

PLOT FORM INSTRUCTIONS

MONTANA
STATE UNIVERSITY

EXTENSION

Extension Forestry • 32 Campus Dr. Missoula, MT 59812-0606

2017-06-27

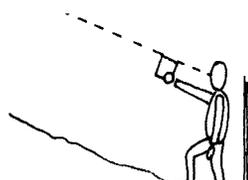
Landowner _____ Date _____

Management Unit _____ Plot No. _____

For future reference, be sure to complete the information to the left on each plot form.

1. Slope Percent

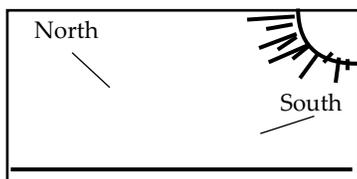
Use your clinometer.
Circle correct answer.



- 40% +
- 20-40%
- 0-20%

2. Aspect

Circle the general direction that your plot faces. If the plot is flat, circle flat.



3. Forest Structure

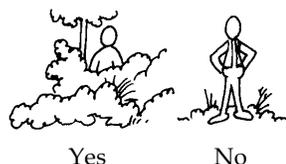
Use the 20 Forest Structure drawings on your metal clipboard.

Looking out from the plot center, select one that most closely resembles what you see. Record the number on the plot form.



4. Shrub Understory (visible from plot)

Are shrubs a significant part of the understory and waist high or more?
Circle correct answer.



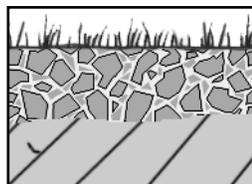
5. Soil Considerations (at plot)

Soil Organic Layer Depth:

Is there an organic layer (Duff) on top of the mineral soil and if so how thick is it?

Soil Depth:

Estimate of the total depth of soil to bedrock. You can dig with a shovel, observe road cuts and upturned root wads, and observe the amount of bedrock visible on the surface.

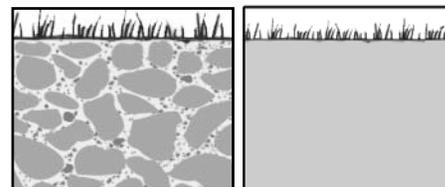


Soil Texture/Compaction:

When pressure is applied do your soil particles stick together or crumble? Feel the soil and mark all that apply. You may have a single soil type or a mixture.

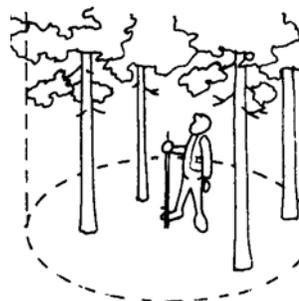
Soil Drainage:

Does soil particle size allow water to percolate quickly or will it stand and puddle?



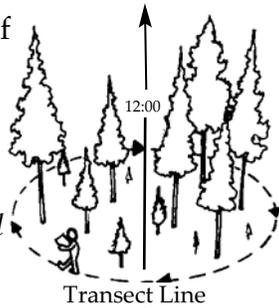
6. Tree Crown Cover (16.7' radius)

Visually estimate tree crown cover on the fixed plot (16.7' radius). Circle the percentage that most closely resembles what you see.



7. Seedling & Sapling Information (16.7' radius) Stop @ 20 total count

Systematic collection of plot information is important. **1** Start at 12:00 and work clockwise (12:00 is your direction of travel along the transect line).



2 Record tree species in first column using abbreviations

CT - Cottonwood	ES - Englemann Spruce
DF - Douglas-fir	LP - Lodgepole Pine
GF - Grand Fir	PP - Ponderosa Pine
PB - Paper Birch	RJ - Rocky Mountain Juniper
QA - Quaking Aspen	WL - Western Larch
SF - Subalpine Fir	WP - Western White Pine
WC - Western Redcedar	

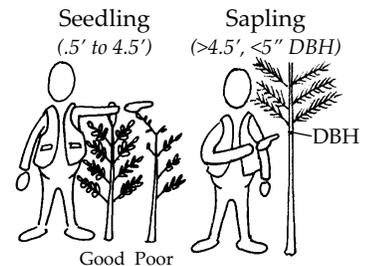
3 In the second and third columns, record the number of good or poor seedling and sapling trees based on condition.

Seedling --- is any tree $1/2$ to $4 1/2$ feet tall

Sapling ---- is any tree greater than ($>$) $4 1/2$ feet tall but less than ($<$) 5 inches in diameter at DBH ($4 1/2$ feet above the ground)

Good tree -- Healthy color, good terminal leader, symmetrical branching.

