

Vegetation Inventory
and
Stand Age Determination
in the Lannan Forest

First Version Report

4

(D.L. 206, Comox Land District)

July 6, 2003

Chris Walther, RPF
P.O. Box 256
Union Bay, BC
V0R 3B0
Tel.: (250) 335-1414

Table of Contents

1. SUMMARY	2
2. PARCEL LOCATION AND IDENTIFIATION.....	3
3. OBJECTIVE OF SURVEY:.....	3
4. METHOD & MATERIALS.....	4
4.1. METHOD.....	4
4.2. MATERIALS USED:.....	4
5. RESULTS:.....	5
5.1. GENERAL:.....	5
5.2. TERRAIN & SOILS.....	5
5.3. VEGETATION	6
5.4. STAND AGE :	6
5.5. ECOSYSTEMS	8
5.5.1. Climatic Classification:	8
5.5.2. Site Classification:	8
5.6. OTHER OBSERVATIONS:.....	9
6. CONCLUSION	9
7. FURTHER SUGGESTIONS	10
7.1. AVOIDING UNDERESTIMATED TREE AGE	10
7.2. ECOSYSTEM MAPPING.....	10
8. APPENDIX.....	10
8.1. OVERVIEW MAP.	11
8.1.1. Please insert Map-1.jpg	11
8.2. POLYGON MAP	12
8.2.1. Please insert map2.jpg	12
8.3. FS 882 VEGETATION INVENTORY FOR PLOTS 1-7.....	13
8.3.1. Notes to Vegetation Inventory:	13
8.4. VEGETATION LIST	20
8.5. UPLANDS GROUND TRUTHING FORMS FOR POLYGONS I-V	22

Summary

Between June 23 and July 3, 2003, a sensitive ecosystem inventory (SEI) survey was conducted in the 16 ha large D.L. 206 of the Comox Land District, also known as the Lannan Forest, with the main goal of determining the age of stands in this parcel and establishing a floral inventory for SEI records. Five stands were identified based on forest cover with 7 plots of 400 m² each, and 22 tree core samples taken for aging.

Approximately 5.5 ha of the 16 ha parcel are in stands of 100 years or slightly older, 7.5 ha appear between 70 and 90 years of age, and 3 ha are mostly hardwoods under 50 years old. The older stands meet the definition of 'Older Forest' under the SEI and show signs of historic logging damage on many Douglas-fir and some cedar. Other findings include a stand of trembling aspen (infrequent on Vancouver island) and several fluctuating water table sites. Inventory forms and a map showing the main results are appended.

1. PARCEL LOCATION AND IDENTIFICATION

Land Parcel ID: D.L. # 206, Comox Land District
Status: Vacant Crown Land
UTM Coordinates: 360000 East and 5507800 North, in zone 10 (NAD 1983)
Mapsheet: 92F076.1.2.

2. OBJECTIVE OF SURVEY:

The objective of this survey was to answer two questions:

1. Are the older trees observed in the north of D.L. 206 representative of an older forest stand as defined in the sensitive ecosystem inventory (SEI), or do they represent scattered veteran trees in a substantially younger stand?
2. If there is an older stand as defined by the SEI, what is its extent?

In addition, the survey was to take note of any other ecosystem-related issues during the survey (terrain, soils, water bodies, prevalent plants & animals, rare plants, animals, or plant associations, human impact / use).

3. METHOD & MATERIALS

3.1. METHOD

Between June 21 and July 3, a survey was conducted using vegetation survey methods from the Resource Inventory Council (RIC). Seven plots of 400 m² size were established (see map), and all vegetation (Trees, brush, herbs, and mosses) was described by species and % cover. Co-dominant (canopy-forming) trees of the leading species (by volume) were cored for age at breast height (1.3m).

The plots are squares of 20m x 20m, with corners flagged with yellow ribbon for independent verification.

The extent of the polygon (stand) was determined by running transects at 50m intervals or less.

Tree age was determined using methods outlined in the 'Province of British Columbia Forest Service Cruising Manual'. Briefly, candidate trees are cored for age at 1.3m (breast height), and the time taken for the germling to reach the height of 1.3m is calculated using tables or programs, in this case Site Tools for Windows, version 3.1. Stand age was determined from age cores of co-dominant trees of the leading species, and preferably shade-intolerant species that were unlikely to germinate and grow after stand establishment (e.g. Douglas-fir, red alder, aspen).

