

Downed Woody Debris- Quick Guide

What Is It?

Includes:

- Dead trees, shrubs, and stumps
- Limbs, branches, and twigs
- Broken stems and trunks

Does not include:

- Anything living
- Trees leaning less than 45 degrees
- Anything below root collar
- Foliage or needles
- Decomposed wood chunks

How Is It Classified?

Coarse:

- Pieces greater than 3" in diameter

Fine:

- Pieces less or equal to 3" in diameter that are also less than 6' above the ground
- Classes:
 - (1) 0"-0.24"
 - (2) 0.25"-0.9"
 - (3) 1" -2.9"

How Is It Different from Other Forest Debris?

Mineral Soil:

- Combined organic and inorganic soil underlying forest floor

Duff:

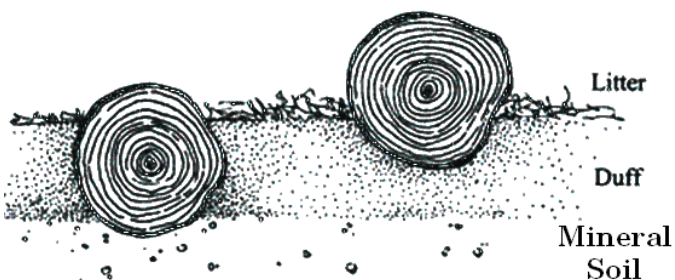
- Partially decomposed layer of mostly vegetative material above soil

Litter:

- Fresh, undecomposed and still recognizable plant debris on top of duff layer.

Downed Woody Debris:

- Part of litter layer
- Woody (not herbaceous or foliage) plant materials
- Must be less than 50% embedded into duff layer



Why Does It Matter?

Roles in:

- Fire Fuel Loads
- Carbon Storage
- Nutrient Cycling
- Wildlife Habitats
- Stream Structure
- Recreation

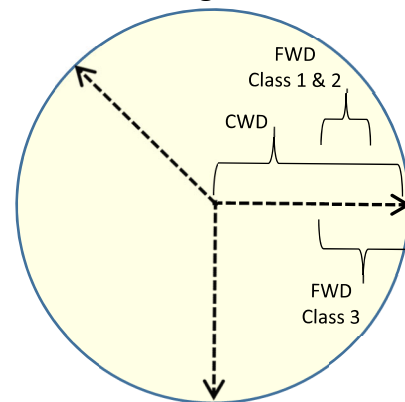
How Do You Measure It?

Fixed Plot:

- Random samples of a known area
- All debris within plot is measured

Transect:

- Linear paths are run across segments of the woodland
- Transect layout:
 - May share sample plot space
 - May be run independent of plots
 - Orientation may be 90-degree pairs, 120-degree triplets or randomly oriented singles



Simplified Transect Measurement:

- If line transects central axis of debris
 - Measure small and large end diameter of debris and debris length
 - Note size limits for class; limit length by class limit
 - Calculate volume (Smalian's)
 - Calculate length factor (in linear ft/acre) as
 - $LF = \frac{43560(ft^2/acre) \times \pi}{2L(ft)}$
 - Where L = length of transect line
- **Each** transected piece of debris represents **LF** linear feet of debris per acre
- **Ex.** If LF = 300 ft/ac and debris is 15 ft long, expect $300/15 = 20$ similar sized pieces of debris per acre

Downed Woody Debris- Quick Guide (cont.)

Measurement Considerations

- Debris measurement ends at size cutoff for class or where debris enters into duff layer
- Debris is counted **each** time it is transected
- Forked stems or major branches are counted as individual units (stop at start of fork)
- Systematic piles are estimated by geometric volume
- Only include intersected material on accessible lands exhibiting forest conditions
- Heavily decayed material may decrease effective diameters of debris

What About Complex Areas?