Poor tree --- Unhealthy color, damaged terminal leader, lopsided or few branches.



Use the "dot count" method to record the number of seedlings or saplings for each species and condition. Stop counting when the combined total of seedlings and saplings reaches 20 trees. Plots with more than 20 seedlings and saplings have an adequate number of young trees.

How to do a dot count:

• - one	— - five	□ - eight	⊗ - eleven
•• - two	— - six	⊠ - nine	⊗ — - fifteen
••• - three	— - seven	⊗ - ten	⊗ ⊗ - twenty
•••• - four			



Species	Good	Poor
LP	—	••

Example:

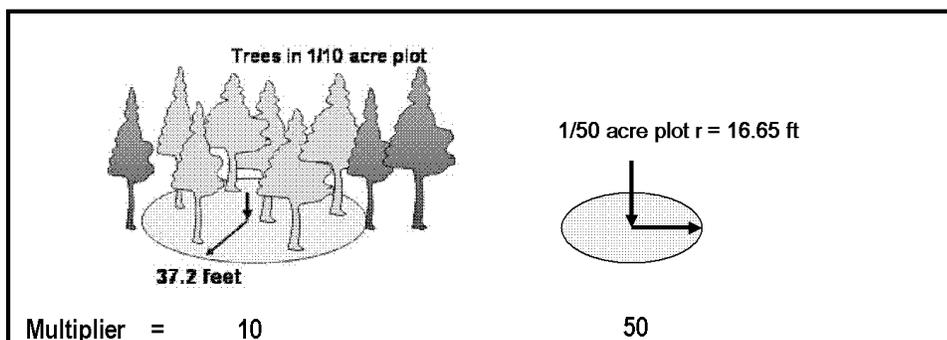
Shows six LP seedlings in good condition, two in poor condition.

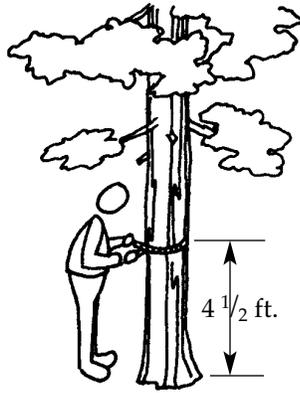
8. Large Tree Information (choose and use one plot size for all plots)

Choose a plot size that will contain about 6-10 trees per plot. Use your knowledge of your stand to determine the plot size you will use. Circle the plot size on all your plot forms now. Use the same plot size for all samples!

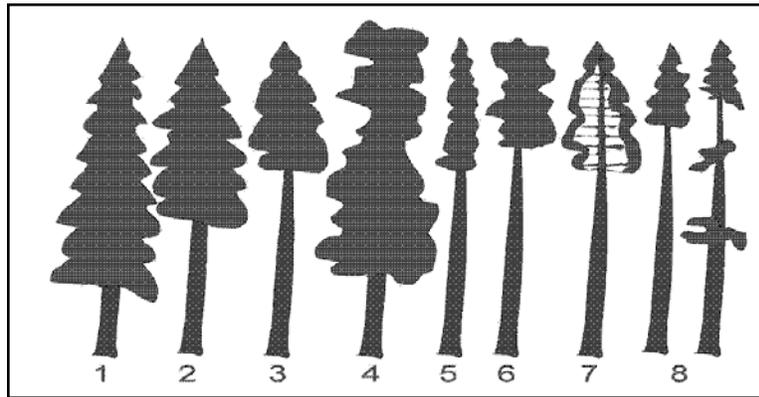
acre	radius
1/50	16.7'
1/10	37.2'

Use your chosen plot size radius (1/10 acre with a 37.2 foot radius is used for this example). Start at 12:00. From plot center, measure a distance of 37.2 feet with your tape measure and mark this spot with a piece of ribbon *or* with one person holding the end of the tape measure and a second person ready to record on your data sheet, measure at 37.2 feet, slowly rotate clockwise weave the tape around each tree within the plot to complete the circle. As each tree is encountered within the 37.2 feet from the plot center, record its species and condition by its size class. When you have rotated a complete circle you should have the total number of trees located in a circle with a radius of 37.2 feet. This represents 1/10 of an acre.





DBH is measured 4 1/2 feet above the ground.



Condition:

Good 1-4 - Healthy color, good terminal leader, symmetrical branching.

Poor 5-8 - Unhealthy color, damaged terminal leader, lopsided or few branches.

Dead - Any standing dead tree.

