Region One
Vegetation Classification, Mapping, Inventory and Analysis Report

VMap Forest Field Data Collection Manual

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Field Data Collection Manual

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Safety

Job Hazard Analysis

Priority Number 1 is to be safe at all times. Working safely is the most important thing we do. Collecting training data for map production is not worth putting yourselves or your crew at risk. Priority Number 2 is to enjoy yourselves while you collect some quality data. I can guarantee that if you don't take care of Priority Number 1 you won't be doing very much of Priority Number 2. Please review the JHA for VMap Field Data Collection, sign, and return it to your supervisor.

Check In/Out procedures

Please adhere to all check in/check out procedures for the Ranger District that you are working on. Please make a point to either call or stop in at the District office at the beginning of every work tour to let them know what you will be doing and what your plans are for the week. Make sure you get permission to camp if plans include primitive camping.

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Office Procedures

Charging Hardware

All mobile equipment should be fully charged before heading to the field each morning. If camping in a remote location without electricity, it is highly recommended to charge the mobile units while driving (especially at the end of the day). A car charger will be supplied to each crew. It is advisable to perform a 'soft-boot' or reset on each piece of hardware prior to re-charging at the end of the day.

Procedures to Measure Forest Stand Attributes

For our purposes valid lifeforms include: Tree, Shrub, Herbaceous, Sparsely Vegetated, and Water. Distinctions between these are made based on absolute canopy cover within the polygon. To be classified as a Tree lifeform the stand must have at least 10% absolute canopy cover of trees in the overstory (visible as cover from above). Trees that are too small to be in the overstory do not count towards the lifeform classification.

Canopy Cover (CCV)

Canopy cover is the percentage of ground surface area covered by a vertical projection of live crowns. Small gaps in the canopy are included. Initially, canopy cover will be measured using line intersect sampling. Once familiarity with the procedures and types has been gained, ocular estimates of canopy cover can be made to cut down on the amount of time spent on a plot and increase the overall number of samples collected. Map canopy cover classes are as follows:

	Description	Class	Code
o	0-10%	non-tree lifeform	(3000)
o	10-25%	low canopy cover	(4001)
o	25-40%	moderate-low canopy cover	(4002)
o	40-60%	moderate-high canopy cover	(4003)
o	60-100%	high canopy cover	(4004)

Tree Size (TSZ)

Tree Size class is a canopy-cover-weighted mean diameter at breast height (DBH). Essentially trees with larger canopies count more towards the Tree Size estimate for the stand, this way a sea of saplings in the understory does not detract from the overall size class estimate for an otherwise mature stand of trees. Map tree size classes are as follows:

	Class Description	Code
o	0-4.9 inches DBH	(4100)
o	5-9.9 inches DBH	(4200)
o	10-14.9 inches DBH	(4300)
o	15.0 + inches DBH	(4400)

Dominance Type (DOM6040)

To classify tree dominance type (dominance group 6040), a map feature must first be classified as tree lifeform (i.e. it must have at least 10% absolute canopy cover of trees). Tree dominance group 6040 is based on two thresholds of relative abundance: 60% and 40%. If the single most abundant tree species comprises at least 60% of the relative canopy cover of the stand, the class assigned is the single species label for that type (e.g., ABLA (8060), PIPO (8010)). If the most abundant species comprises less than 60%, but at least 40% of the relative cover, the class assigned is the species PLANTS code with a suffix of the tree lifeform subclass, such as PICO-TMIX (8054) or PICO-IMIX (8053) (see Table 1 for species' assignment to IMIX, TMIX, and HMIX). It is important to note that the lifeform subclass suffix (IMIX/TMIX) is based upon *all* the trees within the setting, including the most abundant species. It does not describe only the 'other' trees besides the dominant listed. If the relative cover of the single most abundant species comprises less than 40% of stand, the class label assigned is the tree lifeform subclass; HMIX, IMIX, or TMIX. Note, if more than one species has the same abundance then the dominant species is based on the following tie-breaking criteria (in this order): largest basal area weighted average diameter calculated for each dominant species; largest basal area weighted average height; or alphabetical based on PLANTS species code.

Table 1. Region 1 tree species and their assignment as hardwood, shade-intolerant conifer, or shade-tolerant conifer tree types for use in determining tree lifeform subclass.

