

Species Identification and Defects 3

3.1 Purpose of Classification by Species

The wood of each species has unique properties that affect its value and in many cases, the grade applied to it. Each species' commercial value is tied to its suitability for the manufacture of specific products. As part of the scaling process, a scaler must be able to identify species so that volumes may be calculated by category, for species as well as grade.

The first table (3-1) in this section deals with the major commercial species, their common names and scaling codes. These codes are unique to the function of scaling. The second (3-2) is concerned with identifying some characteristics of the major commercial species.

Table 3-1 Alphabetic Species Listing

Common Name	Scaling Code	Common Name	Scaling Code
Alder (Red, Sitka, Speckled)	AL	Larch (Alpine, Tamarack, Western)	LA
Arbutus (Pacific madrone)	AR	Lodgepole pine	LO
Aspen (Trembling)	AS	Maple (Bigleaf, Douglas, Vine)	MA
Balsam (Alpine Fir, Grand Fir, Noble Fir, Pacific Silver Fir)	BA	Ponderosa pine (Yellow pine)	YE
Birch (Paper, Water, White)	BI	Spruce (Black, Engelmann, Sitka, White)	SP
Cedar (Western Red)	CE	White pine (Western White)	WH
Cottonwood (Black, Balsam Poplar)	CO	Whitebark pine (Limber)	WB
Cypress (Yellow cedar)	CY	Willow (Peachleaf, Black)	WI
Douglas-fir (coastal, interior)	FI	Yew (Western Pacific)	UU
Hemlock (Western, Mountain)	HE		

Table 3-2 Unique Characteristics of Major Commercial Species

Common Name	Log Ends and Wood	Knots	Outer Bark	Inner Bark
Alder	Red Alder grows on the coast regions and Mountain Alder in the Interior	Cut limbs are prone to oxidization which can turn to rot which stays in the knots	Thin greenish on young trees turning grey to whitish as it matures. Mountain alder has yellowish brown bark.	Red alder shows <i>bright red/orange</i> when first exposed to the air.
Balsam (includes Grand Fir)	Wood is creamy white in colour and very close-grained in the Interior with little or no contrast between sap and heartwood. It has a distinctive odour that is exacerbated when wet	Grow in whorls, usually insignificant but good indicator of rot	Silvery gray with <i>pitch blisters</i> all over. Greyish white flecks on mature trees. Bark can have longitudinal cracks and flat ridges in older trees.	Soft and mushy and thicker than the outer bark. Look for the <i>flash of acid green on the underside</i> .
Birch	Wood is hard and close grained. Stems are cylindrical with a lot of crook and sweep.	Irregular spacing and size.	Thin, white, <i>peels easily</i> in Paper and White. Water BI bark curls in older trees.*	Thin reddish/orange which darkens with age.
Cedar (Western Red)	Somewhat soft, contrast between white/yellow sapwood and dark heartwood is distinct. It has a pungent odour. Not usually weepy, but the ends can be sticky. Butts often have significant flare	Irregular in spacing and size. Knots are a good indicator of rot. Subject to adventitious knots	Reddish cinnamon brown to greyish brown <i>Can be stripped off in long strands</i> .	Yellowish white and fibrous
Cottonwood grows west of the Rockies Balsam Poplar grows in the north and east of the Rockies	These two species are almost identical in appearance. <i>Only the leaves</i> of the two are different with balsam poplar having a greenish sheen on the underside while cottonwood is silvery on the underside. The wood is soft and light coloured with dark, often stained heartwood	Irregular and very large in older trees.	In young trees it is green/grey and smooth turning dark grey as it ages and forming <i>flat v-shaped ridges</i> .	Insignificant, white
Cypress (Yellow Cedar)	Non-resinous with a characteristic odour and yellowish colour*. Little contrast between sapwood and heartwood. Slow growing	Irregular spacing and sized. Knots are often rotten.	Thin and similar to CE but more grey. Hard and shows a grey streak in mature trees. Narrow intersecting ridges.	Soft and stringy but can't be pulled off in strips. Characteristic <i>potato peel</i> smell*.
Douglas-Fir	Hard with a distinctive <i>reddish brown heart</i> . Definite contrast between sap and heartwood. Subject to butt rot, conk, shake.	Grow in whorls. Subject to bunch knots and adventitious branching	Thick, brown and beige with a corky appearance in mature. Smooth and grey with pitch blisters in young trees.	Reddish brown and somewhat stringy

