

Local volume equations for:

Flindersia brayleyana
Eucalyptus saligna
Eucalyptus grandis



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May 10, 1999
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The following volume equations represent the first update of those originally posted on 4/5/99. The equations were developed through destructive sampling of *Flindersia brayleyana* (n = 45), *Eucalyptus saligna* (n = 74), and *Eucalyptus grandis* (n = 23) trees in 1998. Data for *Flindersia* were collected within Waiakea, while those for the eucalypts were collected in Waiakea and Hamakua. Data analyses were conducted by Forest Biometrics, of Portland Oregon.

Six equations are provided for each species: total cubic foot volume, merchantable cubic foot volume, and merchantable board foot volume as a function of either diameter at breast height alone (D in inches), or D in combination with total height (H in feet). Total volume represents bole volume from tree base to tree tip. Merchantable volume represents bole volume above a one foot tall stump, and below a four inch top, assuming 16 foot log lengths. All equations were developed while accounting for bark thickness, and provide volume figures as wood net of bark. Bark and branch volume analyses were not conducted during this study.

All feedback on the utility and accuracy of these equations would be highly appreciated. Such feedback would allow for updates of equation coefficients, and increase the quality of these equations for use within the forestry community in Hawaii. Please contact Michael Constantinides or Ron Cannarella if you utilize other equations for these species, or have the opportunity to validate these equations through additional sampling.

Flindersia brayleyana**A. Gross cubic foot volume:**

$$V = 3.8407 - 1.1845D + 0.32158D^2$$

$$V = 1.0099 * ((D/24)^{1.755}) * H$$

B. Merchantable cubic foot volume:

$$V = 2.0708 - 1.1167D + 0.31596D^2$$

$$V = 0.9920 * ((D/24)^{1.757}) * H$$

C. Merchantable board foot volume (Scribner):

$$V = 84.377 - 22.624D + 2.4932D^2$$

$$V = 6.4461 * ((D/24)^{1.868}) * H$$

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Eucalyptus saligna

A. Gross cubic foot volume:

$$V = 4.4529 - 1.3308D + 0.33149D^2$$

$$V = 1.0303 * ((D/24)^{1.762}) * H$$

B. Merchantable cubic foot volume:

$$V = 2.8956 - 1.2704D + 0.32599D^2$$

$$V = 1.0128 * ((D/24)^{1.764}) * H$$

C. Merchantable board foot volume (Scribner):

$$V = 96.775 - 24.618D + 2.5885D^2$$

$$V = 6.6011 * ((D/24)^{1.876}) * H$$

Eucalyptus grandis

A. Gross cubic foot volume:

$$V = -10.883 + 0.36233D^2$$

$$V = 1.2354 * ((D/24)^{1.723}) * H$$

B. Merchantable cubic foot volume:

$$V = -11.46 + 0.35724D^2$$

$$V = 1.2170 * ((D/24)^{1.724}) * H$$

C. Merchantable board foot volume (Scribner):

$$V = -8.8252 - 15.869D + 2.8595D^2$$

$$V = 0.8189 * ((D/24)^{1.818}) * H$$

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