

# Cataloguing *in situ* protection of genetic resources for major commercial forest trees in British Columbia

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## Abstract

Loss of genetic diversity can be due to a variety of causes and might take place unnoticed even in widespread and frequent species. *In situ* reserves can be a very efficient method of protecting genetic diversity in tree species if they are sufficiently large to sustain adequate populations and spatially well distributed to protect populations adapted to a range of environmental conditions. We use a geographical information system (GIS) based approach to assess the level of *in situ* protection using forest inventory data. Recently revised maps of seed planning units used for management of genetic resources for 11 major commercial conifer species reflect geographic variation as observed in genetic tests. On this basis we investigate how well populations are represented in protected areas. Due to a systematic expansion of protected areas in the 1990s, it appears that conifer genetic resources are now well represented in protected areas. In this study we identify the remaining gaps for *in situ* protection and discuss implications for genetic resource management. Further, we evaluate protected areas for their importance with respect to gene conservation, and determine whether ground truthing is necessary to confirm that populations in protected areas are sufficiently large.

*Keywords:* gene conservation, conifers, gap analysis, GIS, British Columbia

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## 1. Introduction

Loss of genetic diversity in species reduces the potential for adaptation to new environmental conditions and the potential for selection and breeding for new objectives. Such a loss can be due to a variety of causes and might take place unnoticed even in common species that appear to be in no danger (Ledig 1993). An efficient method to protect genetic diversity in many species is through a regional or international network of genetic reserve forests (Koski 1996;

Ledig 1986; Turok 1997). In addition, monitoring, active management, and integration of *ex situ* programs may be needed to supplement the *in situ* reserve system (Ledig et al. 1998). Nevertheless, a network of *in situ* reserves is essential for any forest gene conservation program targeting the natural distribution of a species that aims at being comprehensive and cost efficient.

A common approach for assessing the level of protection, redundancy of protected areas, and the need for additional *in situ* reserves is to collect good census information on population size and distribution for the species of concern. Based on such survey data, species can be ranked to set priorities for data collection and conservation (Dinerstein et al. 1995; Jenkins

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1996). In addition, geographic information systems (GIS) can be used for spatial modeling of population distribution and frequencies (Davies et al. 1990; Ferrier and Smith 1990; Pressey et al. 2000). These extrapolations from census data can then be used for gap analysis, reserve evaluation, and reserve selection (Davis 1995; Pressey et al. 1996).

While this type of spatial gap analysis has previously been used to assess the conservation status of endangered species, it has only recently been applied in a gene conservation context (Lipow 2004). The reason is that detailed maps associating genetic variation for a species with geography are not usually available. However, for major commercial conifer species in British Columbia, genetic data on geographic differentiation are available from extensive provenance and progeny trials. Digital maps of Seed Planning Zones (SPZs) that reflect this genetic differentiation, have been developed at a scale of 1:250,000 (B.C. Ministry of Forests 1998). Recently, Seed Planning Units (SPUs) were also digitally mapped to reflect genetic differentiation over elevation gradients within SPZs (B.C. Ministry of Forests 2003). These delineations are widely used in practical genetic resource management. Here we assume SPUs contain distinct commercially valuable genetic resources, although they might not be ideal delineations to capture all types of genetic diversity. Further, we define a population as individuals of a species that occur in an SPU.

This survey complements previous work by Lester and Yanchuk (1996)<sup>1</sup> and Yanchuk and Lester (1996) with a quantitative analysis of the *in situ* gene conservation status of commercial conifers. We utilize available information from various ecological and forest inventory databases that are maintained by the B.C.

provincial government to estimate population sizes of tree species in protected areas. Based on this information we evaluate current protected areas individually for their value as genetic reserves. To qualify as a primary genetic reserve, a protected area should contain populations that are not covered elsewhere, and it should also be large enough to ensure adequate genetic variability, maintenance of local adaptation and functioning of mating systems of tree species. The population size needed depends on several factors and will usually exceed 5000 individuals (Aitken 2000). A reserve larger than 250 ha will almost certainly contain this census population size for conifers in British Columbia (Yanchuk and Lester 1996). However, we calculate the probability for reserves of all sizes to exceed 5000 individuals, and then use this data to assess if ground truthing is necessary and determine how it can be carried out most efficiently.

Approximately 4.5 million hectares of protected areas were initially established in British Columbia, mainly in the 1940s, with the objective to set aside areas for recreation and tourism. This number remained more or less stable with only occasional additions for half a century, until a major provincial initiative more than doubled the number of reserves and land cover between 1991 and 2001. The focus of this recent expansion was to achieve satisfactory representation of biological diversity, unique natural environments, and different ecosystems in protected areas (Land Use Coordination Office 1992). It is often argued that such a “coarse filter” or “landscape level” approach to conservation will also protect the underlying genetic diversity of species. In this paper we will also investigate the degree to which this initiative improved the *in situ* conservation status of conifer genetic resources in British Columbia.

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<sup>1</sup> Note that all cited Ministry of Forests and Ministry of Sustainable Resource Management publications are available on-line at <http://www.for.gov.bc.ca/HFD/library/>.

## 2. Methods

### 2. 1. Spatial data and GIS analysis

The first part of this analysis is based on spatial coverage data of protected areas, seed planning units (SPU), water features, and a hierarchical biogeoclimatic ecological classification (BEC) system. These datasets are publicly available on-line through the B.C. Ministry of Sustainable Resource Management of British Columbia (Information Management Branch 2002) and the Tree Improvement Branch (B.C. Ministry of Forests 2002).

For a protected area to be included in this analysis it must be excluded from any type of resource extraction or human manipulation such as logging, mining, oil or gas extraction, urbanization or conversion to agriculture. Protection of areas must also be permanent, being formally designated under legislation. This includes national parks, ecological reserves, class A and C provincial parks, recreation areas and protected areas that fall under the Environment and Land Use Act, following the guidelines of the IUCN (International Union for the Conservation of Nature 1997). Over 800 protected areas covering approximately 11% of the provincial land base met these conditions and were evaluated in this study (Figure 1).

As a spatial representation of genetic variation we used the seed planning units (SPUs) for 11 commercially important conifers in British Columbia. These are derived from seed zones, which are geographic areas across which individuals of a species are adapted to similar environmental conditions. Seed zones were originally used to ensure that reforestation stock is planted within the same general area and climate in which seed was collected from wild stands. Based on genetic information from extensive provenance testing for most of these species, these zones have been revised and combined into the current seed planning zones

and seed planning units (SPUs). These zones are used to control the use for reforestation of seed produced in seed orchards from phenotypically selected and tested trees originating from natural stands in the local SPU. SPUs are high and low elevation bands within seed planning zones (Figure 1). Sometimes they contain an “overlap” elevation band where seed sources from both high and low bands may be used. SPUs are species specific and their names consist of three components, a provincial species code (e. g. Fd, for Douglas fir), a regional code (e. g. PG, for Prince George) and an elevation band (h, high; l, low, o, overlap). There may also be regional overlap zones indicated by three letter codes (e. g. BVP and PGN in Figure 1) where seed from two adjacent zones may be used.

A standard gap analysis was performed by intersecting the protected area spatial layer with the SPU layer for each species. Subsequently, the proportion of protected areas, and the number of reserves larger than 250 ha, was determined for each SPU. For estimating population sizes, the union of the protected area and SPU layer was further intersected with BEC zone and water feature layers.

