

Large Woody Debris Survey

Large Woody Debris Survey Methods and Data Form

Large Woody Debris Survey – Day 4

There are three basic types of Large Woody Debris (LWD):

1. Logs
2. Rootwads
3. Jams

Criteria

Dead wood in your stream reach must meet certain criteria to qualify as Large Woody Debris. These criteria are provided below for each of the three basic types of LWD.

Note: This is just one possible LWD survey protocol. Other protocols may establish different criteria. The choice of protocol will depend on the question you want to answer and the habitat type you are sampling.

1. Logs

Criteria to qualify as a log

- The log must be dead wood
- The log must be a minimum of 5 cm in diameter at the mid-point (Figure 1)
 - Diameter is measured to the nearest cm using a DBH tape at the midpoint of the log (if branches occur at the midpoint, measure the diameter just below the branches)
- The log must be a minimum 2 meters in length
 - Length is measured from end to end, including the root system if present
- The log must have a minimum of 10 cm within the bankfull channel (Figure 2).



Figure 1 (left). Example log. This piece of wood is dead, greater than 5cm at the midpoint (this log is being measured with a DBH tape at the midpoint), greater than 2 meters in length (end to end), and a minimum of 10cm within the bankfull channel.

Figure 2 (below). The log on the bank meets all of the size criteria for a log but is located outside the bankfull channel and it not counted in the LWD survey. So, it is important to establish the bankfull elevation before completing a LWD survey.



2. Rootwads

Criteria to qualify as a rootwad

- The dead root system must be fully detached from original position (Figures 3 and 5)
- The dead root system must be a minimum of 20 cm in diameter
 - Diameter should be measured to the nearest cm at the point where the trunk (bole) meets the root system (Figure 4)
- The dead root system must be less than 2 meters in length
 - Length should be measured from end to end
- The dead root system must be a minimum of 5 cm within bankfull channel



Figure 3 (top). This small rootwad is fully detached from its original position, is greater than 20cm in diameter and less than 2 m in length. This rootwad would be counted in the LWD survey.



Figure 4 (middle). Rootwad diameter should be measured to the nearest cm at the point where the trunk (bole) meets the root system



Figure 5 (bottom): This rootwad meets all of the size criteria but is not fully dislodged from its original position. It should not be counted in the LWD survey.

3. Jams

Criteria to qualify as a jam:

- accumulation of 3 or more qualifying logs physically touching at one or more points (Figure 6)
- A minimum of 5 cm must be within bankfull channel



Figure 6. This jam has the minimum number of qualifying logs (3) and should be counted as a jam in the LWD survey. Count the total number of jams in the stream reach and number of logs within each jam and record them on the datasheet.

Data analysis

1. Sum the tallies of (1) qualifying logs by size class, (2) rootwads, (3) jams in the reach, and (4) total qualifying logs (including individual logs in jams) and rootwads.
2. Divide each sums by the length of the stream reach length (ft)
3. Report as # per 100 stream feet by log size class, rootwad, jam, and total wood.

Example: 5 Class 3 logs/100 stream feet

Equipment

- (2) Diameter tape, metric (orange)
- (2) Biltmore stick (note, a Biltmore stick also measures log diameter but can be easier to use in some cases)
- (2) Woody debris instruction page and data form

Citation for Example LWD Method:

Basinwide Visual Estimation Technique (Dolloff, D.C. et al. 1993. Basinwide Estimation of Habitat and Fish Populations in Streams. Gen. Tech. Rep. SE-83. Asheville, NC, U.S. Department of Agriculture, Forest Service.