Culturally Modified Trees of British Columbia

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Abstract

This Handbook in an operational guide to the identification and recording of culturally modified trees (CMTs) in British Columbia. It is designed for resource managers and others interested in documenting these trees. There are many kinds of CMTs in British Columbia. Examples include trees with bark removed, stumps and felled logs, trees tested for soundness, trees chopped for pitch, trees with scars from plank removal, and trees delimbed for wood. Some kinds are common; others infrequent. This Handbook is concerned with the most common kinds of CMTs — those most likely to be encountered in BC’s forests. The Handbook focuses on the CMTs of the Coast where CMTs are frequent and better understood than in the Interior, but Interior CMTs are also discussed. The Handbook also provides background information on CMT dating and CMT protection and management as currently practised in British Columbia.

Definition of CMT

A CMT is a tree that has been altered by native people as part of their traditional use of the forest. Non-native people also have altered trees, and it is sometimes difficult to determine if an alteration (modification) is of native or non-native origin. There are no reasons why the term "CMT" could not be applied to a tree altered by non-native people. However, the term is commonly used to refer to trees modified by native people in the course of traditional tree utilization, and is used as such in this Handbook.
Culturally Modified Trees of British Columbia

A Handbook for the Identification and Recording of Culturally Modified Trees

October 1998

Ministry of Forests
Culturally Modified Trees of British Columbia

A Handbook for the Identification and Recording of Culturally Modified Trees

Arnoud H. Stryd

Ministry of Forests
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INTRODUCTION

ABOUT THIS HANDBOOK
This Handbook in an operational guide to the identification and recording of culturally modified trees (CMTs) in British Columbia. It is designed for resource managers and others interested in documenting these trees.

Definition of CMT
A CMT is a tree that has been altered by native people as part of their traditional use of the forest. Non-native people also have altered trees, and it is sometimes difficult to determine if an alteration (modification) is of native or non-native origin. There are no reasons why the term “CMT” could not be applied to a tree altered by non-native people. However, the term is commonly used to refer to trees modified by native people in the course of traditional tree utilization, and is used as such in this Handbook.

There are many kinds of CMTs in British Columbia. Examples include trees with bark removed, stumps and felled logs, trees tested for soundness, trees chopped for pitch, trees with scars from plank removal, and trees delimbed for wood. Some kinds are common; others infrequent. This Handbook is concerned with the most common kinds of CMTs — those most likely to be encountered in BC’s forests. The Handbook focuses on the CMTs of the Coast where CMTs are frequent and better understood than in the Interior, but Interior CMTs are also discussed. The Handbook also provides background information on CMT dating and CMT protection and management as currently practised in British Columbia.

HOW THE HANDBOOK IS ORGANIZED
The Handbooks consists of three main sections:
• identification of CMTs on the Coast
• identification of CMTs in the Interior
• the recording of CMTs both on the Coast and in the Interior
The Handbook also contains:
• a brief section on CMT dating
• an introduction to CMT protection, management, aboriginal rights and permits
• a glossary
• suggested readings

CMT CLASSIFICATION
There are many different kinds of CMTs in British Columbia, reflecting the many uses for which tree products were traditionally sought. In order to describe this diversity, archaeologists classify CMTs based on the kinds of modifications present on the trees. CMTs are first divided into three main groups (classes). Each class is then divided into a number of types. The chart on the next page shows the CMT classification used in this Handbook. This classification can be used in all regions of British Columbia, though not all types are present everywhere. Each class and type of CMT is discussed later. There is a separate discussion for the Coast and Interior of the Province. Terms are defined at that time, as well as in the glossary.

TOOLMARKS
Cuts, striations, grooves and other marks produced by tool use are found on many types of CMTs. The presence of marks made by tools used traditionally by native people is usually convincing evidence that a tree is a CMT. These tools include steel axes, hatchets, knives; iron chisels and adzes; chisels of stone, bone and shell; wooden, bone and antler wedges; bone and antler bark peelers; bone sap scrapers; and others. Cutting tools made of steel were used in traditional activities throughout British Columbia in the 19th and 20th centuries; other kinds of tools were more restricted in the geographic extent of their use (for example, chisels with shell bits were used in some areas on the Coast only, and antler bark peelers were used in the Interior only). Toolmarks are briefly discussed in the sections on Coast and Interior CMTs.
HOW TO IDENTIFY A CMT

There is no simple method for identifying a CMT. Most identifications involve matching the observable characteristics of an altered tree suspected of being a CMT with those listed for the different kinds (types) of CMTs. To help identify CMTs on the Coast, where many complex types of CMTs occur, a key is provided. The key provides a fast preliminary identification. The key indicates where in the Handbook information about each type can be found. A final identification then can be made by consulting the detailed characteristics and illustrations for that type.