3.2. MATERIALS USED:

- 16" increment borer / Silva Compass / Clinometer / Hipchain / yellow marking ribbon.
- Forms FS 882 (2) HR
- Site Tools for Windows, version 3.1
- Provincial cruising manual, for determining tree age, and for describing attributes and extent of identified stands.
- Land Management Handbook No. 25 (Field Manual for Describing Terrestrial Ecosystems)
- Land Management Handbook No. 28 (Field Guide for Site Identification and Interpretation for the Vancouver Forest Region)

4. RESULTS:

4.1. GENERAL:

A total of 5 polygons (or stands) based on forest cover characteristics (composition of tree species, age, height) are identified in D.L 206. Table 1 provides an overview of these 5 polygons.

Table 1: Summary of Polygons in D.L. 206, Comox Land District (Lannan Forest)

Polygon No.	Approx. Polygon Area	Plot No's	Eco-system	Tree Species Composition	Approx Age
I	4.5 ha	1,2	CWHxm 05/01/07	Douglas-fir 50%, maple 35%, cedar 15%	~ 105
II	3.0 ha	3	CWHxm 07/13/15	Aspen 30%, alder 30%, Douglas-fir 20%, grand fir 10%, Sitka spruce 10%	~ 45
III	3.0 ha	4	CWHxm 05/07/13	Douglas-fir 80%, grand fir 10%, alder 10%	~ 85
IV	4.5 ha	7	CWHxm 05/13/07	Douglas-fir 60%, grand fir 20%, alder 20%	~ 75
V	1.0 ha	5,6	CWHxm 13/07/15	Sitka spruce 45%, Redcedar 25%, Douglas-fir 10%, grand fir 10%, alder 10%	~100

4.2. TERRAIN & SOILS

D.L. 206 occupies a flat hilltop area, approximately 120m above sea level. The terrain is very uniform and slopes do not exceed 5% anywhere in the parcel. It receives little seepage. However, it is well supplied with moisture throughout much of the year because of underlying water-impermeable soils that cause a seasonal perched water table. Drainage is imperfect in much of this very flat terrain, and much of the Lannan Forest experiences fluctuating water tables from summer fresh - winter very moist to summer very moist - winter very wet.

Soils grade from brunisols to gleysols, depending on the depth to the water restricting layer, which occurs from 50 cm to over 80cm in depth. An Ah or well decomposed Om layer covers sandy loams with 5 - 30% coarse fragment content. Evidence of gleying exists from 20cm depth downward in the less well drained areas.

Despite the high level of soil moisture and seasonal inundation, there are no streams or permanent water bodies in D.L. 206. There is no sign of flowing water other than a 10m long stretch of scoured channel between forested swamps in the south-east of the parcel (see map).

4.3. VEGETATION

The vegetation encountered reflects the rich, moist growing conditions that characterize D.L.206. Douglas-fir and alder are ubiquitous, while cedar, maple, spruce, grand fir and western hemlock occur more localized. The most common shrubs are ocean spray, red huckleberry, trailing black berry, and cascara, while salmonberry, salal, pacific crabapple, Oregon grape and holly are locally concentrated. The most common herb is sword fern, and the most common moss is *Kindbergia oregana*.

Details on terrain and vegetation for each polygon are included in the RIC ground truthing forms in the appendix.

4.4. STAND AGE :

Only Polygons I and V are characterized by stands that appear to be 100 years or older. While there are many smaller trees under 100 years in these stands, most of the canopy -forming shade-intolerant Douglas -fir are just over that age. Another indication of the advanced stand age is the presence of snags and fallen seral tree species (cherry, alder, maple, Douglas-fir). This shows that a number of trees have completed their life cycle, and are giving way to a shade-tolerant understorey composed mainly of younger broadleaf maple, redcedar, cascara, dogwood, and pacific crabapple. The table below shows the results of the tree ages taken at breast height, and the calculated total age.

