

## Instructions 2012 CIG Grant Vegetation Sampling Methods (7/17/12)

### Locate opening:

- 5 - 10 properties per forester (Cheshire, Grafton, Sullivan/Merrimack) using EQIP/WHIP properties when possible (see analysis by K. Ferrare on wiki)
- 1 to 5 openings per property
- Openings surrounded on at least three sides by forests
- Acceptable to have a few large trees in large patches e.g. > 2.0 acres
- Created within the last 10 years or so

### Number of Openings by Size (acres):

- Uncut =30
- < ½ =30
- ½ - <1.0 =30
- 1.0- <2.0 =30
- > 2.0 – 5.0 =30

### Determine opening size:

- Use GPS to determine opening size
- Save track to download to computer for mapping of all openings

### Number of plots required:

- A minimum of 10 plots per 2.5 acres (entire opening should be sampled even if the minimum number of plots are exceeded)

<u>Opening Size (acres)</u>	<u>Estimated Plots Per Opening Size</u>
0.25	1
0.5	2
0.75	3
1.0	4
1.25	5
1.5	6
1.75	7
2.0	8
2.25	9
2.5	10

### Locate plots in opening using a systematic random sample:

- Establish the first plot
  - By going to the approximate southwest edge of the opening
  - Pick two random numbers—1 through 100 (e.g. 55 and 20)
  - Head north 55 feet and east 20 feet, establish your first plot there, or if you aren't in opening continue to do this until you are. Then establish your first plot.

- Subsequent plots are determined using directions below (Sampling method).

## **Sampling Method**

### Plot location

- Locating plots by pacing is acceptable.
- Each plot center is 100 feet from each other.
- If plot center is too close to opening edge to allow the plot to fall completely within the opening, use the “walkthrough method,” as described below.
- Flag and label beginnings/ends of cruise lines. Flag and label plot centers.

### Plot Tallies

- Each plot is 3.72-foot radius (milacre)
- In each 3.72-foot radius plot
  - Tally all species of tree and shrubs. (see “Vegetation Tally Sheet Below”)
  - Measure height classes:
    - 0-2 feet
    - 2-6 feet
    - 6-10 feet
    - >10 feet
  - Plants leaning into the plot, but not growing in the plot aren’t counted (i.e. the base of the stem needs to grow in the plot)
  - Coppice stems are counted individually

### Suggested Plot Tally Technique (by Ken Desmarais)

- Mark center of plot with survey pin.
- Mark edge (3.72 feet) of plot with survey pins at 3 places. Tie flagging or string from the center survey pin to each edge pin. You should have created 2 slices of pie.
- Count all the seedlings in the first slice.
- Count all the seedlings in the second slice. When you are done counting the 2<sup>nd</sup> slice, move the middle marker and string over to create a new slice, leaving the outer edges of the slices in place.
- Continue slicing and counting until you meet up with your first marker.
- Slicing the plot in this way helps avoid overcounting and missing stems and is especially helpful in heavily stocked plots.

### **Locate uncut stand (by uncut we mean a stand that isn’t the opening)**

- Locate “uncut” plots on the same grid as the opening grid.
- The plots are milacre and use the same instructions for sampling as above.
- Establish the same number of plots as in the opening.
- We only need 30 uncut areas for the entire project, so do no more than one per property.

### **Field Equipment Suggested**

- GPS
- Compass

- 100-foot tape/chain optional
- 3.72-foot stick (milacre stick)
- Clicker-counter
- Flagging
- Survey pins
- Ruler
- Field guide to id plants
- Field tally sheets

## The Walkthrough Method

Steve Roberge's description:

- Make a line between the plot center and the seedling in question.
- Measure the distance of that line.
- Moving in the same direction/azimuth of the line between the plot center and the seedling, travel the distance you just measured.
- If you end up OUTSIDE the forest opening (aka "in the woods") then you count that seedling twice. If you are still INSIDE the forest opening (aka "in the scrub") tally the seedling once.
- This method will only be used if your plot edge (not the plot center) is within 3.72 ft (the radius of the sample plot) of your forest opening edge.

Table 1 is a dichotomous key for sampling scenarios in the field. Figure 5 shows the tally and double tally samples and at the end of the arrows in the Figure you'll find a Roman numeral referring back to Table 1.