When a tree is confirmed as a CMT, the location (CMT site) can be recorded using a Level I or II CMT Recording Form. A blank Level I Recording Form is included in the Handbook. Level II recording forms are provided by the Archaeology Branch of the Ministry of Small Business, Tourism and Culture, and are not included here. However, individual CMTs can be recorded using the blank CMT Feature Recording Form in this Handbook. This form can be used in conjunction with either the Level I or Level II Recording Form. Instruction for completion of the Level I and CMT Feature Recording Forms are presented here.

This Handbook is organized so that it can be used in the field. Individual pages or sections can be removed from the binder and inserted into Duksbak-style field notebooks. The recording forms can be photocopied onto waterproof paper and inserted into a field notebook.

A Caution

People encountering CMTs are encouraged to make a record of their findings. However, care should be taken to not damage, move, or in any other way impact a CMT or CMT site. This includes the coring of trees for dating purposes. Impacts not only affect the physical, cultural and historical integrity of a CMT or CMT site, but also may be a violation of the Heritage Conservation Act (see the section on CMT protection).
INTRODUCTION
Coastal British Columbia consists of the Coast Mountains and the land and islands west of those Mountains. Tree use was a part of virtually every aspect of traditional aboriginal life on the Coast. More than a dozen species of trees were used, the most important of these being the western redcedar. The importance of trees and tree products in the traditional cultures of the Coast is well known and documented in a number of widely available sources.

CMT CLASSIFICATION
As discussed in the Introduction, CMTs are classified based on the kinds of modifications present on the trees. CMTs are first divided into three main groups (classes): bark-stripped trees, aboriginally-logged trees, and other modified trees. Each class is then divided into a number of types. The chart in the Introduction shows the most common types for each CMT class. The most common CMT types found on the Coast are discussed below. Terms are defined at that time, as well as in the glossary.

TOOLMARKS
Prior to European contact, people on the Coast used a variety of technologies and tools for felling trees, working wood, and collecting bark. The main tools used were chisels, wedges, hammers, and adzes. Chisels and adzes had bits made of stone, bone or shell. Cobbles and handmauls were used as hammers. Wedges were made of wood, bone and antler. Metal was available in some areas of the Coast by the 16th century (and perhaps earlier), and became the preferred material for chisel bits. Basic technologies did not change until the mid to late 19th century, when first the steel axe and knife were introduced, and later the crosscut saw and backcut-undercut felling method.

Cuts, striations, and other marks produced by these tools are found on many types of CMTs. Examples of some of the toolmark found on CMTs on the Coast are illustrated below.
Coastal British Columbia

Cut marks made by steel axe

Cut marks made by iron chisel using horizontal angle of attack

Cut marks made by iron chisel using oblique angle of attack
The presence of marks made by tools used traditionally by aboriginal people is usually convincing evidence that a tree is a CMT. However, in the case of trees with axe, knife, or crosscut saw marks (which could have been made by non-aboriginal persons), other kinds of supporting evidence, such as the kind of modification on the tree, should be considered before declaring a tree a CMT.

IDENTIFICATION KEY FOR COASTAL CMTS

The insert that follows is a key that can be used to obtain a preliminary CMT identification. The insert is in landscape format so that the key can be presented in its entirety on the two sides of a single sheet of paper. The insert can be removed from the Handbook and placed in a field notebook. Directions for use of the key are provided.

The key consists of 19 questions to be answered YES or NO. Each YES or NO answer either instructs the reader to proceed to another question, or offers a preliminary identification and a page in the Handbook where that type is discussed. Start with question #1. Answer the questions in numerical order. The terms used in the questions are defined in the glossary and text below.
### IDENTIFICATION KEY FOR COASTAL CMTS

Answer the following questions YES or NO. Follow the instructions for each YES or NO answer, until a preliminary identification is made. Start with question #1. Answer the questions in numerical order.