### 2. 2. Inventory data and estimation of population size

The B.C. Ministry of Forests maintains a detailed Timber Supply Area (TSA) database that contains information on forest cover, stand age, species composition, and other attributes for most forest stands in the province. This database has been assembled from interpretations of aerial photographs and is updated weekly as stands are logged, replanted, and resurveyed. The inventory covers approximately 90% of the province but cannot be used directly for this analysis because protected areas are not included unless they have recently been established. Instead, we use a detailed botanical sample database of the provincial ecology program (B.C. Ministry of

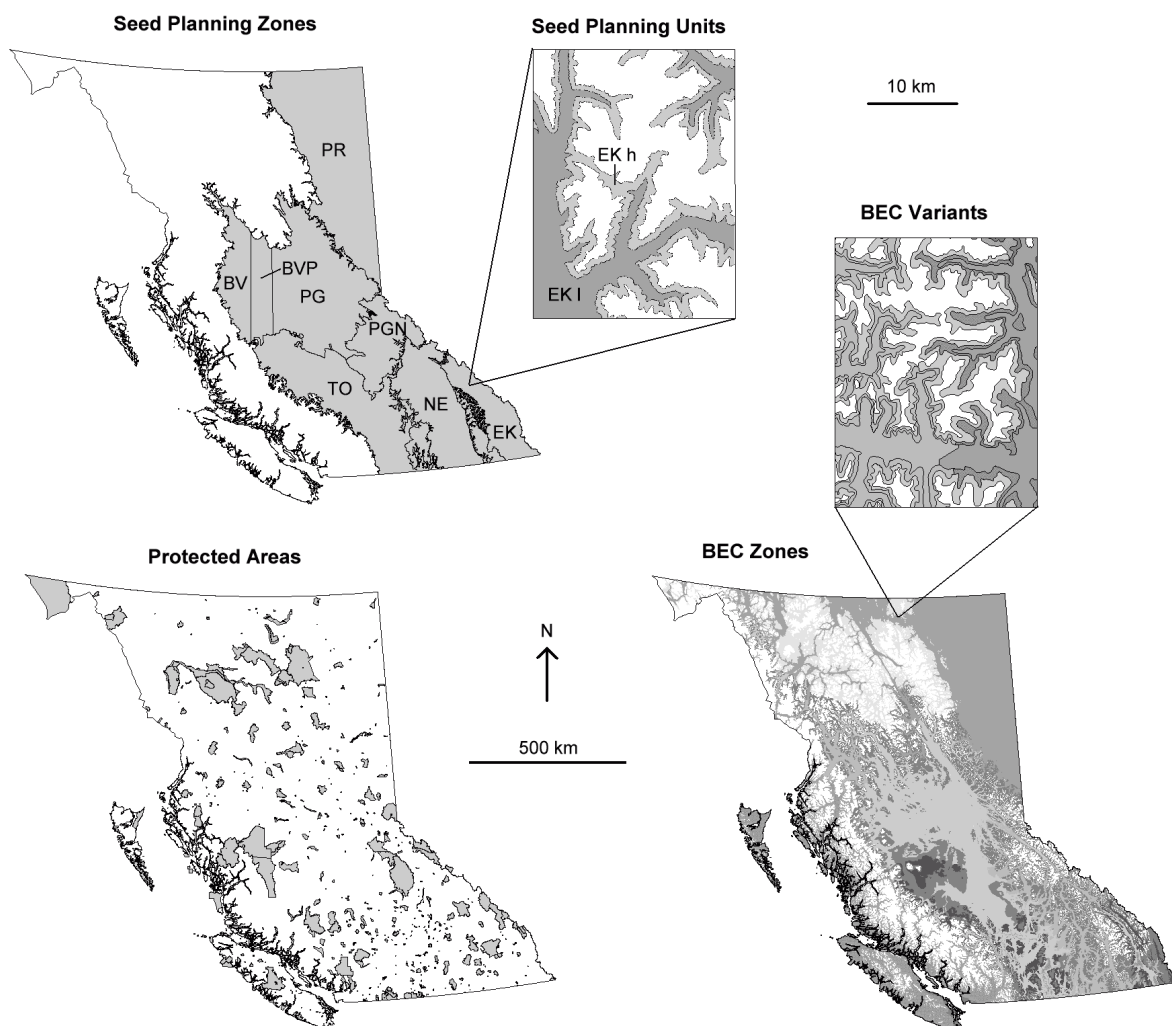


Figure 1. Examples of GIS data sets used in this analysis. Seed planning zones for interior spruce are shown in the upper left, with the enlargement showing seed planning units consisting of two elevational bands (h, high; l, low). This layer was intersected with protected areas (lower left) for a gap analysis. Species frequency modeling is based on the hierarchical Biogeoclimatic Ecological Classification (BEC) system.

Forests 2001), consisting of 34,000 sample plots 0.04 ha in size, which includes an area measure (% cover for each species) and for selected samples also includes data from two prism plots that were used to determine the number of stems (>10 cm dbh) per hectare for each species. We then use the TSA database only to make adjustments for the portion of the land base that are naturally non-forested.

Species frequencies were calculated for variants of the Biogeoclimatic Ecological Classification (BEC) system (Meidinger and Pojar 1991). This hierarchical system subdivides the landbase into 14 zones, 97 subzones and 152 variants. Even at the zone level species ranges are concordant with BEC classification, indicating the latter is a good basis for spatial computations of species

frequencies. The population size in each protected area was estimated using factors for converting cumulative cover to stems per hectare. We only used stems per hectare data from mature stands (100 years and older), and only considered individuals with a dbh >30 cm. When this factor is applied to cumulative cover data for successional stands the resulting number represents a “mature equivalent” census population size of reproducing individuals. This conversion factor was calculated separately for each BEC zone with an error estimate. The expected number of “mature equivalent” individuals in a protected area was then determined by multiplying the total cumulative cover of a species in each BEC variant of a protected area with this conversion factor for stems per hectare. Standard deviations were estimated for all mean values calculated from sample data, allowing for estimation of the standard deviation for number of mature equivalent individuals using standard rules for multiplication and addition of variances. Finally, we used the probability function of the normal distribution to determine the probability of a protected area containing at least 5000 individuals.

One limitation of this estimation procedure is its underlying assumption that individuals of a species are randomly distributed within their range. Because of landscape features, random historic events, or metapopulation dynamics, a species may not be present in a particular reserve that contains appropriate habitat. To account for possible non-random distributions we also assessed the probability of a species being entirely absent in a protected area by calculating the probability of its absence in an inventory plot. This results in a conservative underestimate of the probability of a species being represented in a protected area because sample plots are much smaller than protected areas. However, for relatively common species this underestimate may not be large.

### 2. 3. Evaluation of protected areas

To qualify as a high priority genetic reserve, a protected area should contain populations that are not well protected elsewhere, and preferably protect several species simultaneously. For all 800 reserves included in this analysis, we calculated a score that reflected these values by giving a value of one unit to a reserve for each species that had an expected population size of 5000 individuals or more in this reserve. Then the value for each species was divided by the number of times it was also represented in another reserve (plus unity in the denominator). For example, for a reserve that contained species A, B, and C, where species A was only represented in this location, species B was found in 1 other reserve and species C was found in 9 other reserves the score would be  $1/1 + 1/2 + 1/10 = 1.6$ .

We also evaluated reserves for the need for ground truthing using a similar procedure. If ground truthing is necessary to confirm that a species is adequately protected, one should first visit the reserves that have the highest probability of containing the species, and one should start with species that are least protected. Therefore we only included populations in the ranking procedure that were not adequately protected, and then divided the probability of the reserve of containing a population size 5000 individuals or more by the number of times the species may also be found in other locations (i.e. expected population size of 5000 individuals) in other reserves (plus unity in the denominator). For example, for a reserve that contained species A and B, where species A was only represented in this location with a probability 0.68 and species B with a probability of 0.82 in this reserve and occurs in one other reserve, the score would be  $0.68/1 + 0.82/2 = 1.09$ . If a species has a probability below 0.5 of having 5000 individuals, it is not included in the denominator.

### 3. Results and Discussion

Of a total land base of 94 million hectares in British Columbia, protected areas cover approximately 10 million hectares (11%). Approximately 800 protected areas are included in this study. However, about half of those are less than 100 ha in size. There are about 250 medium sized reserves (100 to 1,000 ha) and another 150 protected areas are large (up to 100,000 ha). Another 17 protected areas exceed this number with sizes of up to 1 Million ha. These very large reserves account for approximately one third of the total protected area.

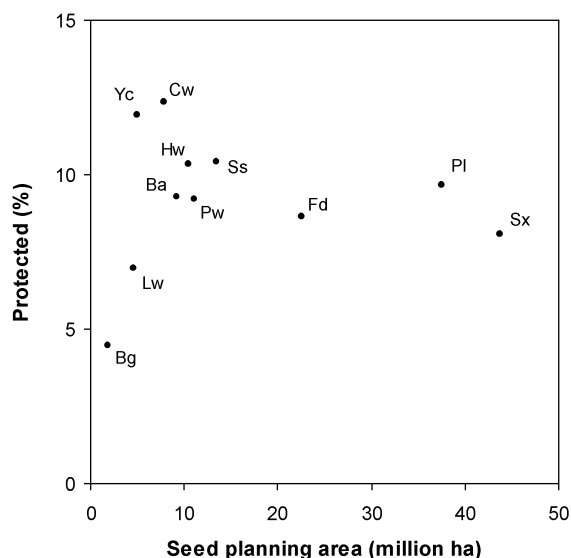


Figure 2. Proportional representation of 11 major commercial conifer species in protected areas as a function of the seed planning unit size. Only the portion of the species range that falls into seed planning zones has been analyzed. Refer to Figure 3 for species codes.

