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### Abstract

#### Height growth and site index models for Pacific silver fir in southwestern British Columbia

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Following an exploratory examination of the variation in the height growth pattern using a singlevalued ratio, conventional polymorphic and climate-specific height growth and site index models were developed for Pacific silver fir (*Abies amabilis* [Dougl. ex Loud.] Forbes). The models were developed from stem analysis data obtained from 67 study plots, which were located over the entire elevation-continentality range of the species in southern coastal British Columbia. When tested against an independent data set consisting of 31 plots, the climate-specific models improved height and site index prediction compared to the conventional polymorphic models. The previously available model for Pacific silver fir was biased. It overestimated height before, and underestimated it beyond, the index age. It also underestimated height on low-productivity sites and overestimated it on high-productivity sites. In consequence, when this model was used to estimate site index from top-height and breast-height age, it underestimated site index before, and overestimated it beyond, the index age. Similarly, site index was overestimated on low-productivity sites and underestimated on high-productivity sites. The climate-specific models developed in this study are recommended for height and site index estimation of Pacific silver fir stands within a range of breast-height age from 15 to 160 years in southern coastal British Columbia.

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