#### Key for Identifying Major CMT Types on Coastal British Columbia

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<tr>
<th>#</th>
<th>QUESTION</th>
<th>IF NO</th>
<th>IF YES</th>
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<tbody>
<tr>
<td>1</td>
<td>Is the tree standing?</td>
<td>Go to Question 12</td>
<td>Go to Question 2</td>
</tr>
<tr>
<td>2</td>
<td>Does the tree have one or more bark scars?</td>
<td>Go to Question 6</td>
<td>Go to Question 3</td>
</tr>
<tr>
<td>3</td>
<td>Is the tree western red or yellow cedar?</td>
<td>Other bark-strip scar (Page 27)</td>
<td>Go to Question 4</td>
</tr>
<tr>
<td>4</td>
<td>Is the scar long and tapered (triangular)?</td>
<td>Go to Question 5</td>
<td>Tapered bark-strip scar (Page 18)</td>
</tr>
<tr>
<td>5</td>
<td>Is the scar large and rectangular?</td>
<td>Other bark-strip scar (Page 27)</td>
<td>Large rectangular bark-strip scar (Page 24)</td>
</tr>
<tr>
<td>6</td>
<td>Does the tree have a test hole?</td>
<td>Go to Question 7</td>
<td>Tested tree (Page 32)</td>
</tr>
<tr>
<td>7</td>
<td>Does the tree have an undercut scar?</td>
<td>Go to Question 8</td>
<td>Undercut tree (Page 34)</td>
</tr>
<tr>
<td>8</td>
<td>Does the tree have one or more notches and no plank scars?</td>
<td>Go to Question 9</td>
<td>Notched tree (Page 45)</td>
</tr>
<tr>
<td>9</td>
<td>Does the tree have one or more plank scars?</td>
<td>Go to Question 10</td>
<td>Planked tree (Page 46)</td>
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<th>IF NO</th>
<th>IF YES</th>
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<td>10</td>
<td>Does bark have many cut marks in one spot?</td>
<td>Go to Question 11</td>
<td>Pitch collection tree (Page 53)</td>
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<td>11</td>
<td>Does the tree show evidence for removal of small pieces of wood?</td>
<td>Other modified tree (Page 51)</td>
<td>Kindling collection tree (Page 53)</td>
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<td>12</td>
<td>Is the tree wind fallen?</td>
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<td>Go to Question 16</td>
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<td>13</td>
<td>Does the tree consist of or include a stump?</td>
<td>Go to Question 15</td>
<td>Go to Question 14</td>
</tr>
<tr>
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<td>Does the tree consist of a stump only?</td>
<td>Go to Question 15</td>
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<td>15</td>
<td>Does the tree consist of or include a log?</td>
<td>Other modified tree (Page 51)</td>
<td>Go to Question 16</td>
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<tr>
<td>16</td>
<td>Has the log or windfallen tree been shaped into an unfinished canoe?</td>
<td>Go to Question 17</td>
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<td>17</td>
<td>Does the log or windfallen tree have one or more plank scars?</td>
<td>Go to Question 18</td>
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<td>Go to Question 19</td>
<td>Notched tree (Page 45)</td>
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IDENTIFYING BARK-STRIPPED TREES
A bark-stripped tree is a tree from which bark has been partially removed by aboriginal people. Bark was collected from different tree species and for a variety of purposes. These trees are characterized by the presence of one or more areas of removed bark and exposed wood commonly referred to as bark scars. A bark scar resulting from human stripping is called a bark-strip scar, whereas the more general term bark scar refers to any scar, whether of natural or human (cultural) origin.

Key Terms
In addition to bark scar and bark-strip scar, key terms for discussing bark-stripped trees are:
• scar face: the wood surface exposed by bark removal.
• scar lobe: the vertical ridge of wood tissue formed on both sides of a scar face. In response to bark removal, a tree attempts to heal itself by growing over the dead wood of the scar face, which results in the development of vertical ridges of wood tissue called scar lobes, callus lobes or healing lobes.
• scar crust: a hard black or dark brown layer formed on the inner side of a healthy scar lobe where it grows against the smooth surface of an uneroded scar face. This crust continues to extend in a curve parallel to the face with each new year of growth until the face begins to decay. The scar crust is an important characteristic in identifying tapered bark-strip scars.
• scar window: the opening created by the lobes growing on both sides of a scar. As lobes grow, they join together above a scar, as well as below the scar if the scar does not extend to the ground, thereby obscuring the edges of the scar and forming a lenticular (lens-like) or triangular opening (the scar window) over the scar.
• internal scar: a scar inside a tree. As scar lobes continue to grow, they can in some cases eventually cover the entire bark-strip scar, thereby closing the scar window, and creating an internal scar. These scars appear as narrow vertical creases in the bark, or lie completely buried inside the tree and cannot be seen from outside.

