



The Distribution and Synopsis of Ecological and Silvical Characteristics of Tree Species of British Columbia's Forests

by K. Klinka, J. Worrall, L. Skoda, and P. Varga

An updated silvics text for British Columbia

The need for an effective learning tool for silvics - one of the basic required courses in forestry - has been recognized by instructors as well as students across the province. The text prepared 18 years ago by Krajina *et al.* (1982) specifically for western Canada has become outdated. The silvics text by Burns and Honkala (1990) represents an up-to-date compendium but it is not an effective learning tool, particularly lacking in the linkage of silvics to ecological classification. Consequently, we revised and expanded "*Distribution and Ecological Characteristics of Trees and Shrubs of British Columbia*" (Krajina *et al.* 1982) using the available information on silvics, with some modification for BC and the results of recent silvics research done in BC. This material has been consolidated into a format that will help students understand the silvical attributes of tree species as well as the relationships between trees and their environments. To enhance learning, we have selected a series of slides illustrating the salient characteristics for each species and present this visual component on a CD-ROM included with the text. Also included is a large biogeoclimatic zone map of BC. The text, together with the CD-ROM, is intended to facilitate learning of silvics emphasizing its application to silviculture.

Special features

The text consists of explanatory notes, information on the ecological and silvical characteristics for 36 tree species, species comparisons, and species diversity maps.

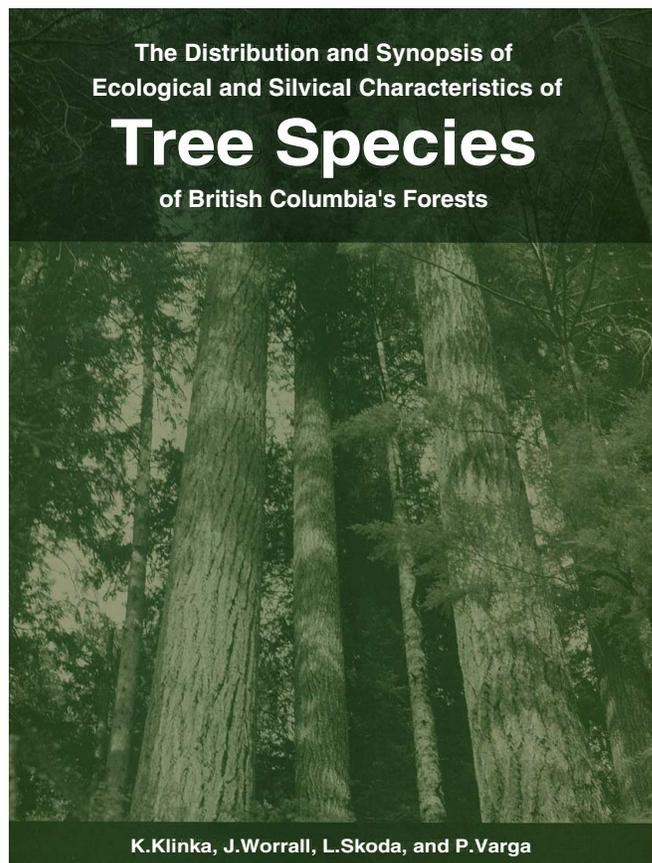


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ACKNOWLEDGMENTS	Softwoods	<i>Taxus brevifolia</i>
INTRODUCTION	<i>Abies amabilis</i>	<i>Thuja plicata</i>
EXPLANATORY NOTES	<i>Abies grandis</i>	<i>Tsuga heterophylla</i>
Nomenclature	<i>Abies lasiocarpa</i>	<i>Tsuga mertensiana</i>
Geographic Range	<i>Chamaecyparis nootkatensis</i>	Hardwoods
Climatic Amplitudes	<i>Juniperus scopulorum</i>	<i>Acer macrophyllum</i>
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Notes	<i>Pinus monticola</i>	<i>Rhamnus purshiana</i>
CD-ROM	<i>Pinus ponderosa</i>	SPECIES DIVERSITY
		SPECIES COMPARISONS
		LITERATURE CITED

Explanatory notes

Explanatory notes describe the concepts and terms used in the synopses, such as geographic, climatic, and orographic amplitudes, and the soil moisture and soil nutrient regimes. The notes also explain how the values given for tolerances, resistances or risks to damaging agents, associated tree species, and silvical characteristics were inferred from the available information, and how to use the visual CD-ROM module.

The synopses

For each species we provide: (1) geographic distribution related to its occurrence in biogeoclimatic zones, (2) ecological (climatic, orographic, and edaphic) amplitudes, (3) root characteristics, (4) tolerances, (5) damaging agents, (6) associated tree species and successional role, (7) silvical characteristics, (8) genetics, and (9) notes, containing additional sources of more detailed information.

Range maps

We have improved the maps showing the native range of each tree species by integrating the old range maps with the provincial biogeoclimatic zone map (in some cases subzone maps) and information on the occurrence of the species in the zones or subzones. These maps, although updated in this edition, will require revision in the future as additional information becomes available. The maps indicate where the tree species grow naturally; they do not define productivity in those areas.

Species comparisons

Understanding of forest ecosystems requires knowledge of how tree species establish and grow with other tree species in different environments. To enhance learning, we have included summary tables comparing the ecological amplitudes, tolerances, damaging agents, associated tree species, and life history of the separate species.

Information Sources

The information included in the revised text was compiled primarily from *Ecology of forest trees of British Columbia* (Krajina 1969), *Comparative Autecological Characteristics of Northwestern Tree Species* (Minore 1979), *Silvics of North America* (Burns and Honkala 1990).

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Purchasing information

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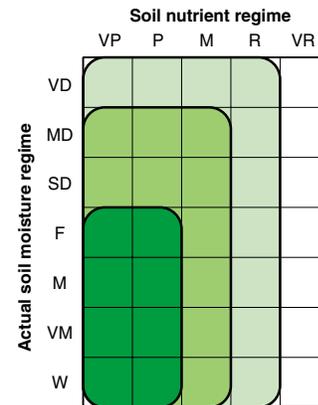
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Some highlights from the text

Edatopic grid showing the generalized edaphic amplitude for black spruce according to actual soil moisture and nutrient regimes



Map showing the native range of black spruce in BC



Silvical characteristics of black spruce

characteristic	interpretive class	comments
reproduction capacity	H	seed production may be as early as 10 years; seed years are less frequent in the north; cones persist on trees for 20 to 30 years and their seeds are not shed unless they are opened by fire; may reproduce by layering
seed dissemination capacity	L	dispersion up to 100 m from the parent tree
potential for natural regeneration in low light	H	regenerates well on organic substrates
potential for natural regeneration in the open	H	especially after fire
potential initial growth rate (≤ 5 years)	L	slow in the establishment period (usually <5 cm/yr)
response of advance regeneration to release	H	low for regeneration developed by layering, high when originating from seed
self-pruning capacity in dense stands	M	but dense stands are infrequent
crown spatial requirements	L	very narrow but long crowns
light conditions beneath closed-canopy, mature stands	L	associated with poorly developed understory vegetation
potential productivity	M	site index (50 yr @ bh) approaching 20 m on the most productive sites
longevity	M	ages >280 years were reported in the Ontario Clay Belt