Table 2: Results of age sampling in DL 206

Polygon (Stand)	Sampling Location ¹	Measured age at 1.3m ² (in years)	Derived total age ³	Tree details ⁴
I	Plot 1	74 minimum	82 minimum	Fd, 21.4cm dbh
I	Plot 1	76 minimum	84 min.	Fd, 53.1 cm dbh
I	Plot 1	104 min.	112 min.	Fd, 59.8 cm dbh
I	Plot 1	96 min.	104 min.	Fd, 36.3cm dbh
I	Plot 1	70 min.	78 min.	Cw, 37.1 cm dbh
I	1	98 min.	106 min.	Fd, pilot sample
I	2	98 min.	106 min.	Fd, pilot sample
I	3	91 min.	99 min.	Fd, 59.8 cm dbh
I	4	96 min.	104 min	Fd blowdown
I	8	102	110	Bg, 46 cm dbh
II	Plot 3	45	49	At, 26.7 cm dbh
II	Plot 3	35 min.	40 min.	Bg, 24.1 cm dbh
II	Plot 3	40	48	Fd, 34.2 cm dbh
III	Plot 4	78 min	86 min.	Fd, 54.6 cm dbh
III	Plot 4	80	88	Fd, 74.8 cm dbh
III	5	68 min.	76 min.	Fd, co-dominant
IV	Plot 7	66 min.	73 min.	Fd, 39 cm dbh
IV	6	81 min	89 min.	Fd, co-dominant
V	Plot 5	88 min.	93	Sitka Spruce, 60cm dbh
V	Plot 5	69 min.	78 min.	Cw, 44 cm dbh
V	7	96 min	104 min	Fd, 48.2 cm dbh
V	9	88 min.	97 min.	Cw, 67 cm dbh

¹ Age sampling was conducted either in 400 m² plots and in independent spot checks. All locations are mapped and flagged in the field.

² Diameter and age samples are usually taken at breast height (1.3m above ground). The suffix 'minimum' indicates that the increment core missed the tree's pith, but that the core was estimated to be within 5 annual rings of the pith. The recorded age at breast height is therefore an under estimate of the true age where the suffix 'min.' appears.

³ The ministry of forest's software Site Tools version 3.1 is used to calculate the number of years required by the young tree to grow from germination to 1.3m height, where the age core samples are taken. Site Tools is site and species specific and is based on optimal growing conditions (without the confounding effects of competition, suppression, repression, and top damage). Conditions in the Lannan Forest are unlikely to have been optimal for seedling growth, and the recorded number of years to reach breast height is therefore an under estimate.

⁴ Dbh refers to 'diameter at breast height', as tree diameter is measured at breast height (1.3m) above ground.

4.5. ECOSYSTEMS

4.5.1. Climatic Classification:

Biogeoclimatic ecosystem classification of D.L.206:

Ecosection: Nanaimo Lowlands
 Biogeoclimatic Zone: Coastal Western Hemlock (CWH)
 Subzone: very dry maritime (xm)

While the parcel has some transitional character to the Coastal Douglas-fir moist maritime subzone (prevalence of ocean spray, grand fir, snowberry, star flower), it is considered part of the Coastal Western Hemlock very dry maritime subzone (CWHxm) due to its northern location, fairly frequent hemlock, the complete lack of Indian plum on moist sites, and lack of Garry oak and arbutus on dry sites.

4.5.2. Site Classification:

Identifying the ecosystems encountered to the site series (or plant association) level was part of the survey, and table 1 lists the ecosystems found in each polygon. The ecosystems identified are five plant associations occurring in the CWHxm:

Table 3: Plant Associations (site series) identified in D.L.206

Plant Association	Site Series
Western hemlock - Douglas-fir / Oregon beaked moss	CWHxm - 01
Western redcedar / swordfern	CWHxm - 05
Western redcedar / three-leafed foamflower	CWHxm - 07
Western redcedar / salmonberry	CWHxm - 13
Western redcedar / slough sedge	CWHxm - 15

The boundaries of these plant associations are not identical to the stand boundaries mapped for polygons I-V, and the extent of these ecosystems was not mapped.

4.6. OTHER OBSERVATIONS:

1. D.L.206 is much used for recreational walking and biking, and there is some gathering of floral greens. The 1:2,500 scale map shows some of the trails and trail fragments encountered during the survey.

2. Blacktail deer appear to use the parcel for feeding and shelter. While they may find sufficient forage in the surrounding urbanized green spaces, the thick undergrowth in D.L. 206 is particularly suitable for shelter from humans and dogs. Deer density appears high, and they were seen and heard on every visit to the site.

3. Turkey vultures were observed feeding on an animal carcass in the South of D.L.206.

4. Several pileated woodpeckers were seen in the south-west of D.L. 206, and signs of their activity is common throughout the parcel. Although the nesting hole was not found, it appeared a crop of fledgling pileated woodpeckers was raised there.

5. Old bear claw marks were found in plot 6. No recent bear sign was seen.

6. Polygon II contains a stand of trembling aspen, which occur only sporadically on Vancouver Island. The presence of young aspen in the herb layer, despite heavy competition from herbs and shrubs, indicates a clonal stand, as this shade-intolerant species would not normally germinate under these conditions.

7. The understory in the wetter areas in D.L.206 features pacific crab apple in all vegetation layers. Some of these reach heights exceeding (by 30%) the maximum recorded in the British Columbia Register of Big Trees.