These terms are illustrated in the next figures.
Key terms for bark-stripped tree with tapered bark-strip scar
Coastal British Columbia

Types of Bark-Stripped Trees
Bark-stripped trees are classified according to the type of bark-strip scar(s) present. Bark-strip scars found on the Coast are of three types:
- long tapered (triangular) scars
- large rectangular scars
- other scars

Although trees often have more than one scar, a tree seldom has scars of more than one type.

Long Tapered Bark-Strip Scars
Long tapered bark-strip scars are also called *triangular scars* or just *tapered scars*. These are relatively long and narrow scars found on two tree species: western redcedar and yellow cedar, although they are far more common on the former. Tapered bark scars are the result of the procurement of the soft, pliant inner bark used to make clothing, mats, blankets, basketry, ropes, diapers, towelling, and so on.
Coastal British Columbia

1 Bark
2 Annual Ring
3 Scar Face (original)
4 Scar Crust
5 Scar Lobe
6 Present Scar Face

Development of scar crust
Bark was usually stripped from young trees that were relatively straight and free of large branches. A horizontal cut was made in the bark (usually above the root flare, and often on the upslope side if the tree was on a hill). Loosened bark was pulled away from the tree until the upper end tapered to a point and broke away. Inner bark was then separated from outer bark, bundled, and taken away for processing. In some cases bark was removed in several adjacent narrow strips, sometimes leaving two, side by side, pointed upper ends.

**Identifying Tapered Bark-Strip Scars**

When assessing whether or not a tapered bark scar is cultural, consideration should be given to the characteristics of both the scar and the scarred tree. The characteristics listed below can be used to make such an assessment. The correct identification of a tapered bark-strip scar sometimes is very difficult because:

- natural forces or agents can produce bark scars that resemble cultural tapered bark scars
- lobe growth and scar face deterioration can obscure some of the key characteristics of a cultural scar, to the point where the bark scar itself is completely hidden by lobe growth or completely destroyed by deterioration.

Correct identification of tapered bark-strip scars is undoubtedly one of the most difficult aspects of CMT work. A brief discussion follows. Readers wanting more information about this topic should consult Appendix I.
Two small bark-stripped cedars with tapered bark-strip scar: on left with intact base formed into U shape by lobe growth; on right with scar extending to ground as a result of bark falling off tree below original scar base
Bark-stripped western redcedar with old tapered bark-strip scar covered with moss, and large scar lobes on both sides of scar
Characteristics of tapered bark-strip scars

- cultural tapered bark scars not obscured by lobe growth are typically long and narrow, with straight tapered sides
- bark is absent on cultural tapered bark scars
- cultural tapered bark scars on a tree that was healthy at the time of stripping produces a scar crust that is smooth and follows the curve of the wood exposed by stripping
- the presence of toolmarks on the scar face usually indicates that the scar is cultural
- large branches are not present on cultural tapered bark scars
- cultural tapered bark scars usually are found on the uphill and lateral sides of a tree located on a slope; cultural scars are seldom found on the downhill side of a tree
- cultural tapered bark scars have distinctive annual ring characteristics that can be observed when a sample of wood is cut from the scar

Characteristics of trees with tapered bark-strip scars

- trees with cultural tapered bark scars are relatively straight-grained and free of large branches on the side of the tree that has been stripped
- western red cedars with cultural tapered bark scars usually had a diameter at breast height of about 60 cm or less at the time of stripping
- a young tree with more than one tapered bark scar probably was stripped by people
- the presence of other trees in the vicinity with tapered bark scars increases the likelihood that the scars are cultural
- the presence of multiple bark scars of similar age on one tree or on adjacent trees increases the probability that the scars are cultural

In addition to scar and tree characteristics, other kinds of evidence for possible natural scarring should be sought out and considered when assessing a tapered scar. Such evidence includes the
presence of large rocks, large branches, and windfallen trees at the base of a scarred tree; grizzly bear claw marks at the base of a bark scar; and the presence of a poor growing site (standing water or minimal soil development).