#### 3. 1. Representation of species and populations in protected areas

At the species level, all but two species are represented in protected areas at the expected level of approximately 11% (Figure 2). The

coastal species yellow-cedar (Yc, *Chamaecyparis nootkatensis* (D. Don) Spach), western redcedar (Cw, *Thuja plicata* Donn ex D. Don), western hemlock (Hw, *Tsuga heterophylla* (Raf.) Sarg.), amabilis fir (Ba, *Abies amabilis* (Dougl. ex Loud.) Dougl. ex Forbes) and Sitka spruce (Ss, *Picea sitchensis* (Bong.) Carr. and Sxs, *P. sitchensis* × *glauca* Little) have the highest level of *in situ* protection. These species have natural ranges covering the entire coast of British Columbia which is generally well represented in protected areas. However, grand fir (Bg, *Abies grandis* (Dougl. ex D. Don) Lindl.) with a very small distribution in drier areas of the most southwestern portion of the coast shows less than half the expected level of protection compared to provincial averages. This region is heavily populated and lacks protected areas. Widespread species that have the majority of their range in the interior of British Columbia such as interior spruce (Sx, including *Picea glauca* (Moench) Voss, *P. engelmannii* Parry ex Engelmann, and hybrids), lodgepole pine (Code PI, *Pinus contorta* var. *latifolia* Engelmann ex S. Watson), and Douglas-fir (Fd, *Pseudotsuga menziesii* var. *menziesii* (Mirbel) Franko and *P. menziesii* var. *glauca* (Beissner) Franko), and with a smaller, more southern range western white pine (Pw, *Pinus monticola* Dougl. ex D. Don) show a level of protection slightly lower than the expected 11%. The only species covered in this study with a range exclusively in the southern interior portion of British Columbia, western larch (Code Lw, *Larix occidentalis* Nutt.), exhibits the second lowest level of protection.

Figure 3 provides a comprehensive summary of the *in situ* conservation status at the population (i. e., seed planning unit, SPU) level. These charts are drawn to scale, so that the area of a slice of a pie chart (extrapolated to the center of the circle) is proportional to the total size of the SPU. The inner circle indicates the relative representation in protected areas with the

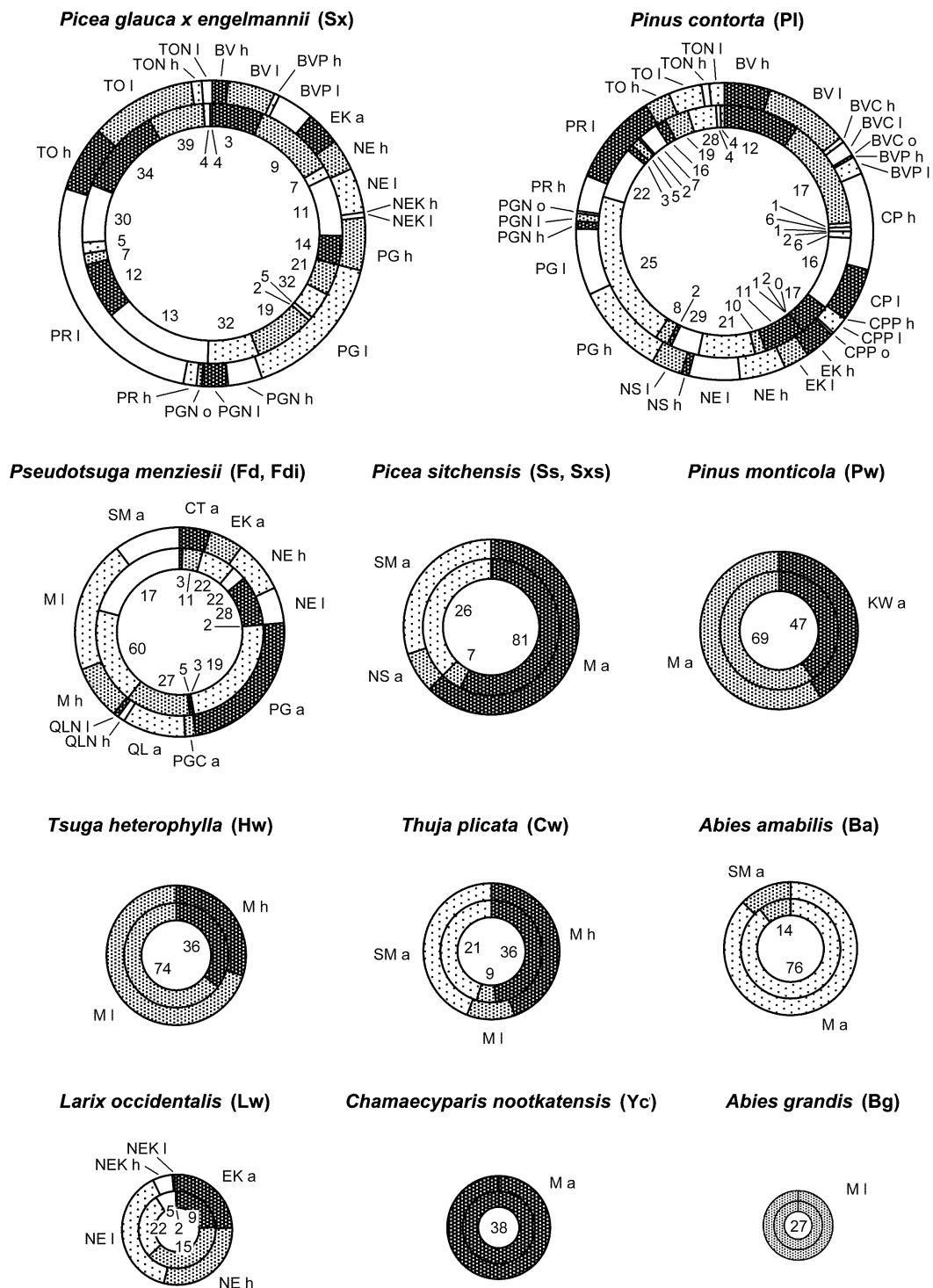


Figure 3. Representation of conifer populations in protected areas. The outer circle is equivalent to the total size of seed planning units (circles are drawn to scale; SPU codes are indicated by the legend). The inner circle shows the proportional representation of protected areas (the number of protected areas >250 ha is indicated by the legend). To match total and protected areas, start at the twelve o'clock position and follow legends clockwise or counter-clockwise using the shading as an aid.

the inner legend. In order to interpret the more complicated diagrams start at the twelve o'clock position and follow the legends clockwise or counter-clockwise using the shading as an aid. For example, the first SPU (BV h) in the first diagram shows interior spruce (Sx) is very well represented by three large protected areas (approximately 3-4 times the expected area for this species). Another example for a similar sized SPU is the first unit (CT a) in the diagram for Douglas-fir (Fd) below. This seed planning unit is considerably under-represented in protected areas for its size although it contains three protected areas > 250 ha. Under the assumption that a single protected area > 250 ha contains a sufficiently large population size of a

particular species to maintain genetic diversity, no SPU lacks protection entirely (regional and elevational overlap zones excluded). However, a number of SPUs are represented by only a few protected areas, and because of non-random spatial distribution of a species, temporal stochasticity of population size, or disturbance dynamics, a single protected area may not be an adequate genetic reserve forest by chance.

In order to better assess the status and redundancy of *in situ* protection of genetic resources in SPUs, we add information from forest inventory data to the spatial analysis. Population densities vary among both species and regions but typically range from 50 to 100

Table 1. Seed planning units that have the least degree of *in situ* representation, ranked by the probability of containing at least one, three, five, or ten reserves with more than 5000 mature-equivalent individuals (refer to electronic Appendix 1 for a full listing).

