

Recording Forest Measurements

4.0 Demonstrate ability to record forest measurements accurately and reliably.

4.1 Define good “note keeping” practices.

Note keeping practices

One of the most important skills that must be applied by forestry workers in the field is the proper recording of clear, concise, clean and accurate field notes. Whether these notes are to be recorded in a fieldbook, on standardized forms and tally sheets or simply on plain paper, professional quality notes are expected. This may have been stressed in other courses that you have taken and the application of guidelines and practices identified in these is expected in all your field-based work and on all forms, tally sheets and compilation sheets used while in school and in the workplace after graduation. You should be aware that, more often than not, in the real world, notes taken in the field, will be read and used by someone other than the notekeeper. **There should be no doubt whatsoever about what exactly has been recorded.** If the user of the notes has to do any interpretation or guessing - the notes are unacceptable! In some cases, notes will have to be duplicated by a photocopying process and as such they must be dark enough to ensure this.

While the list of guidelines may vary in format from different schools and workplaces, the most important and fundamental practices common to all field notes may be summarized as follows:

1. Always use pencil (preferably mechanical); a 2H lead is recommended.
2. Make entries dark enough to allow for photocopying.
3. Use vertical Gothic letters and numbers. It's preferred to use uppercase for text (written words/letters)
4. Record only to appropriate level of precision (not more precise or less precise).
5. Put the unit (cm or in) in the column header, not in the column entries.
6. Do not erase measurements! Mark off and replace with a new entry. This is different for a calculation which may be erased - but not a measurement.
7. Maintain proper column alignment – it looks professional and makes it easier when totaling.
8. Record data and information at time of measurement only.
9. Include a note on sheet (in the margin) where something out of the ordinary exists or an explanation is needed.

10. Always take notes so that an interested third party can get a complete and accurate picture of what has been measured and/or described without reference to the notekeeper.

11. Be consistent with notes – don't change formats halfway through a tally sheet or a workday.

4.2 Describe tally sheet preparation and tally sheet input.

With respect to data and information about the field conditions, it is critical that it be recorded in the field. Rarely will one be permitted to redo and/or complete forms later. In many situations, the notes will be sent away or stored for processing at a later date. Memory has nothing to do with notekeeping as the notes themselves are in fact memory replacers. Header information such as date, location, page numbers, etc should be filled in before you start the actual measurements. All of this type of information is as important to others as much, if not more so than it is to the notekeeper.

With respect to data that is recorded in columns, it is good practice to place the applicable units in the header. Units should not appear in the data entry blanks. Also, note that a ditto * is not a valid entry. Where no measurements has been taken, a dash (-) or NA (meaning not applicable) should be used depending on the situation at hand. In any case, every data entry must have a response. This is different at the end of tallies - ie, "no entries below this line"

Also, in relation to columns, the entries should be as large as the space permits, aligned vertically within the column and have the appropriate number of significant digits as the required precision calls for.

If standard codes are required, it is a good practice to have a code sheet taped to the inside of the tally board cover or have a code page printed in your field book. Only standard abbreviations should be used.

Below are a set of notes that have some acceptable and unacceptable components. Are you able to identify these unacceptable notetaking techniques?

diameter (cm)	Species	Diameter (cm)	Species
10.4	WZ	24.4	JK JP WS JK TL
27.5	1A	13.2m	WB
11	BP	11.	WP
18.11	F	127.1	WS
19.3cm	JP	*	*

4.3 Distinguish between units and numbers.

There are occasions when there is very little information on a sheet for the collection of information such as species, units, level of precision (ie. 0.1cm, 0.01m), and other information sought. When measuring, one should know what one is measuring, the units used, the level of precision and the number to record or announce to the notekeeper to record. Worthy of mentioning here is that a number is an adjective (not a noun) and that it describes a noun. The following two examples will help to make this clear:

The rows are two _____ apart.

I walked four _____ yesterday.

Notice that these two sentences wouldn't mean very much without the units (nouns) in their sentences. It's the same way when taking notes without much direction.

4.4 Discuss tally sheet protocols for various surveys.

Numbering systems

There are cases where it will be necessary to use zeros in front of other digits in order to maintain alignment in columns or to indicate required computer entry practices. Map, tree and plot numbers often have this requirement.

Examples: a La Ronge map sheet is 07131 not 7131 because the number of mapsheets in Saskatchewan are such that five digits are required. The average number of trees on a plot in a Saskatchewan Permanent Ecological Sample Plot (PESP) could go over a 100.

Therefore, the following practice is applied.

For tree number 1 we would use 001, and for tree number 11 would be 011, and follows that for tree number 214 would be recorded as 214. If another survey was designed and if the expected number of trees were to be less than 99, it follows that tree number 1 would be 01 instead of 001.

Note that when recording or calling out measurements it is incorrect to leave out the digit before the decimal when it is a zero.