A note on definite, possible and probable scars

It is not always possible to determine in the field if a tapered bark scar is cultural. This is particularly so for scars that are extensively overgrown by healing lobes, or where scar face deterioration has removed much of the scar. This uncertainty has led some archaeologists to use qualifiers such as “definite”, “possible” and “probable” when describing a tapered bark scar as cultural. Some very cautious archaeologists consider only tapered bark scars with toolmarks to be definitely cultural, using “probable” and “possible” for all other scars. This is misleading and unnecessary, as most cultural tapered bark scars on cedar do not have toolmarks, and there are sufficient other criteria for determining in most cases whether or not a tapered scar is cultural. Whenever possible a scar should be identified as natural or cultural, and the terms “possible” and “probable” should be used as little as possible.

When it is not possible to determine in the field if a tapered scar is cultural, a microscopic examination of a prepared wood sample taken from a tapered scar can determine if the scar is cultural based on the characteristics of the annual rings. Both wedge and disc samples can be cut for this purpose (see section on CMT dating for further discussion of samples). However, it is not always possible or desirable to collect such samples since they involve cutting of the tree.

Large Rectangular Bark-Strip Scars

Large rectangular bark-strip scars are found on western redcedars, particularly those in the northern part of the Coast. They result from the removal of large slabs of outer bark (sometimes called bark planks or bark boards) used as roofing material for temporary
shelters and over canoes under construction in the forest. In removing the bark, a knife, chisel or adze was first used to make a series of horizontal cuts through the thick outer bark at the bottom and top of the desired length. The bark slab was then pried off the tree. Sometimes a third cut was made about midway between the top and bottom cuts. Sometimes a narrow band of bark was first removed at the top of the slab to help with the removal of the bark.

**Characteristics of large rectangular bark-strip scars**

- scars have more or less parallel sides, with healing lobes along both sides
- scars have a horizontal base and top, resulting in an overall rectangular shape
- scars are usually between 3 and 7 m in length, and between 40 and 70 cm in width
- scars are usually quite close to the ground, with bases often less than 50 cm above the ground
- scars are seldom completely obscured by lobe growth because of the large size of the scars
- the scar face at the bottom of the scar (above the original scar base) often is more deteriorated (eroded) than the rest of the scar face
- tool marks in the form of horizontal cut marks are often present on these scars, though deterioration of the scar face may eventually remove these marks (the marks at the top generally preserve better than those at the bottom)

Scars sometimes have peaked rather than straight tops because the bark between the contracting lobes above the scar has died and dropped off the tree, leaving a triangle of exposed but relatively unweathered wood above the original scar.

Some large rectangular bark-strip scars may be the result of stripping for inner bark rather than bark slabs. The bark would be cut at the top and bottom when a specific length of material was wanted, such as for skirts or mats. These rectangular bark scars are found on cedars that were younger and smaller at the time of stripping.
Bark-stripped western redcedar with large rectangular bark-strip scar. Note erosion of scar base and some bark loss at top of scar.
Other Bark-Strip Scars

This category consists of all other bark-strip scars. As some of these are better studied, it may be useful to identify them as separate types. This category consists mainly of small rectangular scars that often heal to oval or lenticular shapes (scar windows). Species on which these scars are found include western hemlock, Sitka spruce, Douglas-fir, spruce, western yew, and some deciduous species, such as cottonwood, red alder, cascara, wild crabapple, and wild cherry. Bark from these species was used extensively for such diverse purposes as food, medicine, dye, fuel, binding material and, in some cases, small emergency canoes. In some cases, the bark may have been removed for the collection of pitch. At one time, CMTs left from these activities must have been very common, but it likely that many of these are no longer living. Hemlock is less resistant to infection following scarring than is cedar, and most of the other species have much shorter life spans. In addition, some trees were girdled or felled in order to obtain large quantities of bark.

