

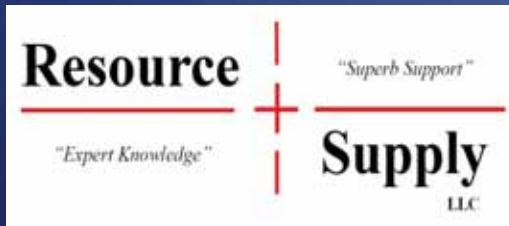
"Sampling System Selection"

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Timber Measurement Society Meeting

October 28, 2008



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Sampling Methods

- What limits us:
 - Accuracy
 - Cost
 - Timing
 - Trained Manpower
- What we need to know:
 - Purposes and goals for cruising
 - Uses of the cruise info
 - Area: Location, Topography, Access
 - Timber: Species, age, size
 - Value: Sorts, Grades

Sampling Systems

- 100%
 - Cruise of entire population
- Strip Cruise
 - Cruise of Percentage of Population based on strip width and interval
- Fixed Area Plot
 - Cruise of Percentage of Population based on plot size
- Variable Plot
 - Cruise of a sample of the population
 - Candidate trees determined by size
- Combinations of the above

Choose a Sampling System

- Required information about the stand:
 - Total Height
 - Ave. Diameter
 - Size of the unit in acres (or hectares)
 - Stand structure
 - Age

“If You Pick the Wrong Sampling System... You May Get the Wrong Answer”

Potential Errors

Variable Plot cruising very small trees.

- Missing trees that are “in”, and you don’t see them

- Underestimating the importance of Diameter in small trees

100% cruising large areas.

- Possibility of missing trees

- Sloppy tree measurements because of time constraints

Using Variable Plot Cruising when it is impossible to determine acreage

- Convolved stand boundaries

- Very low density stands

Timber Cruise Sampling System

Key

Small Areas up to 10 acres

Area Known

Small trees up to 8" DBH.....	Fixed Area Plots
Few Large Trees	100%
Many Large Trees	Strip Cruise or Fixed Plot

Area Unknown

Few Trees	100%
Many Trees	Strip Cruise

Larger Areas over 10 acres

Area Known

Small Trees up to 8"	Fixed Area Plots
Trees over 8"	Variable Plot Cruise
Even Aged stand w/large tree overstory ...	Variable Plot + 100%

Area Unknown

Strip Cruise

100% Cruise

- Entire Population – no less, no more

Approx. 30 Douglas Fir
Trees 50 years old.