SPU	Rank	Probability			
		1	3	5	10
Pl NS h	1	0.41	0	0	0
Sx BV h	2	0.63	0.06	0	0
Fdi CT a	3	0.67	0.08	< 0.01	0
Sx PR h	4	0.88	0.35	0.03	0
Lw EK a	5	0.90	0.39	0.06	< 0.01
Lw NE h	6	0.93	0.51	0.12	< 0.01
Sxs NS a	7	0.95	0.54	0.10	0
Pl PR h	8	0.96	0.56	0.13	< 0.01
Pl EK h	9	0.98	0.63	0.20	< 0.01
Pl NS l	10	0.98	0.69	0.23	< 0.01
Bg M l	11	0.98	0.75	0.34	< 0.01
Pl BV h	12	0.99	0.76	0.32	< 0.01
Pl EK l	13	> 0.99	0.88	0.53	0.01
Pw KQ a	14	0.99	0.89	0.58	0.03
Sx BV l	15	> 0.99	0.92	0.60	0.01
...	...				
Pl TO h	25	> 0.99	0.99	0.89	0.17
...	...				
Fd M l	50	> 0.99	> 0.99	> 0.99	> 0.99



mature-equivalent stems/ha with a dbh >30 cm for all but four species: western hemlock and amabilis fir usually have densities of 100 to 200 stems/ha and grand fir and white pine have approximately 20 stems/ha. Therefore, the minimum size of protected areas that can be expected to contain at least 5000 mature-equivalent individuals varies among species and regions from approximately 25 to 250 ha. Although these estimates are statistically precise with standard errors often approaching zero because of the large sample size, the coefficients of variation are quite large (usually between 0.6 to 0.8) reflecting the natural variation in population density for these species. In addition,

the probability of a species being present in a reserve (based on presence in sample plots) varies from around 0.15 for the less frequent species western larch, grand fir, and white pine to around 0.75 for the most common one, western hemlock. The status of *in situ* protection based on these estimates for each individual population in each reserve is summarized in Table 1, where we calculated the overall probability of each SPU being adequately covered by at least one, three, five or ten reserves. Depending on the level of protection desired, not all populations of all species may be adequately covered. If the desired level of protection is, for example, at least three

Table 2. Examples of protected areas in the order of importance from a gene conservation perspective, reflecting number of populations covered and redundancy of populations in other reserves (refer to electronic Appendix 2 for full listing).

Rank	Protected area name	Area (ha)	Score <sup>1</sup>	Seed Planning Units covered in the reserve
1	Tweedsmuir	990448	0.74	Ba SM a, Cw M l, Cw SM a, Fd SM a, PI BV h, PI BV l, Sx BV h, Sx BV l, Sx BVP h, Sx BVP l, Sxs SM a, Sx TO h, Sx TO l
2	Swan Lake - Kispiox	62360	0.69	PI NS h, PI NS l, Sxs NS a
3	Glacier National Park	135828	0.55	Fdi EK a, Fdi NE h, Fdi NE l, Lw EK a, Lw NEK h, PI EK h, PI EK l, PI NE h, PI NE l, Pw KQ a, Sx EK a, Sx NE h, Sx NE l
4	Purcell Wilderness Cons.	198071	0.53	PI EK h, Sx EK a, Fdi EK a, Fdi NE h, Fdi NE l, Lw EK a, Lw NE h, Lw NE l, PI EK h, PI EK l, PI NE h, PI NE l, Pw KQ a, Sx EK a, Sx NE h
5	Sustut	75687	0.50	PI BV h, PI BV l, PI BVC h, PI BVC l, PI BVC o, PI CP h, PI CP l, Sx BV h, Sx BV l
...				
10	Kakwa	170893	0.36	Fdi PG a, PI PG h, PI PG l, PI PR h, Sx PG h, Sx PG l, Sx PGN h, Sx PR h, Sx PR l
...				
50	Sugarbowl	20319	0.20	Fdi PG a, Fdi QL a, PI CP l, PI PG h, PI PG l, Sx PG h, Sx PG l
...				
250	Eagle River	396	0.07	Fdi NE l, Lw NE l, PI NE l, Sx NE l
...				
500	Dionisio Point	151	0.02	Ba M a, Fd M l, Hw M l

<sup>1</sup>) Sum of the number of populations covered divided by their respective redundancy in other protected areas.

protected areas per population with a confidence level of 95% that each reserve contains at least 5000 individuals, then 15 populations of western larch, Douglas-fir, lodgepole pine, grand fir, and interior spruce require further investigation (Table 1).

### 3. 2. Evaluation of protected areas and ground truthing

The large differences in current *in situ* protection status that we observed among different SPUs implies that individual reserves are not equally important from a gene conservation perspective. In Table 2 we ranked reserves based on the number of populations they cover and their redundancy. The most important reserves are predictably the very large protected areas, 10,000 to 1 million ha in size, which typically include a wide range of ecosystems. The top 25 reserves rank high because they contain at least one population that is not (or not often) covered elsewhere. They are

followed by approximately 100 reserves that provide adequate protection for many species, but also have a high level of redundancy (e. g., Sugarbowl in Table 2). The remaining protected areas are usually small, redundant reserves that cover only a few populations adequately (e. g. Eagle River and Dionisio Point in Table 2). It should be noted that our scoring method implies a certain value for the degree of redundancy, for the number of populations in a reserve, and the value of redundancy relative to the number of populations. The formula could be modified with coefficients and constants to alter these weights.

The potential lack of *in situ* protection that we identified in Table 1 does not necessarily imply that these populations are not adequately covered. It means that with the available data, a lack of protection cannot be excluded at a level of  $p < 0.05$  without visiting the reserves and confirming the presence of the populations or compiling this information from existing reserve

Table 3. Reserves where ground truthing should be carried out to confirm that they contain at least 5000 mature-equivalent individuals. Only the least protected seed planning units are included (refer to electronic Appendix 1 for a full list).

Seed Planning Unit	Protected areas (in order of most to least likely to be adequate)
PI NS h	Damdochax, Swan Lake Kispiox River
Sx BV h	Sustut, Tweedsmuir, Babine Mountains
Fdi CT a	Taweel, Emar Lakes, Schoolhouse Lake Park, Green Lake, Ruth Lake
Sx PR h	Kakwa, Graham Laurier, Wapiti Lake, Butler Ridge, Gwillim Lake, Pink Mountain, Northern Rocky Mountains
Lw EK a	Purcell Wilderness Conservancy, Glacier National Park, Height of the Rockies, Kootenay, Yoho, Ram Creek, Akamina-Kishinena, Columbia Lake, Mount Fernie, Premier Lake, Whiteswan Lake, Windermere Lake, Crowsnest, Elk Valley, Norbury Lake, Cummins Lakes
Lw NE h	Purcell Wilderness Conservancy, Gladstone, Silver Star, Granby, Lockhart Creek, Kalamalka Lake, Graystokes, Goat Range, Greenbush-Caribou, Lew Creek, Monashee, Syringa, Valhalla, West Arm, Kokanee Glacier, Englishman River, Kingfisher Creek, Stagleap

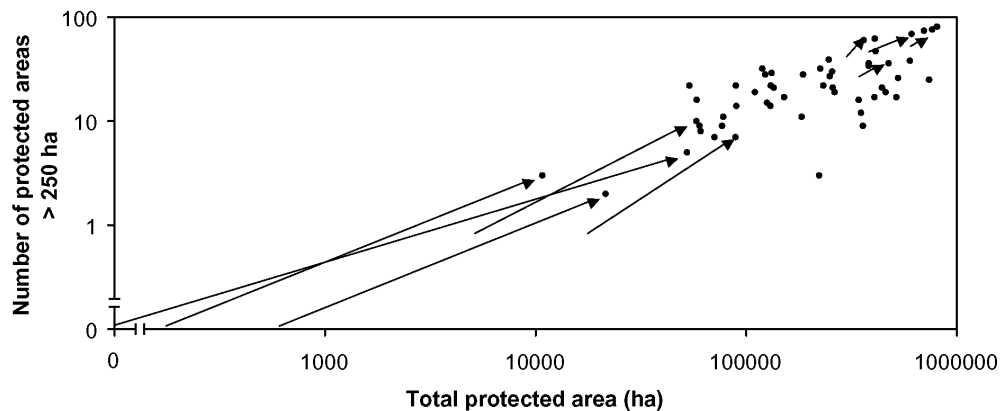


Figure 4. Change of the status of *in situ* protection of conifer populations from 1991 to 2001. Circles represent the 2001 status for 11 species in each seed planning unit (overlap zones excluded). Arrows indicate the change from 1991 for the five least protected (lower left), and some well protected (upper right) populations.

inventories, if available. Using a similar ranking procedure as above, but only for the least protected SPUs listed in Table 1, we can generate a list of reserves where ground truthing should be carried out to clarify the population size and status of protection in these cases. Protected areas are listed in the order of the highest to lowest probability of containing at least 5000 individuals. In addition we have provided electronic Appendices 1 and 2, which are extensions of Tables 1 and 2. These listings give the forest manager more flexibility in deciding the level of redundancy required (e.g., 1 reserve for small seed planning units and 5 for larger ones) and the possibility to find all potential reserves for all SPUs.