DBH Size Classes:

- 5 to 9 inches
- 9 to 15 inches
- 15 to 20 inches
- greater than 20 inches

9. 1st Fixed Plot Large Tree

- Determine the *Primary Species* found on the plot. This is the most abundant "Large Tree" species. Record the species abbreviation at the top of the first column.
- Determine the *Secondary Species* found on the plot*. This is the second most abundant "Large Tree" species. Record the species abbreviation at the top of the second column.

Example: If a plot had 5 DF "Large Trees", 3 PP "Large Trees", 1 LP, record as:

	Primary Species	Secondary Species
	DF	PP
DBH		
		

*In the case of a tie between Primary and Secondary species, look around the plot and use your judgement to choose.

To complete the table:

1 Start again at 12:00. find the first tree of the primary species. Measure its DBH to the nearest inch.

2 Take an increment core at DBH, count the total annual rings and add 10 years for the total age. Make a mark at every 10 year interval.

3 Using the scale on your compass, count the annual rings in the outermost inch of the core.

4 Repeat steps 1, 2 & 3 for the first large tree of your secondary species.

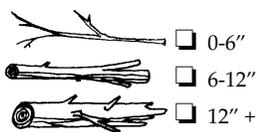
10. Stand Health/Appearance (at and between plots)

Check any insect, disease, animal, or physical defect present in the general vicinity of your plot.



- Bark Beetle
- Root Rot
- Porcupine
- Crook
- Rust

11. Down Woody Material (visible from plot)



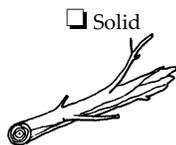
1 Look for the three diameter classes measured at large end. Pieces must be more than 6' long. Check all the size classes present.

2 Check all that apply to the arrangement.

3 Check all that describe the stage of decay (based on description below). Dispersed Piled



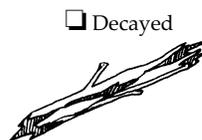
Solid down woody material has:



Solid

- Bark intact.
- Branches usually present.
- Solid wood throughout, center may be beginning to soften.
- Outer 1-3 inches beginning to soften, but center is solid.

Decayed down woody material has:



Decayed

- Bark usually off, may still remain on recently downed tree.
- Branches usually absent.
- Log soft throughout or outer 1-3 inches solid with hollow center.

12. Fire Hazard (visible from plot)

Circle the ratings that apply to each category.

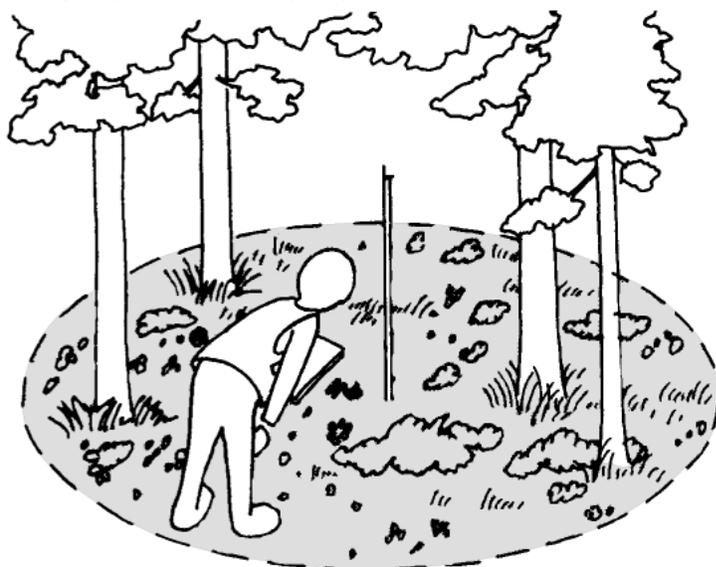
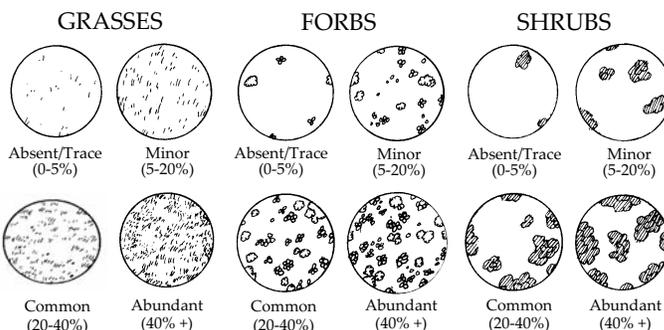
Circle the rating of the overall wildfire risk in the box at the upper right. Refer to the other fire hazard categories to complete this box.