Possible 100% Cruise Area



Shelter wood cut with large trees remaining

100%



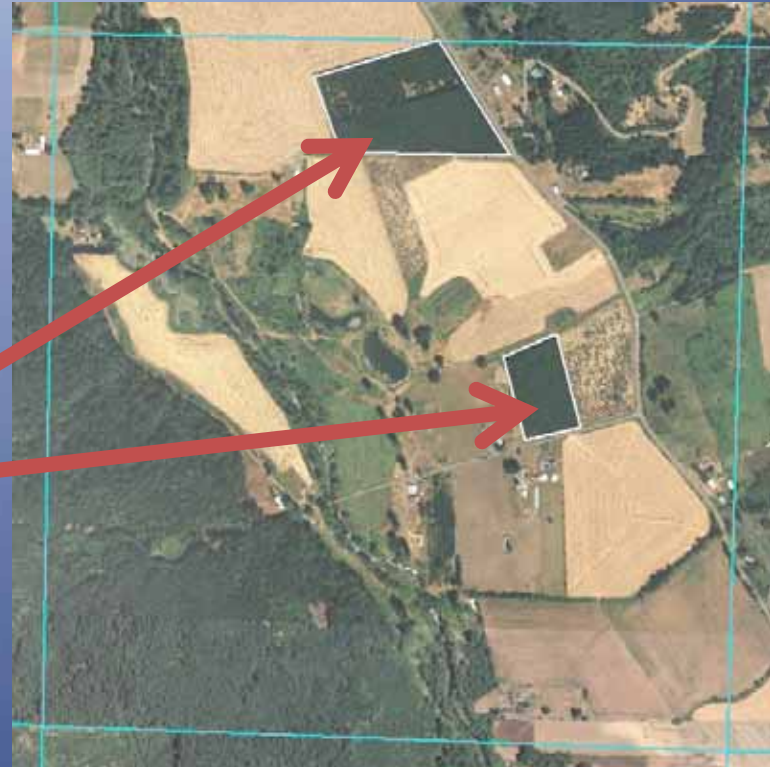
Fixed Area Plots

- May be circular or square/rectangular
- Average 9 to 10 trees per plot
- Works well for very small trees
- Works well if brush/topography doesn't allow
Variable Plot Cruising

Fixed Area Plots



Two Abandoned Xmas Tree Plantations. Perfect for Square or Rectangular Plots.



Average DBH is 8 inches
Spacing of trees is nearly perfect.

Strip Cruising

- A Cruise of a Percentage of the Population
- Volume of cruised trees X Blowup factor = Total Volume
- Cruiser does not need to know acreage

Strip Cruising Examples



Blow down timber near Seaside, Oregon



Riparian Stream Buffer

Variable Plot Cruising

- Use Relaskop, RD1000, Glass Prism, Angle Gauge
- Each tree is viewed at form point and compared to predetermined BAF factor.
- Trees larger than BAF are "In"
- Each sample tree has equal weight for Basal Area