### 3. 3. Changes of *in situ* conservation status between 1991 and 2001

A comparison of the current *in situ* protection status of genetic resources with their status 10 years ago reveals that the complete coverage of all populations and all species that we have today is largely the result of a major initiative to achieve satisfactory representation of biological diversity, unique natural environments, and different ecosystems in protected areas over the last decade (Land Use Coordination Office 1992). This “coarse filter” or “landscape level”

approach to conservation appears to be effective to protect the underlying genetic diversity of species as far as it is revealed in provenance tests and reflected in SPUs. No population currently lacks protection entirely, whereas in 1991 genetic resources in one SPU were not protected areas at all. The 10 least protected seed planning units (excluding the one without protection), had an increase of protected area by a factor of 22 since 1991 (Figure 4, lower left). In contrast, the level of protection increased by a factor of only 1.5 for the 10 most protected SPUs since 1991 (Figure 4, upper right), while the total protected area has doubled. Using another statistic to evaluate this change: of the 50 protected areas that are most important from a gene conservation perspective (Table 2), only 11 existed prior to 1991. It should be noted that protection of genetic resources was not a direct objective when delineating protected areas. However, because representation of different ecosystem types was considered in the selection of new reserves, and both genetic and ecological differentiation occurs predominantly along climatic gradients, protection of genetic resources improved significantly with the additional protected areas. For other values, the result of this initiative may be even more noteworthy.

## 4. Conclusions

Due to a systematic expansion of protected areas in British Columbia in the 1990s, it appears that conifer genetic resources are now well represented in protected areas. The landscape level approach to conservation of this initiative appears to have covered the underlying genetic diversity of species as far as it is revealed in genetic tests and reflected in seed planning units. We identified four species where gaps cannot be excluded using current data: most populations of western larch, and some populations of Douglas-fir, lodgepole pine, and interior spruce. In particular, the seed planning units Fd CT a, Lw NE a, and Lw EK h need attention because although they are large in size they may not be adequately protected. We present new methodology to clarify conservation status of populations and prioritize reserves for ground truthing. Genetic resources of two other species, grand fir and white pine appear to be reasonably well represented in protected areas although they are relatively infrequent and their range coincides with heavily populated areas. It should be noted, however, that some populations, such as the interior distribution of grand fir, are not covered in this analysis because in this region the species is not under intensive forest management. The conclusions of this study apply to genetic resources of species that are of current commercial interest and for which genetic data is available. A similar investigation covering all populations of all 50 tree species native to British Columbia using ecological classification instead of seed planning zones is underway.

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**Appendix 1.** List of seed planning units ranked by their need for ground truthing and/or additional *in situ* conservation efforts, ranked by the probability of containing at least one, three, five, or ten reserves with more than 5000 mature-equivalent individuals. Protected areas that may be visited are listed in order of their probability to contain an adequate population size.

Rank	SPU	Probability of 1, 3, 5, 10				Protected areas (in order of most to least likely to be adequate)
1	PI NS h	0.41	0.00	0.00	0.00	Damdochax, Swan Lake Kispiox River
2	Sx BV h	0.63	0.06	0.00	0.00	Sustut, Tweedsmuir, Babine Mountains
3	Fdi CT a	0.67	0.08	< 0.01	0.00	Taweel, Emar Lakes, Schoolhouse Lake Park, Green Lake (10), Ruth Lake
4	Sx PR h	0.88	0.35	0.03	0.00	Kakwa, Graham Laurier, Wapiti Lake, Butler Ridge, Gwillim Lake, Pink Mountain, Northern Rocky Mountains
5	Lw EK a	0.90	0.39	0.06	< 0.01	Purcell Wilderness Conservancy, Glacier National Park, Height of the Rockies, Kootenay, Yoho, Ram Creek, Akamina-Kishinena, Columbia Lake, Mount Fernie, Premier Lake, Whiteswan Lake, Windermere Lake, Crowsnest, Elk Valley, Norbury Lake, Cummins Lakes
6	Lw NE h	0.93	0.51	0.12	< 0.01	Purcell Wilderness Conservancy, Gladstone, Silver Star, Granby, Lockhart Creek, Kalamalka Lake, Graystokes, Goat Range, Greenbush-Caribou, Lew Creek, Monashee, Syringa, Valhalla, West Arm, Kokanee Glacier, Englishman River, Kingfisher Creek, Stagleap
7	Sxs NS a	0.95	0.54	0.10	0.00	Swan Lake Kispiox River, Kalum Parks, Gingietl Creek, Babine River Corridor, Nisga'a Memorial Lava Bed, Kitwanga Mountain, Boulder Creek, Catherine Creek E.R., Ross Lake
8	PI PR h	0.96	0.56	0.13	< 0.01	Kakwa, Graham Laurier, Wapiti Lake, Monkman, Butler Ridge, Gwillim Lake, Pink Mountain, Bearhole Lake, Sikanni Chief Falls, Bearhole Lake, Buckingham River Way
9	PI EK h	0.98	0.63	0.20	< 0.01	Purcell Wilderness Conservancy, Glacier National Park, Height of the Rockies, Kootenay, Yoho, Ram Creek, Akamina-Kishinena, Bugaboo, Mount Assiniboine, Purcell Wilderness Conservancy, Top of the World, Elk Lakes
10	PI NS I	0.98	0.69	0.23	< 0.01	Damdochax, Swan Lake Kispiox River, Kalum Parks, Gingietl Creek, Babine River Corridor, Nisga'a Memorial Lava Bed, Kitwanga Mountain, Boulder Creek, Catherine Creek E.R., Ross Lake, Netalzul Meadows, Meziadin Lake, Ningunsaw River
11	Bg M I	0.98	0.75	0.34	< 0.01	Garibaldi, Cypress, Desolation Sound Marine, East Redonda Island, Gold Muchalat, Golden Ears, Indian Arm, Inland Lake, Mt. Richardson, Nimpkish Lake, Ambrose Lake, Bowen Island, Brackendale Eagles, Cowichan River, Cultus Lake, Fraser River, Goldstream, Gowland Tod, Halkett Bay, Jedediah Island Marine, Lasqueti Island, Mount Tuam, Newcastle Island Marine, Pinecone Burke, Princess Margaret Marine, Read Island, Roscoe Bay, Sasquatch, Simson, Small Inlet, Sooke Mountain, South Otter Bay, South Texada Island, Spiiyus, Strathcona, Thurston Marine Bay, White Ridge, Woss Lake
12	PI BV h	0.99	0.76	0.32	< 0.01	Sustut, Tweedsmuir, Damdochax, RobyRock Lake, Babine Mountains, Francois Lake, Finger Tatuk, Entiako, Uncha Mountain Red Hills, NN432, Sutherland, Sutherland River, Meridian Road/Vanderhoof
13	PI EK I	> 0.99	0.88	0.53	0.01	Purcell Wilderness Conservancy, Glacier National Park, Height of the Rockies, Kootenay, Yoho, Ram Creek, Columbia Lake, Mount Fernie, Premier Lake, Whiteswan Lake, Windermere Lake, Crowsnest, Elk Valley, Norbury Lake, Burges & James Gadsden, Kikomun Creek, Marl Creek, Thunder Hill, Wasa Lake