5. CONCLUSION

To answer the questions posed under 'Objectives' above:

1. The older trees in stands I and V are not veterans and are considered to be representative of the stand.

2. The age of stands I and V is considered to be over 100 years old, and both meet the definition of 'Older Forest' under the Sensitive Ecosystem Inventory Project for Eastern Vancouver Island. Some confidence should be attached to these ages being a minimum as the survey was biased in favour of lowering the age of the sampled tree (details below).

6. FURTHER SUGGESTIONS

6.1. AVOIDING UNDERESTIMATED TREE AGE

This survey has two negative (age reducing) biases for determining tree ages. Trees were cored at breast height to arrive at an age 'at breast height'. A program was then used to predict the time taken from the germling to reach breast height. Both of these are then added to arrive at a total age.

1. If the core taken at breast height was within an estimated 5 years of the pith, no estimate was added to the annual ring count. It was simply recorded as a 'minimum' in the interests of precision. Most samples, even after repeated attempts, did not include the pith, and the resulting count is therefore an underestimate for most tree ages above breast height.

2. The program used to determine the age below breast height assumes growing conditions in managed stands, i.e. without competition, suppression, damage, disease, etc. However, all of these factors likely impacted the young trees in D.L. 206, and would have slowed growth. This means that the time predicted by the program for the tree to reach breast height is also an underestimate.

It can be seen that adding two underestimates amplifies the bias of lowering tree age. To improve accuracy, it is suggested to obtain basal cores (at ground level) of target trees, to reach the pith each time, and to avoid computer programs or site index tables all together. This procedure is more labour intensive.

6.2. ECOSYSTEM MAPPING

All the plant associations (site series) identified in D.L. 206 appear on the Campbell River forest district's August 2002 list of rare natural plant communities as red or blue listed. Unless drastic changes have recently been made to this list, it may be desirable to map the extent of the plant associations in the parcel.

7. APPENDIX

7.1. OVERVIEW MAP.

7.1.1. Please insert Map-1.jpg

7.2. POLYGON MAP

7.2.1. Please insert map2.jpg

7.3. FS 882 VEGETATION INVENTORY FOR PLOTS 1-7

7.3.1. Notes to Vegetation Inventory:

1. Grasses were not keyed out to the genus level. They are lumped at the family level as 'Poaceae'.
2. Epiphytes were not inventoried
3. Trees were inventoried as per RIC vegetation inventory. Co-dominant trees of the leading species were cored for age.
4. To make the vegetation inventory more user friendly for non-RIC readers, a list of species abbreviations used in the FS 882 forms is attached below.

FS 882 (2) Plot # 1 (Polygon I)

Strata Coverage	Tree	Shrub	Herb	Moss & Lichen	Plot No.	Surveyor	Page	of
	35	40	15	10	1	C. Walther		
Tree Layers	A1	A2	A3	Tot%	Herb Layer	%	Moss/Lichen/ Seedling	%
Fd	10	30	15	55	Poli muni	60	Kind oreg	100
Cw			15	15	Pter aqui	25		
Mb		20	10	30				
					Achl trip	3		
					Tiar trif	2		
					Gali trif	6		
					Trie lati	3		
Shrub Layers	B1	B2	Tot%				Additional Spp.	
Cw	10		10					
Holo disc		25	5	30	Poaceae	1		
Gaul shal			45	45				
Vacc parv			1	1				
Rubu ursi			3	3				
Symp albu			1	1				
Rosa gymn			4	4				
Maho nerv			5	5				
Ilex aqui			1	1				

FS 882 (2) Plot # 2 (Polygon I)

Strata Coverage	Tree	Shrub	Herb	Moss & Lichen	Plot No.	Surveyor	Page	of
	65	20	35	10	2	C. Walther		
Tree Layers	A1	A2	A3	Tot%	Herb Layer	%	Moss/Lichen/ Seedling	%
Fd	7	23		30	Poli muni	55	Kind oreg	100
Cw		15		15	Pter aqui	10		
Mb	5	35	10	50				
Dr			5	5	Achl trip	20		
					Tiar trif	0		
					Gali trif	3		
					Trie lati	5		
Shrub Layers	B1	B2	Tot%	Lact mura	2	Additional Spp.		
Cw	4	4	8					
Hw	3	2	5	Poaceae	5			
Bg		1	1					
Rham purs	3		3					
Holo disc	2	1	3					
Gaul shal		60	60					
Vacc parv		3	3					
Amel alni	1		1					
Rosa gymn		4	4					
Maho nerv		10	10					
Symp albu		2	2					