These bark-strip scars are generally narrow relative to their length, though a few examples of almost square scars have been reported. They are typically between 40 and 150 cm in length, depending on the species, and between 50 and 75 cm in width, although scars as narrow as 10 cm have been recorded. Hemlock bark-strip scars typically measure between 100 and 150 cm in length and 50 to 75 cm in width, with bases between 50 and 150 cm above ground. Sometimes the bases are up to 300 cm above ground. The exposed hemlock wood can deteriorate quickly, removing the scar face and leaving just an oval hole formed by the scar window. Bark-strip scars on spruce are virtually identical to those on western hemlock.

Many of the criteria listed above for identifying cultural tapered scars on cedars can be used to determine whether or not rectangular scars on species such as hemlock, spruce and Douglas-fir are cultural in origin. However, it should be noted that cultural scars on Douglas-firs may have bark on the scar face. In contrast to most other species, which try to heal a scar by covering it with scar lobes, Douglas-fir trees appear to be able to regenerate
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Bark-stripped western hemlock
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bark over the entire scar. The previously stripped area is distinguished by bark that is smoother and often darker than the original bark. In order to identify these scars as cultural, regular scar shapes or toolmarks must be visible, since the trees also can loose bark as a result of fires and other natural agents.

Another difference is found on culturally stripped hemlock trees where growth rings that develop after stripping are suppressed rather than expanded, as they are on cedar trees.

Birch bark was stripped by only a few groups on the coast. Birch bark scars are discussed in the section on Interior British Columbia.

IDENTIFYING ABORIGINALY-LOGGED TREES

Aboriginally-logged trees are trees which have been tested, felled, cut, or otherwise modified by native people as part of the traditional procurement of logs, posts, planks and other pieces of wood. These trees were modified using traditional tools and techniques typical of the 18th and 19th centuries, which included the use of chisels made of trade iron. In some cases, aboriginally-logged trees (or, more simply, logged trees) display evidence of more recent Eurocanadian logging tools (axes, crosscut saws, springboards) and techniques (especially the undercut/backcut technique still used today for the felling of large trees). These trees are still CMTs if they were modified to obtain wood and other products for traditional native use, rather than for commercial purposes as part of the Eurocanadian market economy.

Features and Types of Aboriginally-Logged Trees

There are seven major types of aboriginally-logged trees based on the kinds of features present. A feature is a modification produced by wood or bark removal. Common kinds of features on aboriginally logged trees are test holes, undercut scars, plank scars, stumps, logs, log sections, notches, and canoe blanks. The tree itself, whether standing or felled, also is considered a feature. Less common features include platform notches, logging detritus, and lofting logs. These terms are defined in the glossary and in the text below.
Major types of aboriginally-logged trees

- tested tree — has test hole or holes
- undercut tree — has undercut scar
- felled tree — has stump and/or log
- sectioned tree — has log sections
- notched tree — has notch or notches
- planked tree — has plank scar or scars
- canoe tree — has canoe blank

The key to classifying aboriginally-logged trees is to remember that, when more than one kind of feature is present on a tree, the feature presumed last in the modification sequence is used to describe the CMT type, since it represents most closely the intended use of the tree. For example, a CMT with a notch and a plank scar is described as a planked tree rather than a notched tree since notching usually precedes removal of a plank. The seven types named above are listed in the order of precedence, with a canoe tree the most advanced form of modification.

Note on the usage of “tree”

Use of the term “tree” does not necessarily mean that the CMT is standing. Some kinds of modified trees are standing (tested and undercut CMTs (unless wind fallen), whereas other kinds of modified trees (felled, sectioned and canoe CMTs) are non-standing. Notched and planked trees can be either standing or non-standing.

Criteria for Identifying Aboriginally-Logged Trees

Large cedar stumps with even-height (flat-top) surfaces are almost certainly a result of cultural modification, because cedar trees tend to blow down or shatter into long splinters rather than snapping cleanly across at a height of 1 to 3 m above ground. Toolmarks are often lacking when the surface of the stump has deteriorated; when present, they may be completely obscured by the roots of large nursing trees [see photo, p. 36].
The presence of toolmarks on standing trees, stumps, cut logs, or windfalls is a clear indication of cultural modification, but additional criteria are necessary to distinguish the results of aboriginal logging from those of non-native commercial logging.

