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ESTIMATING D. B. H. FROM STUMP DIAMETER
IN THE PACIFIC NORTHWEST

by

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In timber trespass cases or timber cut studies, a method of estimating d. b. h. is necessary in order to determine the approximate gross tree volume that has been removed.

Recent logging utilization studies in Oregon and eastern Washington provided data for computing the relation between tree stump diameter and corresponding d. b. h. for some of the more common species. Stump diameters were obtained by averaging two measurements, one across the axis of greatest diameter and the second at right angles to the first.

When these measurements were plotted graphically, they tended to lie in a straight line. Several statistical curve forms were tested, and a straight line through the origin was found to be the most adequate for each species. The slope of such a line is the ratio of d. b. h. to stump diameter inside bark.

Table 1 presents, for each species, the ratio of d. b. h. to stump diameter and the standard error of the estimated ratio. Number of trees sampled, average tree diameter, and diameter range are included to give a better picture of the sample.

Table 1.--Ratio of d.b.h. to stump diameter inside bark, by species

Species	Ratio	Standard error of the estimated ratio	Sample basis		
			Trees	Average d.b.h.	Range of d.b.h.'s
Ponderosa pine	0.987	0.005	223	29.0	10.7-53.1
Douglas-fir (east side)	1.006	.023	105	22.6	11.0-39.9
Douglas-fir (west side)	1.021	.010	59	29.6	11.3-47.3
Western larch	1.003	.012	55	18.6	9.8-28.9
Lodgepole pine	.937	.012	28	14.2	9.6-22.7
White fir	1.014	.011	27	24.9	13.0-43.0
Subalpine fir	.865	.025	17	13.7	10.9-18.8
Engelmann spruce	.832	.010	14	13.5	9.0-25.2

D. b. h. can be estimated by multiplying stump diameter by the appropriate ratio. If a ratio is desired for combinations of these species, the number of trees can be used for computing a weighted-average ratio.