Variable Plot Example Stands



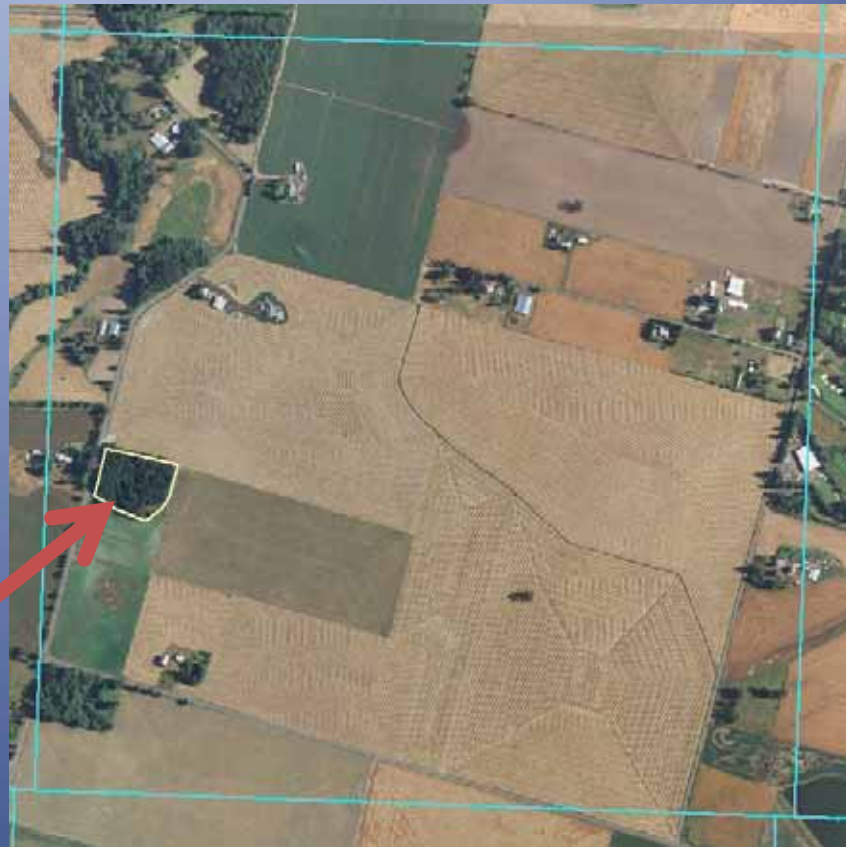
80 Year Old Douglas fir



More Variable Plot Examples



50 Year Old Douglas fir and Oak





40 Year Old Red Alder and Big Leaf M.

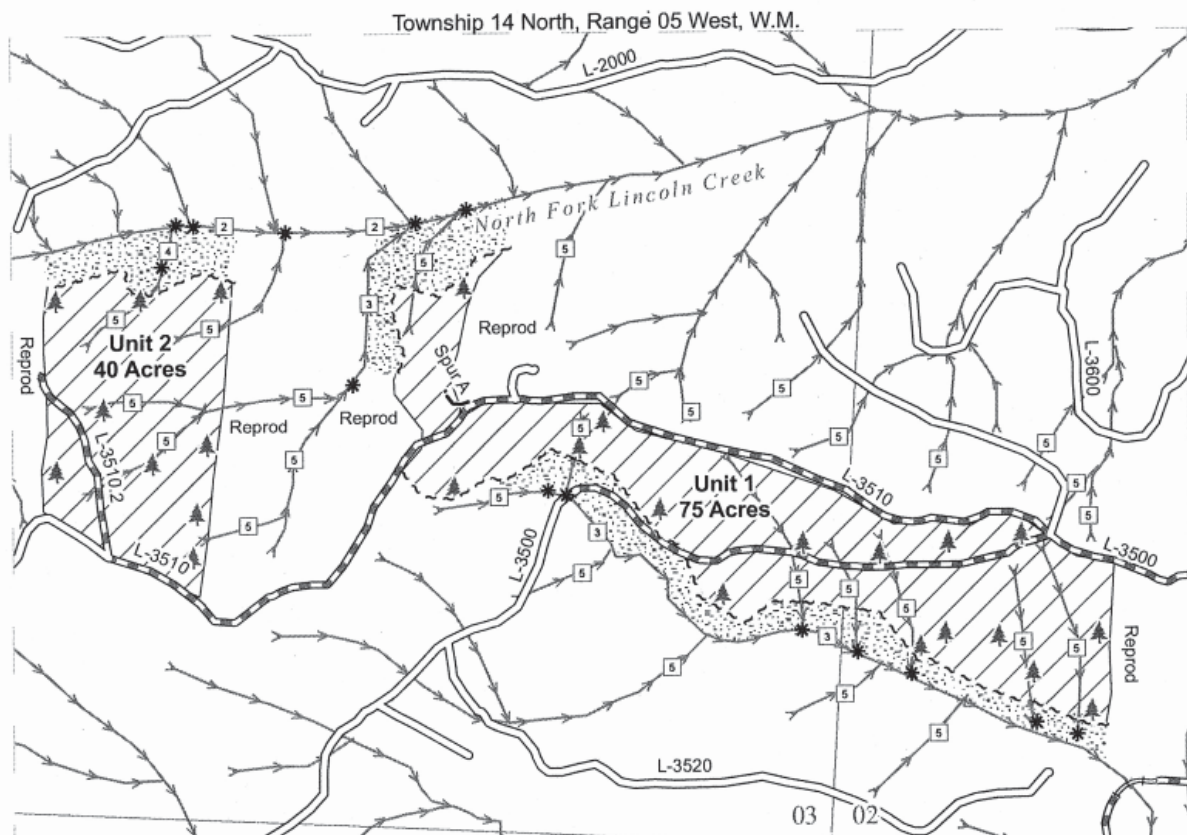


65 Year Old Douglas fir

TIMBER SALE MAP

SALE NAME: MIDNIGHT WAGER
AGREEMENT#: 30-082419
TRUST(S): State Forest Board Transfer (01)

REGION: Pacific Cascade Region
COUNTY(S): Lewis
ELEVATION RGE: 597ft.-1,326ft.



Washington DNR Timber Sale Map (Always check acreage)

Conclusion

1. Pick the best sampling system (before you leave the office if possible)
2. Make sure you take enough plots or sample enough area for a good answer
3. Measure or verify the acreage if using Variable Plot or Fixed Plot sampling
4. Use Laser Rangefinders for heights and distances to save time and increase measurement accuracy
5. Always think about what you are doing. Measure what is important, estimate the rest.