Use Preestablished Visual Estimators:



35.4 T/Ac



36.9 T/Ac



(1 m² Fine Woody Debris)

2.4 T/Ac

| DOWN & DEAD WOODY FUEL LOADINGS | | | OTHER FUEL DATA | | FIRE POTENTIAL RATING | | |
|---------------------------------|---------------------|-----------------------------|-----------------------------|---------------------------|--|------------------------|------|
| Size Class (inches) | T/acre | Weight (kg/m ²) | Average duff depth: | _____ in | Based on an average bad day: 85-90° temp., 15-20% RH, 10-15 mph wind, 4 weeks since rain | | |
| 0-0.25 | 0.5 | 0.11 | Average diameter, 3+ fuels: | _____ in | Rate of Spread: | high | |
| 0.25-1 | 2.9 | 0.65 | | _____ cm | Intensity: | high | |
| 1-3 | 12.9 | 2.89 | Percent rotten, 3+ fuels: | _____ % | Torching: | medium | |
| Subtotal 0-3 | 16.3 | 3.65 | Volume of sound 3+ fuels: | _____ ft ³ /ac | Crowning: | medium | |
| | | | | _____ m ³ /Ac | Resistance to control: | high | |
| 3-6 | 15.0 | 2.91 | STAND AND SITE DATA | | | Overall Fire Potential | HIGH |
| 6-10 | 2.2 | 0.49 | Age of overstory dominant: | STAND LOCATION | | | |
| 10-20 | 5.4 | 1.21 | LADC: | 134 yrs | National Forest: | Lolo | |
| 20+ | 0 | 0 | PICO: | 120 yrs | Ranger District: | Missoula | |
| SUBTOTAL 3+ | 20.6 | 4.61 | PSME: | 90 yrs | Drainage: | N. Fk. Swartz Cr. | |
| TOTAL | 36.9 | 8.26 | Average slope: | 50 % | Photo taken: | 6/20/77 | |
| | | | Aspect: | east | By: | W. C. Fischer | |
| | | | Elevation: | 5555 ft 1693 m | | | |
| | | | Remarks: | Fire Ecology Group Nine | | | |
| NFDRS FUEL MODEL | STYLIZED FUEL MODEL | | | | | | |
| G | 10 | | | | | | |

Corresponding Species/Location/Density Data Sheet



35.1 T/Ac (tons per acre)

Decay Classes

| Decay Class | Structural Integrity | Texture of Rotten Portions |
|-------------|--|---|
| 1 | Sound, intact, freshly fallen, bark on | Intact, no rot |
| 2 | Sound | Mostly intact, sapwood rotting and soft, can't pull off easily |
| 3 | Heartwood sound, supports own weight | Heartwood hard, rot beginning, large cubical rot pieces, sapwood easily pulled off or missing |
| 4 | Heartwood rotten, does not support its own weight, but holds shape | Heartwood soft, small cubical decay pieces, metal pin easily pushed into heartwood |
| 5 | None! Spreads out on ground, losing shape of log | Wood is soft, crumbly, heavily decomposed, powdery when dry |

A photograph of a forest floor covered in fallen, moss-covered tree trunks and branches. The scene is filled with vibrant green moss growing on the wood, and scattered autumn leaves in shades of orange and brown. The background shows more trees and foliage, creating a dense, natural setting.

Downed Woody Debris

Left Side

Intro

Describe downed woody debris and how it is differentiated from the forest floor in general.

Stance

Argue in favor of downed woody debris. Provide at least 3 supporting points as to why it is good with real world examples for each point.

Step 1

Step 2

Right Side

Intro

Describe how downed woody debris is measured (e.g., single piece, in a plot, in a forest).

Stance

Argue against downed woody debris. Provide at least 3 supporting points as to why it is bad with real world examples for each point.

Please make your arguments with full sentences, not just lists of points.



Step 3

Each Side

Counter

Confer with your group. Identify shortcomings in at least 1 of the opposing group's points. Provide a counter-example to support your counter.

Please make your arguments with full sentences, not just lists of points.

A photograph of a forest floor. The ground is covered with fallen branches and leaves, many of which are covered in bright green moss. The background shows more trees and foliage, some with autumn-colored leaves.

Step 4

Each side now split into groups of 3 or 4

Comprimise

Confer briefly within your small group. Come up with 2 or more suggestions for how we could compromise to balance to benefits and risks of downed woody debris.

Please make your arguments with full sentences, not just lists of points.