13. % Ground Cover (16.7' radius)

1 Using the grass, forb, and shrub diagrams, estimate what % of the plot is covered by each type of plant when viewed from above.

2 Use your plant reference "Important Plants" to determine if the plant is acceptable or an invador.

3 Check the estimated cover percentage of Native/Acceptable and Weeds/Invaders plant species on the plot form. Note: Weeds/Invaders grasses and forbs separate 0% cover from 1-5% cover.



13. Ground Cover	0-5%	5-20%	20-40%	40%+
Native/Acceptable		<input checked="" type="checkbox"/>		
Weeds/Invaders	<input checked="" type="checkbox"/> 0-5%			

14. Cattle Forage Use (16.7' radius)

Read the descriptions below, circle the category which best resembles the cattle forage use.



Absent or Light:

The plot appears practically

undisturbed. If grazed, the preferred species will be the most used. Desirable species will show little use by cattle.



Moderate:

Grazing is readily apparent. Most

preferred plants will be grazed but still retain at least 40% of their ungrazed height. Many desirable species will be grazed, but some remain ungrazed or lightly grazed.



Heavy:

Preferred plants show heavy use.

Desirable plants show significant use. Desirable plants may show some grazing use.

15. Deer/Elk Forage Over-use (16.7' radius)

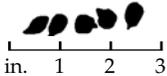
Read the descriptions below. Depending on the forage condition of the plot, circle Yes or No.

Over-use: Grazing or browsing is apparent on all plants preferred by elk and deer. **More than half the current year's growth used.** Preferred shrubs have stubby appearance.

Note: Over-use of preferred deer and elk forage does not necessarily mean they are the animals using the forage.

16. Presence of Pellets/Scat (visible at and between plots)

Deer:* Pellet is blunt on one end, small point on the other end.



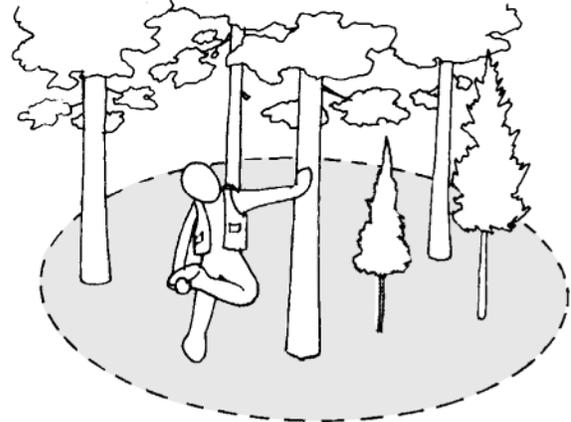
Moose:* Pellet is smooth on both ends.



Elk:* Pellet is indented on one end, pointed on the other end.



Bear: Thick (1-2" diameter) and piled. Content: berries, insects, plant and animal matter.



* Deer, elk, and moose pellets are best identified by size. Shape will vary depending on time of year.

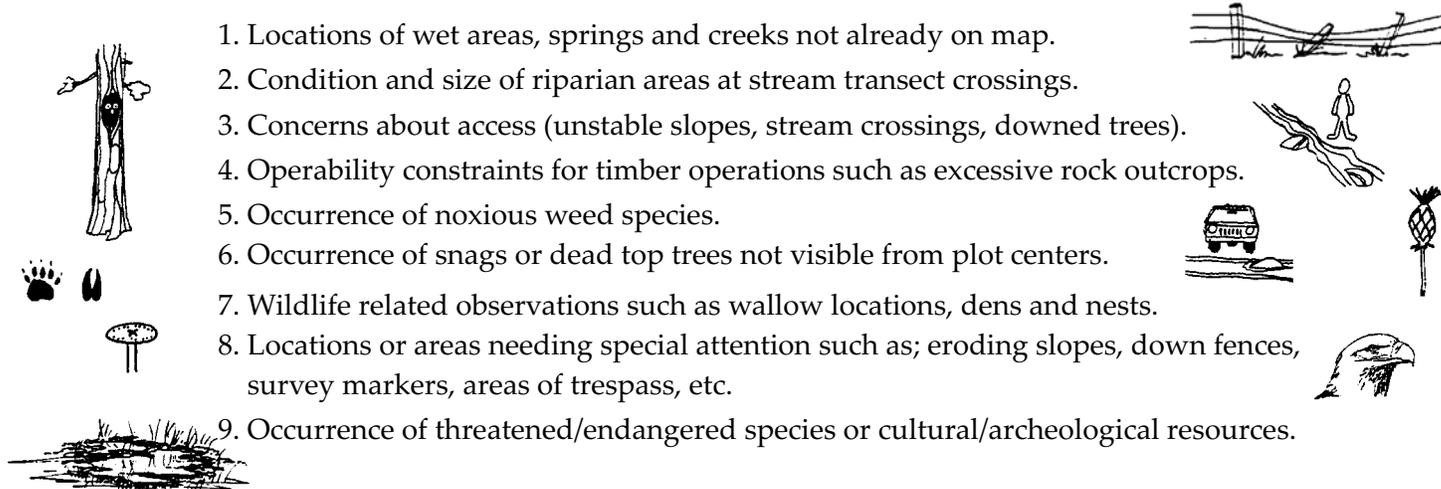
Example: Deer pellets might be smooth on both ends, but still distinguishable from moose pellets by their size.

