAM

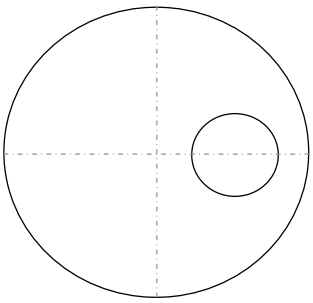


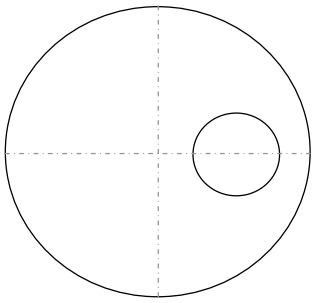
Sketch in the boundaries of any plot that has mulitiple condition classes, as well as any features that may facilitate the relocation of the plot or subplots.

Be particularly careful to sketch condition boundaries that occur within the subplot accurately as possible (include azimuths).

For plots where all 4 subplots fall entirely within one condition, clearly note on this page: "All Conditon Class 1).







Instructions: Draw and label all boundaries, conditions and other features. Distance between subplots is not to scale.

ST	UNIT	CNTY	PLOT #
xx	x	xxx	xxxx
◆	◆	◆	◆

■ All accessible forest land ○ Stocking check for accessible forest land ◆ All plots

PLOT NOTES:

This area is used for notes about the plot, subplot or individual tally variables.

All changes in land use must be documented in this section.

Describe the land use for all nonforest plots in this section (e.g., Entire plot falls in cropland without trees -- LU = 61)

STAND AGE WORKSHEET

CONDITION CLASS #	SPECIES	RING COUNT PLUS 5 YEARS	PERCENT OF OVERSTORY	WEIGHTED AGE
x	xxxx	xxx	xx	xxx
			100%	

STAND AGE WORKSHEET

CONDITION CLASS #	SPECIES	RING COUNT PLUS 5 YEARS	PERCENT OF OVERSTORY	WEIGHTED AGE
x	xxxx	xxx	xx	xxx
■	■	■	■	■
			100%	■

STAND AGE WORKSHEET

CONDITION CLASS #	SPECIES	RING COUNT PLUS 5 YEARS	PERCENT OF OVERSTORY	WEIGHTED AGE
x	xxxx	xxx	xx	xxx
			100%	

STAND AGE WORKSHEET

CONDITION CLASS #	SPECIES	RING COUNT PLUS 5 YEARS	PERCENT OF OVERSTORY	WEIGHTED AGE
x	xxxx	xxx	xx	xxx
			100%	

STOCKING CHECK WORKSHEET

DBH of the largest tally tree on the plot =

Column used from Table 5a + 5b:

SUBPLOT NUMBER	PLOT TYPE	SPECIES	DBH	NUMBER TALLIED BY DBH SIZE CLASS	STOCKING VALUE	CUMULATIVE TOTAL
x	x	xxxx	xxx	x	xx.x	xx.x

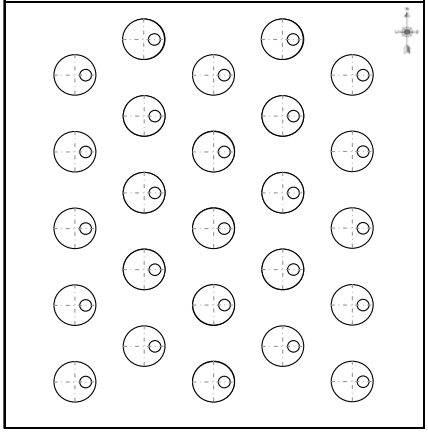
STOCKING CHECK WORKSHEET

DBH of the largest tally tree on the plot = XX.X

Column used from Table 5a + 5b: X

SUBPLOT NUMBER	PLOT TYPE	SPECIES	DBH	NUMBER TALLIED BY DBH SIZE CLASS	STOCKING VALUE	CUMULATIVE TOTAL
x	x	xxxx	xxx	x	xx.x	xx.x
○	○	○	○	○	○	○

STOCKING PLOT REFERENCE DIAGRAM



QC USE ONLY: FIELD ____ OFFICE ____ DATE _____ INITIALS _____ PLOT DATE: MON ◆ DAY ◆ YEAR ◆

Printed label with plot identification and photo information.