FS 882 (2) Plot # 3 (Polygon II)

Strata Coverage	Tree	Shrub	Herb	Moss & Lichen	Plot No.	Surveyor	Page	of
	55	15	50	7	3	C. Walther		
Tree Layers	A1	A2	A3	Tot%	Herb Layer	%	Moss/Lichen/ Seedling	%
Fd		3		3	Poli muni	60	Kind oreg	90
Dr		5	2	7	Pter aqui	0	Plag insi	10
Bg		15	5	20	Athy fili	15		
At		55	5	60	Achl trip	3		
Ss		8		8	Tiar trif	2		
Rham purs			2	2	Gali trif	3		
					Trie lati	0		
Shrub Layers	B1	B2	Tot%	Lact mura	0	Additional Spp.		
At		10	10	Smil Stel	2			
Bg	15	10	25	Carex opnu	5			
Dr	5		5					
Hw		5	5	At	5			
Prun emar	5		5					
Malu fusc	15		15	Poaceae spp.	5			
Rham purs	8		8					
Holo disc	15	5	20					
Gaul shal			0					
Vacc parv		1	1					
Amel alni			0					
Rosa nutk		1	1					
Maho nerv			0					
Symp albu			0					
Rubu ursi		5	5					

FS 882 (2) Plot # 4 (Polygon III)

Strata Coverage	Tree	Shrub	Herb	Moss & Lichen	Plot No.	Surveyor	Page	of
	50	5	20	25	4	C. Walther		
Tree Layers	A1	A2	A3	Tot%	Herb Layer	%	Moss/Lichen/ Seedling	%
Fd	15	50	15	80	Poli muni	70	Kind oreg	100
Bg		80	2	10	Pter aqui	8		
Dr			10	10	Athy fili	0		
					Achl trip	7		
					Tiar trif	1		
					Gali trif	2		
					Trie lati	1		
Shrub Layers	B1	B2	Tot%	Lact mura	0	Additional Spp.		
At	5		5	Smil Stel	0			
Bg	5	5	10	Carex opnu	2			
Ss	5		5					
Hw	4		4	Bg	2			
Fd			2					
Rubu spec			3	Poaceae spp.	7			
Rham purs			1					
Holo disc			2					
Gaul shal			20					
Vacc parv			35					
Rubu ursi			5					
Rosa gymn			2					
Maho nerv			5					
Ilex aqui			1					

FS 882 (2) Plot # 5 (Polygon V)

Strata Coverage	Tree 50	Shrub 40	Herb 35	Moss & Lichen 15	Plot No. 5	Surveyor C. Walther	Page	of
Tree Layers	A1	A2	A3	Tot%	Herb Layer	%	Moss/Lichen/ Seedling	%
Ss	15	20	5	40	Poli muni	40	Kind oreg	35
Cw	5	20	5	30	Pter aqui	3	Hylo sple	35
Fd	0	6	2	8	Athy fili	20	Plag insi	20
Hw	0	0	5	5	Blec spic	3	Plag undu	5
Dr	0	0	2	2	Dryo expa	5	Leuc menz	0
Malu fusc	0	0	15	15			Rhyt lore	5
Shrub Layers	B1	B2	Tot%	Achl trip	9	Additional Spp.		
Hw	25	15	40	Tiar trif	2			
Fd	10	0	10	Linn Bore	2			
Cw	5	0	5	Gali trif	0			
Bg	0	1	1	Trie lati	0			
Malu fusc	15	5	20	Lact mura	0			
Rubu spec		2	2	Ranu unci	0			
Rham purs		2	2	Carex opnu	5			
Holo disc	2	1	3	Stach cool	4			
Gaul shal		5	5	Oena sarm	1			
Vacc parv	1	2	3	Maia dila	1			
Rubu ursi		3	3	Rubu spec	1			
Symp albu		1	1	Vacc parv	1			
Maho nerv		3	3	Malu fusc	1			
Ilex aqui		2	2	Bg	1			
Rosa gymn	0	0	0	Hw	1			

FS 882 (2) Plot # 6 (Polygon V)

This plot does not attempt to describe a stand, but the cedar-slough sedge plant association found in Polygon V.