## Appendix 1. continued.

Rank	SPU	Probability of 1, 3, 5, 10				Protected areas (in order of most to least likely to be adequate)
14	Pw KQ a	0.99	0.89	0.58	0.03	Wells Gray, NN460, Gilnockie, Kianuko, Purcell Wilderness Conservancy, Gladstone, Silver Star, Goosegrass Creek, Granby, Glacier National Park, Lockhart Creek, Dunn Peak, Kalamalka Lake, St. Mary's Alpine, Upper Adams River, Mount Robson, Foster Arm, Finn Creek, Harbor Dungon Lakes, Height of the Rockies, Kootenay, Yoho, Okanagan Mountain, Enderby Cliffs, Goat Range, Greenbush-Caribou, Lew Creek, Monashee, Syringa, Valhalla, West Arm, Kokanee Glacier, White Lk S Shore, Columbia Lake, Mount Fernie, Premier Lake, Whiteswan Lake, Windermere Lake, Cummins Lakes, Mt. Revelstoke National Park, NN557, Burges & James Gadsden, Nancy Greene, Hamber, Mt Griffin E.R., Champion Lakes, Momic Lakes, North Thompson Oxbows - Manteau, North Thompson Oxbows East, Blanket Creek, Kokanee Creek, Kootenay Lake (5), McDonald Creek, Pilot Bay, Wap Ck Delta Flpl, Adams Lake - Spillman Beaches
15	Sx BV I	> 0.99	0.92	0.60	0.01	Sustut, Tweedsmuir (South), Damdochax, Tweedsmuir (North), Babine Mountains, Babine River Corridor, Netalzul Meadows, NN114, Takla Lake Marine, Babine Lake Marine (2), Andrews Bay, Call Lake, Morice River, Rainbow alley, Red Bluff, Torkelson Lake, Tyhee Lake, Wistaria
16	PI CP h	> 0.99	0.95	0.71	0.03	Sustut, Nation, Graham Laurier, Wapiti Lake, Monkman, Arctic Pacific Lakes, Heather Dina Lake, Patsuk Creek, Whiskers Point, Pine Le Moray, Carp Lake, Chunamon Creek, Omineca, Tacheeda Lakes, Mudzenchoot, Bocock Peak, Chase, Ed Bird Estella Lake, Finlay-Russel, Kwadacha Wilderness, Pine Pass
17	Fdi EK a	> 0.99	0.95	0.72	0.04	Purcell Wilderness Conservancy, Kootenay, Glacier National Park, Yoho, Height of the Rockies, Akamina-Kishinena, Gilnockie, Whiteswan Lake, Premier Lake, Kikomun Creek, Burges & James Gadsden, Columbia Lake, Mount Fernie, Windermere Lake, Marl Creek, Wasa Lake, Ram Creek, Norbury Lake, Elk Valley, Gilnockie Creek, Crowsnest, Thunder Hill, Columbia Lak, Elko
18	PI CP I	> 0.99	0.97	0.79	0.07	Sustut, Nation, Monkman, Sugarbowl-Grizzly Den, Arctic Pacific Lakes, Heather Dina Lake, Patsuk Creek, Whiskers Point, Pine Le Moray, Carp Lake, Chunamon Creek, Omineca, Tacheeda Lakes, Chase, Ed Bird Estella Lake, Finlay-Russel, Kwadacha Wilderness, Bijoux Falls, Blackwater Creek, Heather Lake, Muscovite Lake, Raspberry Harbour, Tudyah Lake, Kwadacha,
19	Lw NE I	> 0.99	0.97	0.79	0.10	Purcell Wilderness Conservancy, Gladstone, Silver Star, Granby, Lockhart Creek, Kalamalka Lake, Okanagan Mountain, Enderby Cliffs, Goat Range, Greenbush-Caribou, Lew Creek, Monashee, Syringa, Valhalla, West Arm, Kokanee Glacier, White Lk S Shore, Englishman River, Conkle Lake, Roderick Haig-Brown, Mt. Revelstoke National Park, NN557, Adams Lake (Bush Creek Site), Herald, Shuswap Lake Marine - Paradise Point, Shuswap Lake, Shuswap Riv Isl, Nancy Greene, Champion Lakes, King George VI, Blanket Creek, Kokanee Creek, Kootenay Lake (5), McDonald Creek, Pilot Bay, Wap Ck Delta Flpl, Arrow Lakes (4), Eagle River South Side, Mabel Lake, Purcell Wilderness Conservancy, Ryan, Shuswap Lake - Hermit Bay Site, Shuswap Lake Marine - Albas, Shuswap Lake Marine - Marble Point, Silver Beach, Skookumchuck Rapids
20	Cw M I	> 0.99	0.97	0.80	0.07	Tweedsmuir (South), Kalum Parks, Gingietl Creek, Garibaldi, Kitlope Heritage Conservancy, Homathko River - Tatlayoko, Brandywine Falls, Clendinning, Coquihalla Canyon, Coquihalla River, Nahatlatch, Nairn Falls, Silver Lake, Skagit Valley, Kleanza Creek, Williams Creek, Alexandra Bridge, Homathko Estuary, Kitsumkalum, Lakelse Lake, NN242
21	Pw M a	> 0.99	0.97	0.80	0.13	Garibaldi, Liumchen E.R., Brooks Peninsula, Carmanah Walbran, Clayoquot Arm, Clayoquot Plateau, Cypress, Desolation Sound Marine, East Redonda Island, Gold Muchalat, Golden Ears, Hakai, Indian Arm, Inland Lake, Mount Judge Howay, Mt. Richardson, Nimpkish

## Appendix 1. continued.

Rank	SPU	Probability of 1, 3, 5, 10				Protected areas (in order of most to least likely to be adequate)
22	Fd SM a	> 0.99	0.98	0.86	0.14	Tweedsmuir, Kitlope Heritage Conservancy, Garibaldi, Stein Valley, EC Manning, Homathko River -Tatlayoko, Clendinning, Skagit Valley, Mehatl Creek, Bishop River, Upper Lillooet, Birkenhead Lake, Chilliwack Lake/Greendrop, Tweedsmuir Park Addition, Coquihalla Summit, Callaghan Lake, Duffey Lake, Nahatlatch, Joffre Lakes, Cerise, Nairn Falls, Brandywine Falls, Coquihalla Canyon, Silver Lake, Coquihalla River, Stoyoma Creek, Nicolum River
23	Fdi QL a	> 0.99	0.99	0.88	0.17	Wells Gray, Goosegrass Creek, Erg Mountain, Bowron Lake, Mount Robson, Schoolhouse Lake Park, Foster Arm, Cariboo Mountains, Lower Raush, Upper (Middle) Raush, Sugarbowl-Grizzly Den, Cummins Lakes, West Twin, Ptarmigan Creek, Evanoff, Holiday Creek Arch, Cariboo River, Horsefly Lake, Jackman Flats, Rearguard Falls, West Twin, Hamber, Barkerville, Wendle, North Thompson Oxbows - Manteau, North Thompson Oxbows East, Slim Creek, Blue River Black Spruce, Blue River Pine
24	Sx EK a	> 0.99	0.99	0.89	0.15	Purcell Wilderness Conservancy, Glacier National Park, Height of the Rockies, Kootenay, Yoho, Ram Creek, Akamina-Kishinena, Columbia Lake, Mount Fernie, Premier Lake, Whiteswan Lake, Windermere Lake, Crownsnest, Elk Valley, Norbury Lake, Bugaboo, Burges & James Gadsden, Kikomun Creek, Marl Creek, Thunder Hill, Wasa Lake, Mount Assiniboine, Purcell Wilderness Conservancy, Top of the World
25	PI TO h	> 0.99	0.99	0.89	0.17	Dunn Peak, Okanagan Mountain, Duffey Lake, EC Manning, Stein Valley, Arrowstone, Arthur Seat, Cathedral, Cornwall Hills, Mount Savona, NN1315, NN1317, NN1554, Trepanier, Cascade, Bonaparte, Harry Lake Aspen, Apex Mountain, Bedard Aspen, Blue Earth Lake, Brent, Cayoosh Goats, Eneas Lakes, Pennask, Porcupine Meadows, Skwaha Lake, Tsintsunko Lakes
26	PI NE h	> 0.99	0.99	0.89	0.17	Gilnockie, Kianuko, Purcell Wilderness Conservancy, Gladstone, Silver Star, Granby, Glacier National Park, Lockhart Creek, Dunn Peak, St. Mary's Alpine, Goat Range, Greenbush-Caribou, Lew Creek, Monashee, Syringa, Valhalla, West Arm, Kokanee Glacier, Englishman River, Mt. Revelstoke National Park, NN557, Kingfisher Creek, Bugaboo, Mount Griffin, Stagleap, Mt Griffin E.R., NN558
27	PI PR I	> 0.99	0.99	0.89	0.17	Graham Laurier, Monkman, Butler Ridge, Gwillim Lake, Bearhole Lake, Sikanni Chief Falls, Swan Lake, Beaton River, Beaton, Beaton-Doig Canyon & Beaton River Site, Cecil Lake, Charlie Lake, Chinchaga Lakes, Clayhurst, Hole-in-the-Wall, Kiskatinaw, Milligan Hills, Moberly Lake, One Island Lake, PEACE RIVER / BODREAU, Peace River Corridor (Alces River), Peace River Corridor (Peace River Islands), Peace River Corridor (Wak Anahtaah), PEACE-MOBERLY subzone, Pine River Breaks, Rolla Canyon E.R., Sikanni Chief Canyon, Sukunka Falls
28	PI BV I	> 0.99	0.99	0.93	0.27	Sustut, Tweedsmuir (South), Damdochax, Tweedsmuir (North), Roby Rock Lake, Babine Mountains, Francois Lake, Finger Tatuk, Entiako, Uncha Mountain Red Hills, Babine River Corridor, Sutherland, Sutherland River, Netalzul Meadows, Babine Lake Marine (2), Hook (Deep) Bay, Burns Lake, Entiako, Andrews Bay, Call Lake, Morice River, Rainbow alley, Red Bluff, Torkelson Lake, Tyhee Lake, Wistaria, Beaumont, Chilako River, Drywilliam Lake, Nechako Canyon, Pinkut Creek East
29	Ba SM a	> 0.99	> 0.99	0.96	0.36	Tweedsmuir, Kitlope Heritage Conservancy, Garibaldi, Kalum Parks, Homathko River -Tatlayoko, Clendinning, Skagit Valley, Mehatl Creek, Bishop River, Upper Lillooet, Nisga'a Memorial Lava Bed, Birkenhead Lake, Great Glacier, Chilliwack Lake/Greendrop, Craig Headwaters, Lava Forks, Gingietl Creek, Nahatlatch, NN242, Williams Creek, Homathko Estuary, Lakelse Lake, Kleanza Creek, Nairn Falls, Brandywine Falls, Coquihalla Canyon, Silver Lake, Coquihalla River, Alexandra Bridge, Kitsumkalum, FH Barber, Nicolum River