Species Common Name	Plants Species (Code)	Tree Type Assignment
Aspen	POTR5 (8170)	Hardwood (HMIX) (8600)
Cottonwood and poplar	POPUL (includes POBAT, POAN3, PODEM, POBA2) (8160)	
green ash	FRPE (8190)	
paper birch	BEPA (8140)	
alpine larch	LALY (8030)	Shade-intolerant conifer (IMIX) (8400)
Douglas-fir	PSME (8020)	
Juniper	JUNIP – includes JUOC, JUOS, JUSC2 (8180)	
limber pine	PIFL2 (8150)	
lodgepole pine	PICO (8050)	
mountain mahogany	CELE3 (8200)	
ponderosa pine	PIPO (8010)	
western larch	LAOC (8040)	
western white pine	PIMO3 (8080)	
whitebark pine	PIAL (8120)	
Englemann spruce	PIEN (8070)	Shade-tolerant conifer (TMIX) (8500)
grand fir	ABGR (8030)	
mountain hemlock	TSME (8110)	
pacific yew	TABR2 (8210)	
subalpine fir	ABLA (8060)	
western hemlock	TSHE (8100)	
western redcedar	THPL (8090)	

Line-Intercept Transect Protocols

Along a 100' transect, estimate tree canopy by measuring a vertical projection of tree canopy cover every 10 feet. Use a densitometer or clinometer to project points vertically.   Mentally throw a sheet over the tree canopy to include small canopy gaps in the measurement. Any non tree canopy intercepted should not be included in the measurement. At each interval also record the tree size and dominance type for the intersected canopy. Sum the canopy occurrence for the transect and multiply by 10 to determine percent canopy. Repeat this for three transects, then average all the transect estimates to obtain a canopy cover estimate for the stand. Average the canopy estimates for each class and then divide by the total canopy estimate to obtain a relative cover estimate for each dominance type. This is all easily accomplished by entering the pertinent information into Stand_Transect_Analsysis.xlsx spreadsheet shown in the example table below (Table 2).

Table 2. Example Line-Intercept Spreadsheet

Date	6/20/2011					
Model #	5001					
GRIDCODE	56892					

Transect	CCV	TSZ	DTB	CCV	Count	Cover Percent
	1	4200	8020	0	14	
	1	4200	8020	1	16	53
	1	4300	8010	CCV		**4003**
	1	4300	8010			
1	1	4200	8020			
	0					
	0					
	0			TSZ	Count	Class Weight
	0			4100	2	8.0
	0			4200	4	36.0
	1	4100	8040	4300	9	126.0
	1	4100	8040	4400	1	19.0
	0			WT DBH	16	11.81
	0			TSZ		**4300**
2	1	4300	8010			
	1	4300	8040			
	1	4300	8040			
	1	4300	8010	DTB	Count	Relative Percent
	0			8010	6	38%
	0			8020	4	25%
	0			8030	0	0%
	1	4400	8040	8040	6	38%
	0			8050	0	0%
	0			8060	0	0%
3	1	4300	8010	8070	0	0%
	1	4300	8010	8090	0	0%
	1	4200	8020	8120	0	0%
	1	4300	8040	8160	0	0%
	0			8170	0	0%
	0			DOM6040		**8400**

The spreadsheet automatically calculates CCV and TSZ and provides the necessary information for a determination of DOM6040 by the user based on the rules defined in the DOM6040 section above. If a given dominance type does not meet the 60% plurality rule, the DOM6040 code should end in either a "3" or a "4", representing the IMIX or TMIX portion of the cohort, rather than a "0". For example, if the the stand is comprised of 55% Douglas-fir (8020), 20% ponderosa pine (8010), and 25% larch (8040), the resulting label should be 8023. If the Douglas-fir had exceeded the 60% threshold then the code would have been 8020. In the example from Table 2 there is no single species that comprises at least 40% of the stand so the resulting code is 8400, reflecting the IMIX character of the cohort.

The purpose of the line intercept is to calibrate your eye and familiarize yourself with what the various classes look like in the field. The goal being that after you are calibrated, consistent and accurate ocular estimates can quickly be made for each stand and information on a sizeable number of stands can be collected in a short amount of time. At the beginning of the field season it might require that transects be completed on every stand for the first hitch. Subsequent hitches might begin with transects for the first day to re-calibrate, but you should move to ocular estimation of the classes as soon as you are confident that you can make an accurate and consistent call.