17. Other Wildlife Sign (visible at and between plots)

Record other visible wildlife sign (e.g. nests, antler rubs, game trails, stripped bark, bird cavities in snags). Indicate the wildlife species if known.

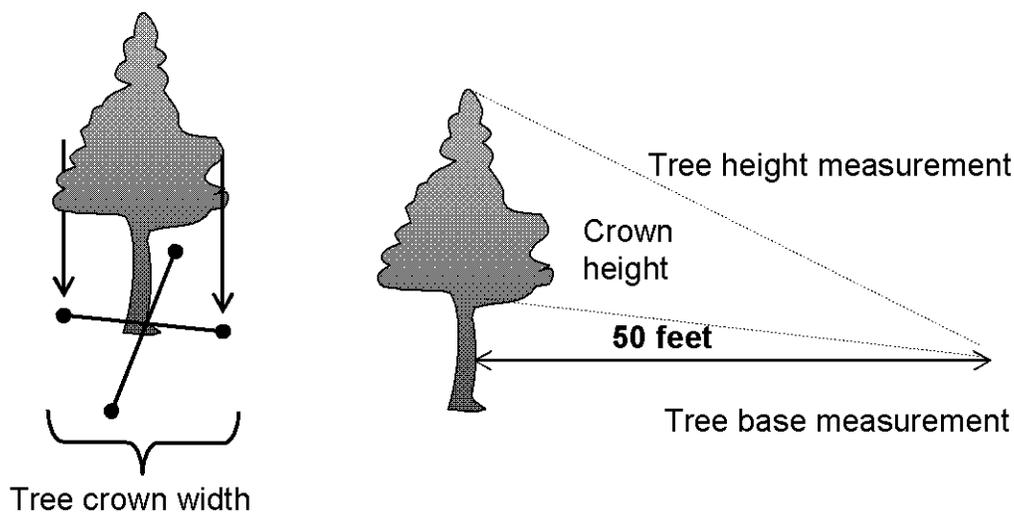
18. General Observations

As you walk your transect line take note of the location and presence of special features. Plot the location of these features on your base map. Use this space to make notes. For your convenience, check-off drawings of some common features are included. Other special features are listed below.



1. Locations of wet areas, springs and creeks not already on map.
2. Condition and size of riparian areas at stream transect crossings.
3. Concerns about access (unstable slopes, stream crossings, downed trees).
4. Operability constraints for timber operations such as excessive rock outcrops.
5. Occurrence of noxious weed species.
6. Occurrence of snags or dead top trees not visible from plot centers.
7. Wildlife related observations such as wallow locations, dens and nests.
8. Locations or areas needing special attention such as; eroding slopes, down fences, survey markers, areas of trespass, etc.
9. Occurrence of threatened/endangered species or cultural/archeological resources.

Extra: Measuring Tree Height



Materials: measuring tape and clinometer

Locate a spot with a clear view of the top and base of the tree you want to measure. Walk away from the tree measuring 50 feet. Try to stay at the same elevation as the base of the tree. Stand exactly 50' away in a position where the base and top of the tree is visible. The clinometer is used by looking through the window and aligning the line in the window with the top of the tree. The clinometer has two scales on it. The right scale is in % and is the one that should be used. When the line in the window is even with the top of the tree, the corresponding number on the right scale should be recorded. Next, the line in the clinometer window should be aligned with the base of the tree where it enters the ground. The corresponding number should also be recorded. If this later number is below the "0" on the scale, it should be recorded as a negative number. To calculate the height of the tree, subtract the reading taken at the base. Multiply the difference by the distance divided by 100 to get the total tree height.

Top of tree: 180

Base of tree: -4

Calculate: $(180 - -4) \times 50/100 = 92'$ tall

Top of tree: 180

Base of tree: 4

Calculate: $(180 - 4) \times .5 = 88'$ tall