Strata Coverage	Tree 30	Shrub 15	Herb 60	Moss & Lichen 20	Plot No. 6	Surveyor C. Walther	Page	of
Tree Layers	A1	A2	A3	Tot%	Herb Layer	%	Moss/Lichen/Seedling	%
Ss	20	20	5	45	Poli muni	10	Kind oreg	35
Cw	0	18	0	18	Pter aqui	0	Hylo sple	25
Fd	18	0	2	20	Athy fili	10	Plag insi	15
Bg	0	2	0	2	Blec spic	0	Plag undu	15
Dr	0	0	5	5	Dryo expa	1	Leuc menz	10
Malu fusc	0	0	5	5				
Rham purs	0	5	0	5				
Shrub Layers	B1	B2	Tot%		Achl trip	0	Additional Spp.	
Hw	0	5	5		Tiar trif	5		
Dr	20	0	20		Linn Bore	0		
Cw	3	1	4		Gali trif	0		
Bg		1	1		Trie lati	0		
Ss	3	2	5					
Malu fusc	5	0	5		Lact mura	0		
Rubu spec		10	10		Ranu unci	1		
Rham purs	10		10		Carex opnu	40		
Holo disc			0		Stach cool	10		
Gaul shal		5	5		Oena sarm	3		
Vacc parv	10	10	20		Vero amer	3		
Rubu ursi		10	10		Maia dila	1		
Symp albu					Vacc parv	5		
Maho nerv					Rubu spec	5		
Ilex aqui					Bg	1		
Rosa gymn	0	5	5		Poaceae spp.	5		

FS 882 (2) Plot # 7 (Polygon IV)

Strata Coverage	Tree 50	Shrub 40	Herb 60	Moss & Lichen 15	Plot No. 7	Surveyor C. Walther	Page	of
Tree Layers	A1	A2	A3	Tot%	Herb Layer	%	Moss/Lichen/ Seedling	%
Fd	20	30		50	Poli muni	65	Kind oreg	50
Bg	0	30	1	40	Pter aqui	10	Hylo sple	5
Mb	0	0	10	10	Athy fili	5	Plag insi	20
					Blec spic	0	Plag undu	15
					Dryo expa	0	Rhyt. lore	10
Shrub Layers	B1	B2	Tot%		Achl trip	2	Additional Spp.	
Hw		2	2		Tiar trif	3		
Dr			0		Linn Bore	0		
Cw			0		Gali trif	0		
Bg	5	1	6		Trie lati	1		
Ss			0					
Malu fusc			0		Lact mura	3		
Rubu spec	30	15	45		Ranu unci	0		
Rham purs		5	5		Carex opnu	0		
Holo disc					Stach cool	10		
Gaul shal					Oena sarm	0		
Vacc parv	10	15	25		Vero amer	1		
Rubu ursi		15	15		Maia dila	0		
Rubu laci		2	2		Vacc parv	0		
Maho nerv					Rubu spec	0		
Ilex aqui					Bg	0		
Rosa gymn					Poaceae spp.	0		

7.4. VEGETATION LIST**Species Abbreviations used for RIC 882 Forms - Vegetation Inventory**

Trees	
Mb	Broadleaf maple
Fd	Douglas-fir
Bg	Grand fir
Dr	Red alder
At	Trembling aspen
Hw	Western hemlock
Cw	Western redcedar
Malu fusc	Pacific crab apple
Rham purs	Cascara
Shrubs	
Rham purs	Cascara
Ilex aqui	Holly
Holo disc	Ocean spray
Maho nerv	Oregon Grape
Malu fusc	Pacific crab apple
Vacc parv	Red huckleberry
Rosa gymn	Rose, baldhip
Rosa, Nutk	Rose, nootka
Gaul shal	Salal
Rubu spec	Salmon berry
Symp albu	Snowberry, common
Rubu ursi	Trailing black berry

Herbs	
Gali trif	Bedstraw, sweet-scented
Vero amer	Brooklime, American
Ranu unci	Buttercup, small flowered
Pter aqu	Fern, Bracken
Blec spic	Fern, Deer
Athy fili	Fern, Lady
Dryo expa	Fern, Spiny Wood
Poli muni	Fern, sword
Tiar trif	Foamflower, 3-leafed
Poaceae	Grass family
Stach cool	Hedge-nettle, Cooley's
Maia dila	Lily of the valley, false
Carex opnu	sedge, slough
Smil Stel	Solomon's seal, false star flowered
Trie lati	Starflower, broad-leafed
Achl trip	Vanilla Leaf
Lact mura	Wall-lettuce
Oena sarm	Water-parsley
Mosses	
Plag insi	Moss, coastal leafy
Rhyt lore	Moss, lanky
Kind oreg	Moss, Oregon beaked
Leuc menz	Moss, palm tree
Hylo sple	Moss, step
Plag undu	Moss, wavy cotton