### **Table 1. A decision key for field implementation of the walkthrough method. The key is entered whenever a tallied object appears close to the boundary.**

I. Is it possible that the tallied object is closer to the boundary, than to the sample point?

Ia. NO—No action needed. Tally the object normally.

Ib. YES—Proceed to II.

II. Measure the distance from the sample point to the object—call this distance  $x$ . Now measure the distance from the object to the boundary, continuing on the same bearing. Call this distance  $y$ . Is  $y$  less than  $x$ ?

IIa NO—No action needed. Tally the object normally.

IIb. YES—Proceed to III.

III. Does the boundary curve back across the walkthrough line?

IIIa. NO—Walkthrough point must be outside the tract. Double-tally the object.

IIIb. YES—Proceed to IV.

IV. Move to the walkthrough point, so that the distance to the object equals the previously measured distance  $x$  along the same bearing, or to a point where that location can be clearly identified. Is the walkthrough point inside the tract?

IVa. NO—Double-tally the object.

IVb. YES—Tally the object normally.

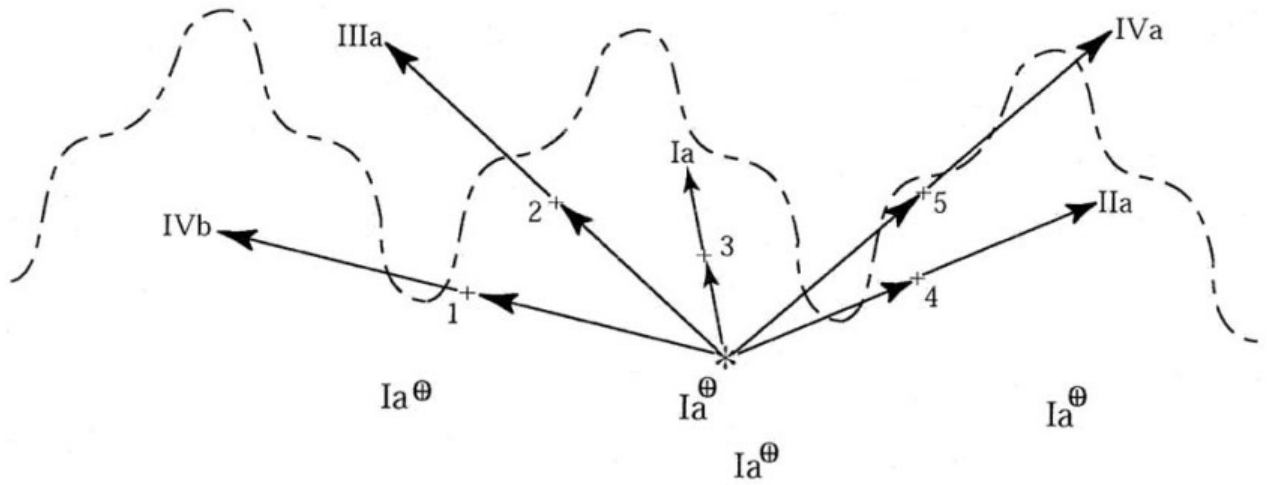


Figure 5. Graphic illustration of the walkthrough method. Five sample objects (+), lying close to the boundary, have been tallied from a sample point (\*). The arrows indicate the layout of the walkthrough points for each object; the outcome on the key in Table 1 is indicated for each walkthrough point. Objects 1, 3, and 4 are tallied normally; objects 2 and 5 are double-tallied. Four objects (⊕) lie "close to the boundary" but in positions where they would be single-tallied, and no measurements would be needed.

## 2012 CIG Grant Vegetation Tally Sheet

(note: only one cover sheet per opening needed, make your own copies)

**Forester:**

**Date:**

**Landowner:**

**EQIP/WHIP Practice?**

**Location Description (address):**

**Location (coordinates as UTM, lat-long):**

**Soil Type (include slope):**

**Aspect:**

Show approximate type changes on sketch

**Opening Size (acres):**

**Age of Opening (dates created if known):**

**Harvesting equipment if known:**

**General characterization of invasion of the surrounding forest:**

**Stand history if known or estimated:**

**Sketch of property, opening(s), plot(s) below or attached:**