	GPS COORDINATES					
	LATITUDE 1.14.6			LONGITUDE 1.14.7		
	DEG	MIN	SEC	DEG	MIN	SEC
	xx	xx	xx.xx	xxx	xx	xx.xx
SP	◇	◇	◇	◇	◇	◇
	LATITUDE 1.14.6					
	DEG	MIN	SEC	DEG	MIN	SEC
	xx	xx	xx.xx	xxx	xx	xx.xx
PC	◆	◆	◆	◆	◆	◆

GPS DATUM	GPS UNIT	GPS LOCATION	GPS SERIAL NUMBER	COORDINATE SYSTEM	AZ CORRECTION TO PC	DIST CORRECTION TO PC	GPS ELEVATION	GPS ERROR	NUMBER OF GPS READINGS
1.14.1	1.14.3	1.14.3.1NB	1.14.4	1.14.5	1.14.12	1.14.13	1.14.14	1.14.15	1.14.16
	x	x	xxxxxx	x	xxx	xxx	xxxxxx	xxx	xxx
NAD27	◆	◆	◆	◆			■	◆	◆

OWNER CONTACT? Y N

CONTACT DATE _____

ON-SITE [ ] LETTER [ ]

TELEPHONE [ ] # _____

POSTED? Y N

NAME

ADDRESS

CITY/ ST/ ZIP

SOURCE

Complete ownership information for plot center at subplot 1 for all forested plots and as necessary for nonforest plots.

STARTING POINT: SPECIES - ◆ DBH - ◆

Provide notes about the starting point for all plots.

WITNESSED BY -

SPEC	DBH	HD	AZ	NOTES
◆	◆	◆	◆	◆
◆	◆	◆	◆	◆

PLOT CENTER WITNESSED BY - ■

LINE NO.	SPEC	DBH	HD	AZ	NOTES
■	■	■	■	■	■
■	■	■	■	■	■

COURSE TO PLOT

DISTANCE	AZIMUTH	NOTES
◆ FEET	◆ DEG	

DIST	SC	SPP	DBH	DIS	DIR	NOTES
■	■	■	■	■	■	■

COURSE TO PLOT (cont.)

DIST	SC	SPP	DBH	DIS	DIR	NOTES

◆ All plots with Plot Staus = 1 or 2

■ All plot with accessible forest land

◇ New plots only when Plot Status = 1 or 2

ST	UNIT	CTY	PLOT #
xx	x	xxx	xxxx
◆	◆	◆	◆

FIELD CREW	
CRUISER	TALLY
xxx	xxx
◆	◆

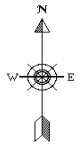
FIELD EDIT			OFFICE EDIT		
MO	DAY	YR	MO	DAY	YR
xx	xx	xx	xx	xx	xx
◆	◆	◆	◆	◆	◆

OWNERSHIP & PLOT LOCATION NOTES:

Record any additonal information regarding ownership, plot and/or subplot relocation. Notes pertaining to condition or specific tally variables should be written in the plot notes (back of the plot diagram).

CALCULATIONS

If applicable, show calculations used to determine the course to plot.



ALL PLOTS

Draw a sketch map of the general plot location that provides enough details so that the starting point can be relocated without the use of aerial photography or GPS. Include the distance to the nearest town, major road intersections, the locations of the SP and PC, as well as any additional landmarks that may be useful. Record distances that are driven in miles and tenths of miles, and distances that are walked in feet or chains.

◆ All plots

Tree Tally Guide Supplement: Regional Tree History Reference Table

This table applies to all subplots for SK 2 & 5 AND subplot 1 only for SK 6 & 7.