## Appendix 1. continued.

Rank	SPU	Probability of 1, 3, 5, 10				Protected areas (in order of most to least likely to be adequate)
30	PI PG h	> 0.99	> 0.99	0.97	0.40	Wells Gray, Mount Robson, Kakwa, Bowron Lake, Hamber, West Twin, Cummins Lakes, Sugarbowl-Grizzly Den, Kluskoil Lake, Nazko Lake, Upper (Middle) Raush, Taweel, White Pelican, Ptarmigan Creek, Goosegrass Creek, Mount Terry Fox, Small River Caves, Emar Lakes, Evanoff, Ptarmigan Creek, Lower Raush, Narcosli Lake, Foster Arm, Erg Mountain, High Lakes Basin, Sunbeam Creek, Close-To-The-Edge, Holiday Creek Arch, Mount Tinsdale, Close-To-The-Edge, Wendle, Barkerville, Cariboo Mountains
31	Fdi NE h	> 0.99	> 0.99	0.97	0.41	Purcell Wilderness Conservancy, Glacier National Park, Goat Range, Valhalla, Granby, Gladstone, Kokanee Glacier, Mt. Revelstoke National Park, West Arm, Monashee, Dunn Peak, Kianuko, Okanagan Mountain, St. Mary's Alpine, NN557, Silver Star, Syringa, Lockhart Creek, Kalamalka Lake, Gilnockie, Greenbush-Caribou, Enderby Cliffs, NN558, Momich Lakes, Kingfisher Creek, Champion Lakes, Mount Griffin, Lew Creek, Conkle Lake, Englishman River, Nancy Greene, NN472, King George VI, Jewel Lake, Cody Caves, Wrinkly Face Cliff
32	PI PG I	> 0.99	> 0.99	0.97	0.47	Wells Gray, Mount Robson, Kakwa, Bowron Lake, Sugarbowl-Grizzly Den, Kluskoil Lake, Nazko Lake, West Twin, Upper (Middle) Raush, Fraser River, Schoolhouse Lake Park, Cariboo River, Goosegrass Creek, Evanoff, Ptarmigan Creek - (PA), Lower Raush, Foster Arm, Erg Mountain, Three Sisters, Jackman Flats, North Thompson Oxbows - Manteau, Slim Creek, Green Lake - A Multi Site, North Thompson Oxbows East, Close-To-The-Edge, West Lake, Ten Mile Lake, Fort George Canyon, Blue River Black Spruce, Horsefly Lake, Pinnacles, Cottonwood River, Cinema Bog, Rearguard Falls, Puntchesakut Lake, Cariboo Mountains
33	Sx NE h	> 0.99	> 0.99	0.98	0.46	Wells Gray, Purcell Wilderness Conservancy, Glacier National Park, Goat Range, Valhalla, Granby, Gladstone, Kokanee Glacier, Mt. Revelstoke National Park, Hamber, West Arm, Cummins Lakes, Monashee, Dunn Peak, NN460, NN557, Silver Star, Syringa, Lockhart Creek, Greenbush-Caribou, Goosegrass Creek, NN558, Kingfisher Creek, Mount Griffin, Stagleap, Lew Creek, Foster Arm, Englishman River, Nancy Greene, Cody Caves
34	Sx PG h	> 0.99	> 0.99	0.98	0.46	Kakwa, Bowron Lake, Graham Laurier, Monkman, Pine Le Moray, West Twin, Sugarbowl-Grizzly Den, Finger Tatuk, Wapiti Lake, Kluskoil Lake, Arctic Pacific Lakes, Sutherland, Nazko Lake, Pine Pass, Heather Dina Lake, Sutherland River, White Pelican, Ptarmigan Creek, Mount Pope, Evanoff, Bobtail Mountain, Boccock Peak, Erg Mountain, Mudzenchoot, Patsuk Creek, Close-To-The-Edge, Mount Tinsdale, Meridian Road/Vanderhoof, Wendle, Whiskers Point, Barkerville
35	Fd M h	> 0.99	> 0.99	0.98	0.52	Garibaldi, Liumchen E.R., Brooks Peninsula, Carmanah Walbran, Clayoquot Arm, Clayoquot Plateau, Cypress, Desolation Sound Marine, East Redonda Island, Gold Muchalat, Golden Ears, Hakai, Indian Arm, Inland Lake, Mount Judge Howay, Mt. Richardson, Nimpkish Lake, Pacific Rim - West Coast Trail, Pinecone Burke, Schoen Lake, South Texada Island, Spiipiyus, Strathcona, Sydney Inlet, Tahsish Kwois, Tantalus, White Ridge, Woss Lake, Tetrahedron, Weymer Creek, Sumas Mountain, Wood Mountain Ski, International Ridge, Mount Elliot, Mount Seymour, Tranquil Creek, Claud Elliott Creek, Haley Lake, San Juan Ridge
36	Cw SM a	> 0.99	> 0.99	0.99	0.64	Tweedsmuir, Kitlope Heritage Conservancy, Garibaldi, Stein Valley, Kalum Parks, EC Manning, Homathko River -Tatlayoko, Clendinning, Skagit Valley, Seven Sisters, Mehatl Creek, Bishop River, Upper Lillooet, Nisga'a Memorial Lava Bed, Birkenhead Lake, Chilliwack Lake/Greendrop, Tweedsmuir Park Addition, Coquihalla Summit, Gingietl Creek, Callaghan Lake, Duffey Lake, Nahatlatlch, Joffre Lakes, Cerise, Williams Creek, Kitwanga Mountain, Kleanza Creek, Nairn Falls, Brandywine Falls, Coquihalla Canyon, Silver Lake, Coquihalla River, Stoyoma Creek