As an example, professionals record 0.123 not .123 and say “zero decimal 123” in calling out. It is permitted and not uncommon to use the word “point” instead of decimal but nonetheless, the word decimal is the more technically correct.

With a person measuring and another person notekeeping, it is mandatory that after the measurer says aloud the measurement that the notekeeper repeats the measurement prior to recording in the field notes. Most forestry personnel will practice this method even when they’re recording for themselves!

Dead versus living trees

Occasionally, one might find that instructions regarding whether or not dead trees should be measured might be missing and there might not be provision on the tally sheet to separate these. In cases where the actual tree measurements (as opposed to tallies) are being recorded, we have found it convenient to circle the tree number of dead trees. This will enable the end user to clearly distinguish between living and dead if necessary in his or her analysis.

In cases where trees are tallied and you are uncertain as to whether dead trees should be counted, divide the column and tally separately.

Implied measurement standards

Unless specifically stated the word diameter implies diameter in centimeters, outside bark, of a standing tree at 1.30m above the average ground height. This is usually denoted as DBH (dbh) meaning diameter at breast height.

For permanent sample plots (PSP’s), trees are often tagged and may also have a painted ring. Generally, but not always, the tags are 15cm above the ring which is painted at BH.

Always study the graduations before using the instrument to ensure that you will be able to read and record to the appropriate number of significant figures called for in the project instructions. It is wise to do this before leaving the office to ensure that you have chosen the correct tool for the job.

Entry of dates

Dates may be recorded as May 1, 2006 or May 4/06 but computer entries will be numeric. It is suggested that the d/m/y style 04/05/06 be used.

Notekeeper

Generally, but not always the Crew Chief is also the notekeeper. There may or may not be provision made in the header information of a tally sheet or record page to enter the

notekeeper's name. If not, print NK or NOTES after the name of the person who did the recording.

4.5 Discuss reasons and rules of some field tally systems.

Tally systems

Recall from material presented earlier that there are a couple of methods of recording measurements. One method is recording a measurement right on the field sheet. There are two systems of recording a tally (or tallying) and these are known as the mill tally and the dot-dash tally method. Where trees are to be tallied (counted by class/size, etc), the standard system is to use the dot-dash method rather than the mill tally stroke. This allows for a greater number of entries per unit of tally space. This dot-dash tally method is very beneficial in times of high counts required such as a regeneration survey, or a down, woody debris survey

In general, class sizes will be 2cm and the following practice is to be adopted when converting raw data measurements to tally format. When trees are to be measured and recorded (tallied) by diameter classes, the class limits should be identified at the start of operations. For example:

If a tree's dbh was measured and it was 15.2cm. What diameter class would this tally in? if we set up a class limit for a 16cm class as: $\geq 15.1\text{cm}$ and $\leq 17.0\text{cm}$, then this measurement of 15.2cm would fall (or be tallied) in the 16cm class. Based upon this logic, what class would a measurement of 15.0cm fall into for tallying purposes?

Let's write out the class limits for the diameter classes of 14cm, 16cm and 18cm:

14cm	16cm	18cm
$\geq 13.1\text{cm}$ and $\leq 15.0\text{cm}$;	$\geq 15.1\text{cm}$ and $\leq 17.0\text{cm}$,	$\geq 17.1\text{cm}$ and $\leq 19.0\text{cm}$

According to the class limits identified here, the measurement of 15.0cm would be tallied as a 14cm diameter. It's important to note that the diameter class is a whole number (ie 14cm) while the field measurements were to one decimal place (15.2cm), which means that there is less precision involved with tallying because you are putting alike diameters in the one class. There being less precision with this method, we then record it as indicating less precision.

4.6 Identify common abbreviations and numerical precision called for in most forestry circles.

Abbreviations and equivalents

In the absence of instructions to the contrary the following is assumed:

No., no., N, n, and # refers to a specific assigned number (tree number, etc) or to the total number of units in a population or sample.

F, f refers to the frequency in a class

Stems or stems/ha = trees or trees/ha

Dbh – diameter at breast height

V, SVT and LVT means volume, standard volume table and local volume table

A is ground area and lowercase a is used to identify a plot of sample area

Rules of thumb for number of digits

diameter taped diameter	0.1cm
Suunto measured height	0.1m
length of stem or bolt	0.01m* (unless otherwise required)
expansion factor	0.0
Basal area	0.000 000 00m ²
tree volume	0. 000m ³
plot volume	0. 000m ³
volume/ha	0. 000m ³ /ha
stand volume	0m ³
woodlot volume	0m ³
area	0.0ha ^ in all cases except silviculture payment-related situations where 0.00ha will apply

Below are the upper case letters as they should appear in field notes. A look at the numerals will reveal that the number four (4) is not the traditional four in common usage, and that the number 7 is not crossed as in common usage in some locations. Remember that in some forestry circles, some people may only see you through your field notes!

A B C D E F G H I J K
L M N O P Q R S T U
V W X Y Z

1 2 3 4 5 6 7 8 9 0