							No Change or tallied for the first time in CCS 1	LU 20, 30 or 52 to LU 31 - 50	LU 31 - 50 to LU 20, 30 or 52	CCS 2 - 5 to CCS 1 (LU 20 - 52)	CCS 1 (LU 20 - 52) to CCS 2 - 4	CCS 1 (LU 20 - 52) to CCS 5 (Nonsampled)				
							Trend 1	Trend 2	Trend 3	Trend 4	Trend 5	Trend 6				
	All trees/saplings require Subplot#, Tree#, Species, Hdist, Azimuth and the indicated variables except ME's 5th microplot. ME's 5th microplot requires only Subplot#, Tree#, Species and the indicated variables. Note: P3 crown and damage variables are not shown.	**Previous Tree Status**	**Present Tree Status**	**Reconcile**	**Standing Dead**		Valid Tree History >>>	Valid Tree History >>>	Valid Tree History >>>	Valid Tree History >>>	Valid Tree History >>>	Valid Tree History >>>		Cause of Death	Mortality Year	Notes
SK 2 & SK5-P3 microplots only	Live sap, new	null	1	1			20			22						
	Live sap: missed: was live	null	1	3			11,12,16,18									
	REM live sap: no status	1	0	5			50									
	REM live sap: no status	1	0	6			41									
	REM live sap: no status	1	0	7			50									
	REM live sap: no status	1	0	8			13,14,15,17									
	REM live sap: no status	1	0	9								38,39				
	REM live sap: live	1	1				10,21	33	23							
	REM live sap: now dead standing or down	1	2				41	44	23					X	X	
	REM live sap: removed	1	3				31	34			32, 42			x	X	If tree history = 32, cause of death = 80.
SK2: all subplots / SK5: all subplots and microplots / SK 6 & 7: subplot and microplot 1 only	Live sap: new	null	1	0			00									Not valid on SK 2 or SK5-P3 plots.
	Live tree: new or through growth	null	1	1,2			20			22						Reconcile = 2 on SK2 & SK5-P3 only!
	Live tree: previously live missed	null	1	3			11,12,16,18									
	REM live tree: no status	1	0	5,7,8			50									
	REM live tree: no status	1	0	6			41									
	REM live tree: no status	1	0	8			13,14,15,17									
	REM live tree: no status	1	0	9								38,39				
	REM live tree: live	1	1				10,21,27	27,33	23,27							
	REM live tree: was dead	2	1				19									
	REM live tree: now dead standing	1	2		1		21,27,30,40	27,33,43	23,27					X	X	If tree history = 30 or 33, cause of death = 80.
	REM live tree: now dead not standing	1	2		0		30,41	44						X	X	If tree history = 30, cause of death = 80.
	REM live tree: removed	1	3				31	34			32,42			X	X	If tree history = 32, cause of death = 80.
	Dead tree: new or through growth	null	2	1, 2			24			22				X	X	Reconcile = 2 on SK2 & SK5-P3 only!
	Dead tree: previously live missed	null	2	3			11,16,18,25							X	X	
	Dead tree: previously dead missed	null	2	4			11							X	X	
	REM dead tree or snag: no status	2	0	5,7,8			50									
	** REM dead tree or snag: no status*	*2*	*0*	*8*			*13,14,15,17*									
	REM dead tree or snag: no status	2	0	9								38,39				
	**REM dead tree: still standing & sound*	*2*	*2*		*1*		*53*	*53*	*53*					*00*	*0000*	
	Snag: new	null	2	1			24			22				X	X	
	Snag: previously dead missed	null	2	4			11,16,18									
	REM snag: still standing	2	2		1		53	53	53							
	REM snag: not standing	2	2		0		54	54	54		54					
	**REM dead tree or snag: removed*	*2*	*3*				*54*	*54*	*54*		*54*					*Not a valid Previous/Present Status combo*
	** Not sure if this could actually happen on an SK2 plot. It would be a rare event.*															

Table revised April 2005.