

NEEDLE ABUNDANCE AND NEEDLE LOSS DATA SHEET

This protocol uses trees NEAR identified and tagged Forest Watch trees. Do not use Forest Watch trees—save their needles for our usual protocols and sampling.

Students/Class _____ Date _____

School _____ Teacher _____

Tree # _____ Quadrant N, S, E or W (circle one)

Length of Twig.(mm)

Whole Twig _____ 1st year twig _____ 2nd year twig _____ 3rd year _____ 4th year _____

Are needles present?:

First Year needles, Yes _____ No _____ Full _____ Partial _____ Bare _____

Second year needles, Yes _____ No _____ Full _____ Partial _____ Bare _____

Third year needles, Yes _____ No _____ Full _____ Partial _____ Bare _____

Fourth year needles, Yes _____ No _____ Full _____ Partial _____ Bare _____

Focus on the twig which is PARTIALLY foliated. In the past, even if this twig contained only a few needles, we would count the branch as having that year of needles. For example, a branch containing only 8 second-year needles would be said to have two years of needles. Actually it only has 1.x years of needles. Let's calculate X.

Count the number of needles on the partially foliated twig _____.

Remove all of these for examination later.

Notice the pedicels at the base of each fascicle (groups of 5 needles). Mark each pedicel with a water proof marker.

Count the number of pedicels _____.

Multiple the number of pedicels by 5 _____. Why did you do this?

This is the number of needles the twig once had.

Calculate the percent of needles which remained on this twig: _____

Number of needles present/Total needles once there = % needles present

What is the precise Needle Retention on this branch: Add each full year of needles + the partial percentage. _____

Record these findings on this sheet and on the class summary data sheet.

NEEDLE ABUNDANCE AND NEEDLE LOSS SUMMARY DATA SHEET

Students/Class _____ Date _____

School _____ Teacher _____

Near Tree ID Numbers _____

Needle Retention Study

Tree Number	# Samples	Full Years Average	Partial % Average	Precise Retention Averages
<i>Example Near 1708</i>	5	1	25	1.25

Observations of Needle Condition (Discuss with students how many samples will produce a credible scientific sample.)

Near Tree Number	# Needles Examined	Avg. Needle Length (mm)	Tip Necrosis (yes/no)	Chlorotic Mottle (yes/no)	Fungi (yes/no)	Avg. Total Damage (mm)	Avg. % Damage

Observations you wish to report:

NEEDLE LENGTH AND INJURY DATA SHEET

Students/Class _____ Date _____

School _____ Teacher _____

Tree _____ Quadrant (N, S, W, E) (circle one).

	Number	Needle Length (mm)	Tip Necrosis (yes/no)	Chlorotic Mottle (yes/no)	Fungi (yes/no)	Total Damage (mm)	Avg. % Damage
	1						
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	Average of 10 needles						

Observations:

Describe the color or condition of needles.

Describe any weather or atmospheric conditions which prompted you to sample now.