Logged trees are considered aboriginal when:
• a stump shows a single massive undercut resulting in a barberchair spire, or a continuous girdling of the tree
• a plank-strip scar is present on a standing tree. Such scars on felled trees or windfalls are probably aboriginal. If two parallel narrow slots are present at one end of the scar and other parallel slots or an open-angled horizontal notch are present at the other end, the logging is aboriginal
• chisel or adze marks (cutmarks 2 to 5 cm wide) are present or wedge striations are visible on the split faces
• a small rectangular hole is chiselled into the tree to test the heartwood (not to be confused with holes made by pileated woodpeckers)
• nursing trees on the feature predate commercial logging in the local area.

Logged trees are considered not to be aboriginal when:
• a stump has springboard notches (unless it is associated with a clearly aboriginal feature such as a partly finished canoe or a log with a missing section)
• a stump has chainsaw cuts
• a stump has an axed undercut combined with a sawn back-cut, a stepped-top, and widely scattered logging debris displaying cross-cut saw marks.

Stumps displaying these characteristics are most likely the result of non-native commercial logging. However, it should be stressed that modern felling techniques can still result in a CMT if the purpose is a traditional use of the tree.
A caution when looking for aboriginally-logged trees

Field inventory conditions (dense undergrowth, rugged terrain, poor weather) are not always the best for the recognition of aboriginally-logged CMTs such as logs, log sections, and low stumps which are often not evident from any distance. All cedar logs, windfalls and stumps of a size suitable for aboriginal logging should be examined carefully for evidence of use during a field survey. Moss, salal and other plants growing on logs and stumps may have to be removed in order to determine if toolmarks are present. Stumps with springboard-like notches should be examined for toolmarks and the presence of a log or log sections, and not be automatically dismissed as commercial in origin.

Tested Trees

A tested tree is a standing tree with one or more rectangular holes chopped into its trunk. These holes are commonly called “test holes” though the term “alcove” also has been used. It is thought that these holes were made to determine the soundness of the heartwood of the tree, a consideration that was particularly important when looking for a tree suitable for a canoe or planks.

Features always present on a tested tree are:
• the tree itself — usually a large western redcedar
• test hole — see below

Other features which can be present are:
• logging detritus — see below
• platform notch — see below
• notch — see below

Test hole: A test hole is a four-sided alcove cut into a standing tree, usually deep into the heartwood. Two very different kinds of four-sided holes have been called test holes. The first kind is found most commonly on the Queen Charlotte Islands (Haida Gwaii) and elsewhere on the north Coast, consist of relatively large holes that start at the outer surface (bark) of the tree. These test holes are
usually rectangular when viewed from the front of the tree, although some more or less square examples have been reported. The long axis of the hole is usually horizontal rather than vertical. Usually, the hole has a flat bottom and a flat or “stepped” top that slopes down into the hole to form also the back of the hole. Unlike undercut scars which they resemble (see below), a test hole will have a cut left and right side. Healing lobes normally will be present along the edges of the hole, but the sides of the hole are not formed by these lobes. Axe, adze or chisel cut marks are usually present inside the hole.

These test holes are of variable size, with lengths and widths commonly in excess of 50 cm. The holes can be of varying heights above ground, from about 0.5 m to over 4.0 m. Bark often sloughs off the tree both above and below the test hole. A tree may have more than one test hole, including trees with test holes above one another and examples of test holes on opposite sides of the tree (but at different heights). Test holes have been reported on stumps.

Little is known about these holes. In addition to possible use as tests of wood soundness, it has been suggested that they could be notches for felling the tree, and alcoves for holding trapsets. However, trapping alcoves differ from test holes in that they are generally smaller and lower on the tree, and occur on trees other than western redcedar and yellow cedar.

A second kind of test hole is considerably smaller, and has been identified so far on northeast Vancouver Island. They are holes cut to test the soundness of the heartwood after a flaw had been detected while cutting a large notch. Presumably the notch was the first step in felling the tree or removing a plank. These small test holes are cut into the back of the notch, and are smaller than the notch. These holes typically do not exceed 50 cm in width or height, and taper into the tree.

*Platform notch:* A feature found on some trees and stumps are notches and grooves that held parts of ladders, platforms and other means of providing a firm footing for the aboriginal loggers close to the tree but above the forest floor. Some of these notches could have been toe holds. Commonly called platform notches, these
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features include round, square and L-shaped notches; rectangular notches (with four sides); and rectangular channels (with two sides). Aboriginal notches tend to be smaller than the springboard notches used in early commercial logging.