7.5. UPLANDS GROUND TRUTHING FORMS FOR POLYGONS I-V

GROUNDTRUTHING FORM - UPLANDS Polygon I

POLYGON ID NO.:I	MAP SHEET(S):92F076(.1.2)
ECOSYSTEM CODE(S): 05/01/07	LOCATION: Courtenay
AIR PHOTO(S): Not used	GROUND PHOTO(S): None
SOIL UNIT: Brunisols	
SURVEY DATE: June 21, 2003	SURVEYORS: Chris Walther

LANDSCAPE CONDITION:

- Unfragmented (< 5% of landscape fragmented)
- Partly fragmented (5-25% landscape fragmentation)
- Highly fragmented (> 25% landscape fragmentation)

POLYGON DESCRIPTION:

Uniformity:

Degree of environmental uniformity: High Medium Low
 Degree of vegetation uniformity: High Medium Low

Disturbance History (natural):

Fire Windthrow Disease Animal Use Erosion Other

Disturbance History (anthropogenic):

Logging Grazing Agriculture Construction Recreation Other

Adjacent land uses: Golf Course, Residential

Known threats: Potential development

Comments: _____

Wildlife Observations: Deer, various warblers, woodpeckers

SKETCH (show access and plot location): **See attached map**

PLOT DESCRIPTION:

Environmental characteristics:

0-3% Slope var. Aspect 150m Elevation LV Mesoslope
3-4 Moisture Regime C-D Nutrient Regime M Drainage

Ecosystem type(s):

Forested Site Association(s): CWHxm05, 01, 07

Non-forested Ecosystem(s): _____

New Ecosystem (Y,N): N Ecological Plot(s) (Y,N): Plot(s) #: 1, 2

VEGETATION DESCRIPTION: **See Attached FS882 Ecosystem Field Form for Plots # 1 & 2**

GROUNDTRUTHING FORM - UPLANDS Polygon II

POLYGON ID NO.:II	MAP SHEET(S):92F076(.1.2)
ECOSYSTEM CODE(S): 07 / 13 / 15	LOCATION: Courtenay
AIR PHOTO(S): Not used	GROUND PHOTO(S): None
SOIL UNIT: Brunisols, Gleysols	
SURVEY DATE: June 22, 2003	SURVEYORS: Chris Walther

LANDSCAPE CONDITION:

- Unfragmented (< 5% of landscape fragmented)
 Partly fragmented (5-25% landscape fragmentation)
 Highly fragmented (> 25% landscape fragmentation)

POLYGON DESCRIPTION:**Uniformity:**

Degree of environmental uniformity: High Medium Low
 Degree of vegetation uniformity: High Medium Low

Disturbance History (natural):

Fire Windthrow Disease Animal Use Erosion Other

Disturbance History (anthropogenic):

Logging Grazing Agriculture Construction Recreation Other

Adjacent land uses: Golf Course, Residential

Known threats: Potential development

Comments: This polygon features a leading component of Vancouver Island Aspen (P. tremuloides)

Wildlife Observations: Lots deer, warblers, sapsucker, resident pileated woodpecker, Turkey vulture

SKETCH (show access and plot location): **See attached map**

PLOT DESCRIPTION:**Environmental characteristics:**

0-2% Slope 170° Aspect 150m Elevation LV Mesoslope
4-7 Moisture Regime D Nutrient Regime P-VP Drainage

Ecosystem type(s):

Forested Site Association(s): CWHxm 07, 13, 15

Non-forested Ecosystem(s): _____

New Ecosystem (Y,N): N Ecological Plot(s) (Y,N): _____ Plot(s) #: 3

VEGETATION DESCRIPTION: **See Attached FS882 Ecosystem Field Form for Plot # 3**

GROUNDTRUTHING FORM - UPLANDS Polygon III

POLYGON ID NO.:III	MAP SHEET(S):92F076(1.2)
ECOSYSTEM CODE(S): 05/ 07/13	LOCATION: Courtenay
AIR PHOTO(S): Not used	GROUND PHOTO(S): None
SOIL UNIT: Brunisols	
SURVEY DATE: June 22, 2003	SURVEYORS: Chris Walther

LANDSCAPE CONDITION:

- Unfragmented (< 5% of landscape fragmented)
 Partly fragmented (5-25% landscape fragmentation)
 Highly fragmented (> 25% landscape fragmentation)

POLYGON DESCRIPTION:**Uniformity:**

Degree of environmental uniformity: High Medium Low
 Degree of vegetation uniformity: High Medium Low

Disturbance History (natural):

Fire Windthrow Disease Animal Use Erosion Other

Disturbance History (anthropogenic):

