

DOWNED WOODY DEBRIS

AIM

To record and monitor downed woody debris using protocols developed by the Ontario Forest Research Institute, Ontario Ministry of Natural Resources.

RATIONALE

Down woody debris is important in forest ecosystems as it can influence the nutrient cycle, soil erosion and formation and water retention (Bellhouse & Naylor, 1996). Woody debris can also act as habitat and provide a seedbed for forest vegetation. Recording and monitoring downed woody debris can increase understanding of forest ecology and can then influence forest management practices.

BACKGROUND

Debris found on the forest floor can range from leaves and twigs to entire trees. However most of the above ground detritus pool consists of material larger than 7.5cm in diameter and this has been called down woody debris.

Downed woody debris has been found to play an important role in forest ecology. Nutrient cycling, water retention, soil disturbance, soil formation, erosion control, seedbeds and wildlife habitat are some of the ecological functions that relate to down woody debris.

Monitoring downed wood material will give a representation of the balance between the rate of recruitment and the rate of decay in a forest. Monitoring the stage of decay, size of debris and species will contribute to the understanding of relationships in forest growth and development.

CHECKLIST OF MONITORING ACTIVITIES

- ✓ Select location of study site and obtain permission;
- ✓ Complete site establishment protocols and mark exact location;
- ✓ Lay out transect;
- ✓ Record down woody debris present;
- ✓ Manage data sets;
- ✓ Send copy of data to EMAN office for national comparisons.

EQUIPMENT

Site establishment data sheet
Tape measure
Pen

Flagging tape
Down woody debris data sheet

LOCATION

In all cases once a site is chosen, *site establishment protocols* should be followed. Record any changes to site selection protocol that were made to accommodate site features.

Forest Biodiversity Plots

1. Site selection will have already been done in order to establish the forest biodiversity plot.
2. Create a transect by going along the west, north and east edges of the 20 x 20 metre forest plot until each transect reaches 45.15m (see figure 1). Identify each as line 1, 2 or 3.

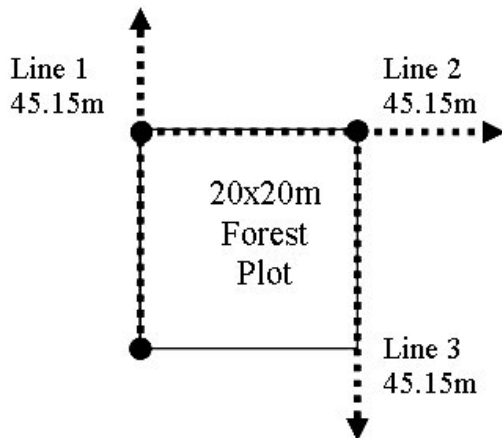


Figure 1. Example of 45.14metre transects for down woody debris

Urban/Natural Areas Plots

1. At the site, lay down a transect and select a random station or point along the transect.
2. From the station, lay line 1 at 90 degrees to the transect. Establish line 2 120 degrees from line 1 and establish line 3 120 degrees from line 2 (see figure 2). Each line will measure 45.14m.

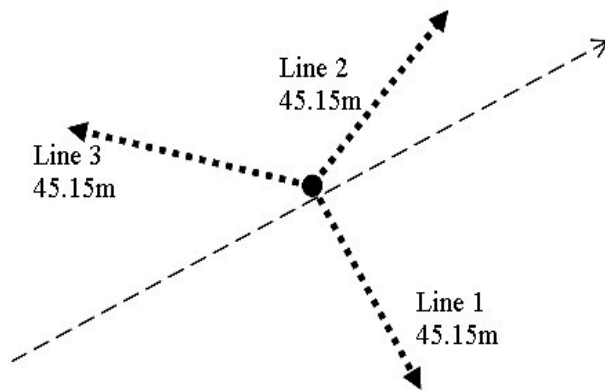


Figure 2. Example of 45.14 metre transects for down woody debris in non-plot areas.

DOWNED WOODY DEBRIS SAMPLING

Timing

The recording of downed woody debris can be done annually, along with other forest biodiversity monitoring protocols or on its own. Repeated sampling should be done at the same time of year.

Data Collection

1. Record the following information for every piece of downed woody debris that intersect each line and has a diameter of 7.5cm or more at the point of intersection.
 - Record line number and distance to point of intersection.
 - Record diameter at point of intersection.
 - Record species (if known, if not enter "0")
 - Type of debris (log/stump)
 - Log decomposition class (see appendix 1)



- Note evidence of the following: Burned / Hollow / Wildlife

DATA MANAGEMENT

1. Enter data into an appropriate data management system in order to allow for interpretation.
2. Hard copies of the data should be kept for future use.

DATA SHARING

Hard copies of the data sheets or electronic copies should be submitted to the Environmental Monitoring and Assessment Network (EMAN) in order to allow for regional, provincial and national comparison of decay rates and soil health.

REFERENCES

Bellhouse, T. & B. Naylor. 1996. The Ecological Function of Down Woody Debris in the Forests of Central Ontario. Central Region Science & Technology Technical Report No. 43 Revised, North Bay.

Hayden, J., Derley, J., Carr, D., Kenedi, T. & J. Hallarn. 1995. Ontario Forest Growth and Yield Program: Field Manual for Establishing and Measuring Permanent Sample Plots. Ontario Ministry of Natural Resources, Sault Ste. Marie.



SITE NAME:	SITE NUMBER:
LOCATION (DESCRIPTION/NEAREST NAMED PLACE ETC):	
Latitude/Longitude:	OBSERVATION DATE (mm/dd/yr):
OBSERVER NAME(S):	OBSERVER ADDRESS:
	TELEPHONE:

Comments:

Appendix 1

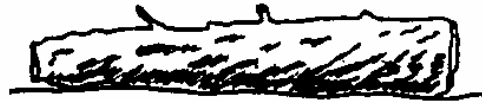
LOG DECOMPOSITION CLASS:

Log Characteristics	Class 1	Class 2	Class 3	Class 4	Class 5
Bark	Intact	Intact	Trace	Absent	Absent
Twigs	Present	Absent	Absent	Absent	Absent
Texture	Intact	Intact to soft	Hard, large pieces	Small, soft blocky pieces	Soft and powdery
Shape	Round	Round	Round	Round to oval	Oval
Colour of wood	Original colour	Original colour	Original colour to faded	Light brown to faded brown or yellowish	Faded to light yellow or grey
Portion of log on ground	Log elevated on support points	Log elevated on support points but sagging slightly	Log is sagging near ground	All of log on ground	All of log on ground

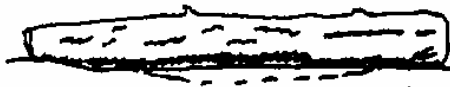
Log Decomposition Examples:



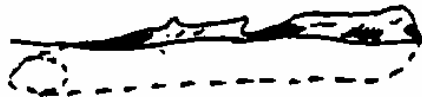
Decomposition Class 1



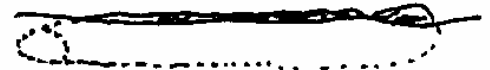
Decomposition Class 2



Decomposition Class 3



Decomposition Class 4



Decomposition Class 5