*Logging detritus*: Logging detritus refers to the waste chips, chunks and slabs produced as by-product of aboriginal logging. Detritus can vary in size from small to large, and in quantity from a few pieces to a large number of pieces. Discarded wood chips from the chopping of the test hole may be present at the base of the tree, or deeply buried under moss and organic layers.

**Undercut Trees**

An undercut tree is a standing tree which has an area of missing wood and bark that was removed as part of the initial stage of felling the tree. The area of missing wood and bark is called the undercut scar. As with test holes, scar lobes form over the vertical sides of the chopped area, reducing the original width of the hole.
Undercut cedar with test hole-like undercut. Scar bar in 10 cm intervals

Undercut western redcedar with square platform notch below undercut
This sometimes makes it difficult to distinguish between an undercut scar and a test hole.

Features always present on an undercut tree are:
- the tree itself — usually a large, mature standing western redcedar or yellow cedar
- undercut scar

Other features may include:
- logging detritus

*Undercut scar:* These features resemble test holes, but generally are somewhat larger in size. Unlike test holes, undercut scars do not have cut sides. Instead, they have sides formed by healing lobes. These sides formed a considerable time after the undercut scar was made. Toolmarks are present on the top and bottom of the undercut scar, but absent from the sides. Burn marks may exist in or around the undercut scar.

**A note on burn marks**

Controlled burning was used by some coastal groups to fell large cedars. The use of fire to help section logs also has been reported. Evidence for the controlled burning of trees and logs is difficult to detect archaeologically. Standing cedars charred by wildfires or lightning are sometimes mistaken for culturally burnt trees, but the latter should show signs of *restricted intentional* burning rather than uncontrolled accidental burning. On CMTs, burnt wood is usually restricted to a strip around the tree, stump or log end, or in a hollow cut into a tree or log. On trees, the burning should be at a height above ground commonly used to fell trees. If widespread in an area, and found on a number of tree species, the burning is probably the result of a wildfire. Single burnt and shattered trees on ridges are probably lightning strikes. Because trees burnt by wildfires are relatively common, care should be taken when interpreting charred wood as evidence of cultural burning. The black areas associated with many toolmarks resemble burnt wood; however, they are not the result of burning and should not be identified as burn marks.
Felled Trees
These are trees of usually large diameter that were completely felled, using traditional felling techniques. Notched or planked trees fallen by wind are not recorded as felled trees. Nearly all are western redcedar, though a few examples of western hemlock, western yew and white pine have been reported. One traditional felling technique involved the complete girdling of the tree with chisels or axes. A second technique involved a massive unidirectional undercut, probably by notching with long-handled chisels, cut deep into the tree at a relatively steep angle to produce a flat-bottomed hole with a sloping top. Presumably, the tree was then left to fall on its own volition, leaving a spire of sheared wood along that part of the trunk that was not cut.

A felled tree is characterized by the presence of:

• a stump and/or
• a log

Other features may include:

• platform notch(es) on stump
• logging detritus

Stump: Stumps may be present by themselves, or in association with a log. When found by themselves (the felled tree has been removed), stumps should be recorded as felled trees unless the stump has a notch or the lower end of a plank scar in which case the stump would be recorded as a notched or planked tree respectively.

Stumps are of five kinds:

• flat: characterized by a level or sloping top on a single plane
• barberchair: characterized by a distinctive spire of wood on one side of the stump [see photo, p. 34].
• step: characterized by a level top on two planes separated by a vertical step.
• basin: characterized by a concave top with sides that slope down gradually from the outside circumference of the tree towards the centre of the tree. A basin stump should not be
confused with a stump where deterioration of the centre has resulted in a concavity.

- **unclassifiable**: stumps that cannot be assigned to one of the above kinds because their top surfaces are badly deteriorated or obscured by nursing trees.

Cultural cedar stumps are generally high, with their tops often 1.5 to 2.0 m above ground surface. However, on some parts of the Coast, low stumps are common [see photo below]. Cedars were usually cut above root flare, though sometimes they were cut low, with the flare left on the log or cut off the log in the form of a butt section.

![Low cultural flat stump](image)

Natural cedar stumps are infrequent because most cedars will fall over with roots attached to the stem rather than break when struck
Cultural flat stump with nursing hemlock growing against (not on) stump
Cultural barberchair stump with tall barberchair spire next to man
Tall cultural flat stump