Logging Grazing Agriculture Construction Recreation Other

Adjacent land uses: Golf Course, Residential

Known threats: Potential development

Comments: _____

Wildlife Observations: Deer, various warblers, woodpeckers, turkey vultures, raven

SKETCH (show access and plot location): **See attached map**

PLOT DESCRIPTION:**Environmental characteristics:**

0-1% Slope var. Aspect 150m Elevation LV Mesoslope
 4-5 Moisture Regime D Nutrient Regime M-I Drainage

Ecosystem type(s):

Forested Site Association(s): CWHxm05, 07, 13,

Non-forested Ecosystem(s): _____

New Ecosystem (Y,N): N Ecological Plot(s) (Y,N): _____ Plot(s) #: 4

VEGETATION DESCRIPTION: **See Attached FS882 Ecosystem Field Form for Plot # 4**

GROUNDTRUTHING FORM - UPLANDS Polygon IV

POLYGON ID NO.:IV	MAP SHEET(S):92F076(.1.2)
ECOSYSTEM CODE(S): 05/ 07/13/15	LOCATION: Courtenay
AIR PHOTO(S): Not used	GROUND PHOTO(S): None
SOIL UNIT: Brunisols, Gleysols	
SURVEY DATE: July 3, 2003	SURVEYORS: Chris Walther

LANDSCAPE CONDITION:

- Unfragmented (< 5% of landscape fragmented)
- Partly fragmented (5-25% landscape fragmentation)
- Highly fragmented (> 25% landscape fragmentation)

POLYGON DESCRIPTION:

Uniformity:

- Degree of environmental uniformity: High Medium Low
- Degree of vegetation uniformity: High Medium Low

Disturbance History (natural):

- Fire Windthrow Disease Animal Use Erosion Other

Disturbance History (anthropogenic):

- Logging Grazing Agriculture Construction Recreation Other

Adjacent land uses: Golf Course, Residential

Known threats: Potential development

Comments: _____

Wildlife Observations: Deer, various warblers, pileated woodpeckers, turkey vultures feeding

SKETCH (show access and plot location): **See attached map**

PLOT DESCRIPTION:

Environmental characteristics:

- 0-2% Slope 180° Aspect 150m Elevation LV Mesoslope
- 4-7 Moisture Regime D Nutrient Regime I - VP Drainage

Ecosystem type(s):

- Forested Site Association(s): CWHxm05, 07, 13, 15
- Non-forested Ecosystem(s): Sedge swamps in this polygon are considered forested
- New Ecosystem (Y,N): N Ecological Plot(s) (Y,N): Plot(s) #: 7

VEGETATION DESCRIPTION: **See Attached FS882 Ecosystem Field Form for Plot # 7**

GROUNDTRUTHING FORM - UPLANDS Polygon V

POLYGON ID NO.: V	MAP SHEET(S):92F076(.1.2)
ECOSYSTEM CODE(S): CWH xm 07/13/ 15	LOCATION: Courtenay
AIR PHOTO(S): Not used	GROUND PHOTO(S): None
SOIL UNIT: mostly Gleysols	
SURVEY DATE: July 2, 3, 2003	SURVEYORS: Chris Walther

LANDSCAPE CONDITION:

- Unfragmented (< 5% of landscape fragmented)
 Partly fragmented (5-25% landscape fragmentation)
 Highly fragmented (> 25% landscape fragmentation)

POLYGON DESCRIPTION:

Uniformity:

- Degree of environmental uniformity: High Medium Low
 Degree of vegetation uniformity: High Medium Low

Disturbance History (natural):

- Fire Windthrow Disease Animal Use Erosion Other

Disturbance History (anthropogenic):

- Logging Grazing Agriculture Construction Recreation Other

Adjacent land uses: Golf Course, Residential

Known threats: Potential development

Comments: Plot 6 specifically describes the cedar-slough sedge plant association in polygon V.

Wildlife Observations: Deer, racoon, warblers, woodpeckers, old bear sign, turkey vultures feeding

SKETCH (show access and plot location): **See attached map**

PLOT DESCRIPTION:

Environmental characteristics:

- 0-1% Slope 180° Aspect 150m Elevation LV Mesoslope
5-7 Moisture Regime D Nutrient Regime I-VP Drainage

Ecosystem type(s):

Forested Site Association(s): CWHxm 13, 07, 15

Non-forested Ecosystem(s): _____

New Ecosystem (Y,N): N Ecological Plot(s) (Y,N): _____ Plot(s) #: 5, 6

VEGETATION DESCRIPTION: **See Attached FS882 Ecosystem Field Forms for Plots # 5, 6**