Common Name	Log Ends and Wood	Knots	Outer Bark	Inner Bark
Hemlock	Wood is considered hard, strong and close-grained. Colour is yellowish white to pale brown with little or no contrast between sap and heartwood. Stems often have a lumpy appearance with a flattened butt flare.	Irregular spacing and size. Does not grow in whorls. Can have small black knots from discarded branches. Knots are good indicators of rot. Subject to rotten knots	Scaly on young trees and russet brown with a maroon under colour. Darkens with age into flat-topped ridges. and irregular dark brown scales	Medium thick. distinctive red with purple streaks.
Larch (Tamarack)	Strong hard wood. Sharp contrast between sap and heart wood. Heartwood more brown than FI. Pitchy ends. Subject to conk.	Grow in whorls. Subject to bunch and oversized knots which are a good indication of rot	Thick grooved, plate-like in mature trees, cinnamon brown to reddish. Bark is similar to YE* Scales come off in thin narrow strips	Insignificant whitish beige
Lodgepole Pine	Yellowish white heartwood. White sapwood. Heavy and soft. Close grained often spiral. Cut ends pitch evenly. Bole can be quite irregular.	Grow in whorls. Often recessed and small.	Thin fine scales. Blackish to dark brown or blue/grey scales dotted with <i>small pitch blisters</i>	Orange brown under scales. Thin bark usually < 1 cm
Spruce	A soft, close-grained, light coloured wood. Little contrast between sap and heartwood. Stems are very cylindrical with a pronounced flare and are subject to grain deflection	Grow in whorls. Brittle when dead	<i>Engelmann</i> - Scales are large, loose and circular. Light brown with silvery overtones and reddish pink underneath. <i>Black</i> , bark is grey, scaly and similar to LO. <i>Sitka</i> - Scales are round, loose and rusty brown.*	Silvery white to beige. Sticky and with a distinctive odour
White Pine	Light and soft. The sapwood oozes when cut and produces a distinct sap ring. Often oxidizing into a bluish tint. <i>Ends pitch profusely</i> and can be a significant identifier	Grow in whorls and knots are often a deep purple colour.	Thin, smooth, and darkish grey on young trees with narrow, scaly brown plates developing on the butts of mature trees*.	Brown. Not mushy
Yellow Pine (Ponderosa Pine)	Heavy, pitchy and very strong. Wide sapwood ring and yellowish to brownish heartwood. <i>Dark pith in the centre of the heart.</i>	Grow in whorls and subject to large knots on upper stem*.	Deeply fissured into broad, elongated, flat plates. Thick bark up to 10 cm*.	Brown and stringy but insignificant

*some of the descriptive phrasing comes from 'The Tree Book – learning to recognize the trees of British Columbia' written by R. Parish and S. Thomson as described in section 3.1

Many species have bark that is somewhat similar in appearance. Conversely, bark may look markedly different on the same tree. If in doubt, be sure to check all indicators before classifying any log by species (appearance of bark, colour and hardness of wood, sapwood/heartwood contrast, form and shape of logs, and type of needles).

The reference book noted below contains information on tree species including growth area maps, needle and cone descriptions and exceptional pictures. For further information on species identification please refer to:

- The Tree Book – Learning to Recognize Trees of British Columbia. A Canadian Forest Service and Ministry of Forests and Range publication. ISBN 0-7726-2159-4, FS 316 HPA 94/07. By Roberta Parish and Sandra Thomson. Cf.

This book is available online at:

[Tree Book – Learning to Recognize Trees of British Columbia](#)

Or it can be ordered from:

Wild BC
PO Box 9354 Stn Prov Govt
Victoria BC V8W 9M1
Phone: 1-800-387-9853 or in Victoria (250)356-7111
Fax: (250)952-6684
Email: wild@gov.bc.ca

Some other books of interest on tree identification are:

- Plants of Coastal British Columbia
edited by J. Pojar and A. MacKinnon ISBN 1-551-05042-0
- Plants of Northern British Columbia
edited by A MacKinnon, J. Pojar and R. Coupe ISBN 1-551-05108-7
- Plants of Southern British Columbia
edited by R Parish, D. Lloyd, and R. Coupe ISBN 1-551-05057-9

These books are available from Lone Pine Publishing at:

[Lone Pine Publishing](#)

More books of interest are:

- Native Trees of Canada 8th Edition by R.C.Hosie
ISBN 0-88902-558-4 published by Fitzhenry & Whiteside
- Trees, Shrubs and Flowers to Know in British Columbia by C.P. Lyon
ISBN 0-460-95301-X published by J.M. Dent & Sons (Canada) Ltd.

These books are available at bookstores throughout B.C.

3.2 Common Tree Defects

If all logs were smooth, round, and sound scaling would be simple. Because they are not it is necessary for the scaler to find the amount of volume lost from various defects. In general, the defects in logs will fall into three major classifications: defects due to rot fungi, defects due to other natural causes, and defects due to handling.

3.2.1 Disease

Some of the major tree diseases considered in scaling and grading (but not limited to):

- Root diseases (butt rot)
- Heart rots (including Conk, Indian Paint Fungus, Pin Rot)
- Canker diseases (bark diseases resulting in scarring)
- Sap rots (surface rot)
- Abiotic diseases (frost injury. scar)

The primary reference used for tree diseases is:

Common Tree Diseases of British Columbia by E.A. Allen, D.J. Morrison, G.W Wallis ISBN0-662-24870-8 published by Natural Resources Canada and the Canadian Forest Service. 1996

The Link to the Canadian Forest Service web page on tree diseases is:

[Tree Diseases](#)

Or order a copy from their publication site at:

[Canadian Forest Service Publications](#)

Other useful references include:

[Field Guide to Forest Damage in BC](#)

[Forest Pathology](#)

3.2.2 Other Natural Defects

Surface defects take a variety of forms, showing up as either rot, charred wood, or missing wood such as catface, deadside, and miscellaneous scars. With experience, it will become clear that many forms of these defects will suit a shape for which a calculation method is described in both the *Gross Measurements Procedures* and in the *Defects and Conventions Chapters* of this manual.

3.2.3 Mechanical Defects

Regardless of how efficiently or carefully the logging process is conducted, it will result in some damage to timber when they are felled, bucked, transported, and handled by various mechanical devices. In many instances, this damage may result in a considerable loss of firm wood and the scaler must be able to recognize and make proper allowances for the various types of mechanical defects. Log storage over long periods can cause defects. An example of this is sap rot in dryland decks and toredo borings in log booms on the water.

It is important to perform a scale as soon as possible after harvesting to avoid the problems of determining whether defects are natural or induced by storage. Normally, damage to timber after delivery to the scale site is not accounted for. It is necessary for the scaler to contact the Ministry scaling representative for instruction on the correct approach to take in each situation.

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