## Appendix 1. continued.

Rank	SPU	Probability of 1, 3, 5, 10				Protected areas (in order of most to least likely to be adequate)
37	Sxs SM a	> 0.99	> 0.99	> 0.99	0.83	Tweedsmuir, Kalum Parks, Gingietl Creek, Garibaldi, Nisga'a Memorial Lava Bed, Kitwanga Mountain, Kitlope Heritage Conservancy, Homathko River - Tatlayoko, Duffey Lake, EC Manning, Stein Valley, Brandywine Falls, Clendinning, Coquihalla Canyon, Coquihalla River, Nahatlatch, Nairn Falls, Silver Lake, Skagit Valley, Liumchen E.R., Kleanza Creek, Williams Creek, Birkenhead Lake, Bishop River, Chilliwack Lake/Greendrop, Mehatl Creek, Upper Lillooet, Coquihalla Summit, Alexandra Bridge, Homathko Estuary, Kitsumkalum, Lakelse Lake, NN242, Callaghan Lake, Cerise, Joffre Lakes, Stoyoma Creek, Tweedsmuir Park Addition, Cascade, Seven Sisters
38	Fdi PG a	> 0.99	> 0.99	> 0.99	0.85	Purden Lake, Mount Pope, Bobtail Mountain, RobyRock Lake, Kakwa, Nation, Erg Mountain, Eksers, Francois Lake, Monkman, Finger Tatuk, Fraser River, Aleza Lake, Crooked River, Giscome Portage Trail, Sutherland, Sugarbowl-Grizzly Den, Sutherland River, Arctic Pacific Lakes, Heather Dina Lake, Patsuk Creek, Whiskers Point, Bednesti Lake, Dahl Lake, Nechako River, Paarens Beach, Stuart River, Meridian Road/Vanderhoof, Stuart Lake, Carp Lake, Chunamon Creek, Omineca, Tacheeda Lakes, Hook (Deep) Bay, Mudzenchoot, Close-To-The-Edge, Bijoux Falls, Blackwater Creek, Heather Lake, Muscovite Lake, Raspberry Harbour, Tudyah Lake, Beaumont, Chilako River, Drywilliam Lake, Nechako Canyon, Fort George Canyon, Three Sisters, West Lake, Pinkut Creek East, McKinnon Esker
39	Fdi NE l	> 0.99	> 0.99	> 0.99	0.92	Purcell Wilderness Conservancy, Glacier National Park, Goat Range, Valhalla, Granby, Gladstone, Mt. Revelstoke National Park, West Arm, Monashee, Dunn Peak, Kianuko, NN460, NN557, Upper Adams River, Syringa, Lockhart Creek, Kalamalka Lake, Greenbush-Caribou, Enderby Cliffs, Mt Griffin, Momich Lakes, Mount Griffin, Lew Creek, Roderick Haig-Brown, McDonald Creek, Eagle River South Side, Kootenay Lake, Pilot Bay, Wap Ck Delta Flpl, Blanket Creek, Niskonlith Lake, Kokanee Creek, Mabel Lake, Adams Lake - Spillman Beaches, Shuswap Riv Isl, White Lk S Shore, Shuswap Lake Marine - Marble Point, NN472, Shuswap Lake Marine - Albas, King George VI, Shuswap Lake, Silver Beach, Eagle River Dragonflies, Adams Lake (Bush Creek Site), Arrow Lakes, Herald, Shuswap Lake - Hermit Bay Site, Skookumchuck Rapids, Purcell Wilderness Conservancy, Shuswap Lake Marine - Paradise Point, Ryan, Martha Creek, Beaver Creek, Adams Lake (Refuge Bay), NN475, Adams Lake - Poplar Point, Drewry Point, Shuswap Lake Marine - Fowler Point
40	Yc M a	> 0.99	> 0.99	> 0.99	0.93	Kalum Parks, Garibaldi, Kitlope Heritage Conservancy, Liumchen E.R., Brooks Peninsula, Carmanah Walbran, Clayoquot Arm, Clayoquot Plateau, Cypress, Desolation Sound Marine, East Redonda Island, Gold Muchalat, Golden Ears, Hakai, Indian Arm, Inland Lake, Mount Judge Howay, Mt. Richardson, Nimpkish Lake, Pacific Rim - West Coast Trail, Pinecone Burke, Schoen Lake, South Texada Island, Spiiyus, Strathcona, Sydney Inlet, Tahsish Kwois, Tantalus, White Ridge, Woss Lake, Tetrahedron, Weymer Creek, Sumas Mountain, Flores Island, Wood Mountain Ski, International Ridge, Mount Elliot, Mount Seymour, Tranquil Creek, Gwail Haanas, Claud Elliott Creek, Haley Lake, San Juan Ridge, Artlish Caves, Fiordland, Gamble Creek, Gitnadoix River, Khutzeymateen, Klewnuggit Inlet Marine, Lowe Inlet Marine, Vladimir J. Krajina, Bowen Island, Halkett Bay, Sooke Mountain, Mount Elphinstone

## Appendix 1. continued.

Rank	SPU	Probability of 1, 3, 5, 10				Protected areas (in order of most to least likely to be adequate)
41	Sx PR I	> 0.99	> 0.99	> 0.99	0.95	Kakwa, Graham Laurier, Wapiti Lake, Monkman, Butler Ridge, Gwillim Lake, Northern Rocky Mountains, Bearhole Lake, Sikanni Chief Falls, Bearhole Lake, Swan Lake, Beaton River, Beaton, Beaton-Doig Canyon & Beaton River Site, Cecil Lake, Charlie Lake, Chinchaga Lakes, Clayhurst, Hole-in-the-Wall, Kiskatinaw, Milligan Hills, Moberly Lake, One Island Lake, PEACE RIVER / BODREAU, Peace River Corridor (Alces River), Peace River Corridor (Peace River Islands), Peace River Corridor (Wak Anahtaah), PEACE-MOBERLY subzone, Pine River Breaks, Rolla Canyon E.R., Sikanni Chief Canyon, Sukunka Falls, Andy Bailey, Ekwan Lake, Fort Nelson River, Grayling River Hot Springs E.R., Hay River, Klua Lakes, Liard River Corridor, Maxhamish Lake, Muncho Lake, Parker Lake, Prophet River Wayside, Scatter River Old Growth, Sikanni Old Growth, Tetsa River, Thinahta North - PA, Thinahta South - PA, Toad River Hot Springs,
42	Sx TO h	> 0.99	> 0.99	> 0.99	0.95	Tweedsmuir (South), Dunn Peak, Okanagan Mountain, Homathko River - Tatlayoko, Duffey Lake, EC Manning, Stein Valley, Arrowstone, Arthur Seat, Cathedral, Cornwall Hills, Mount Savona, NN1315, NN1317, NN1554, Trepanier, Cascade, Swan Lake, Bonaparte, Harry Lake Aspen, Apex Mountain, Bedard Aspen, Blue Earth Lake, Brent, Cayoosh Goats, Eneas Lakes, Pennask, Porcupine Meadows, Skwaha Lake, Tsintsunko Lakes, Antoine/Fred, Chapperon-Shorts, Lac du Bois Grasslands, McConnell Lake, NN1320, NN1580, Walloper Lake, Bridge Delta, Churn Creek, Edge Hills, French Bar Creek, Nunsti, Southern Chilcotin M, Ts'il-os, Big Creek, Cardiff Mountain - E.R., Itcha Ilgachuz Park, Marble Range, Yalakom
43	PI NE I	> 0.99	> 0.99	> 0.99	0.95	Purcell Wilderness Conservancy, Glacier National Park, Goat Range, Valhalla, Granby, Gladstone, Kokanee Glacier, Mt. Revelstoke National Park, West Arm, Monashee, Dunn Peak, Kianuko, NN460, St. Mary's Alpine, NN557, Silver Star, Upper Adams River, Syringa, Lockhart Creek, Gilnockie, Greenbush-Caribou, Enderby Cliffs, Mt Griffin E.R., Momich Lakes, Kingfisher Creek, Champion Lakes, Mount Griffin, Lew Creek, McDonald Creek, Englishman River, Eagle River South Side, Kootenay Lake, Pilot Bay, Wap Ck Delta Flpl, Blanket Creek, Kokanee Creek, Mabel Lake, Adams Lake - Spillman Beaches, Nancy Greene, White Lk S Shore, Shuswap Lake Marine - Marble Point, NN472, Shuswap Lake Marine - Albas, King George VI, Silver Beach, Eagle River Dragonflies, Arrow Lakes, Shuswap Lake - Hermit Bay Site, Skookumchuck Rapids, Purcell Wilderness Conservancy, Ryan, Gilnockie Creek, Martha Creek, Beaver Creek, Adams Lake (Refuge Bay), NN475, Adams Lake - Poplar Point
44	Cw M h	> 0.99	> 0.99	> 0.99	0.97	Kalum Parks, Garibaldi, Kitlope Heritage Conservancy, Liumchen E.R., Brooks Peninsula, Carmanah Walbran, Clayoquot Arm, Clayoquot Plateau, Cypress, Desolation Sound Marine, East Redonda Island, Gold Muchalat, Golden Ears, Hakai, Indian Arm, Inland Lake, Mount Judge Howay, Mt. Richardson, Nimpkish Lake, Pacific Rim - West Coast Trail, Pinecone Burke, Schoen Lake, South Texada Island, Spiipiyus, Strathcona, Sydney Inlet, Tahsish Kwois, Tantalus, White Ridge, Woss Lake, Tetrahedron, Weymer Creek, Sumas Mountain, Flores Island, Wood Mountain Ski, International Ridge, Mount Elliot, Mount Seymour, Tranquil Creek, Gwaii Haanas, Claud Elliott Creek, Haley Lake, San Juan Ridge, Fiordland, Gamble Creek, Gitnadoix River, Khutzeymateen, Klewnuggit Inlet Marine, Lowe Inlet Marine, Vladimir J. Krajina

## Appendix 1. continued.

Rank	SPU	Probability of 1, 3, 5, 10				Protected areas (in order of most to least likely to be adequate)
45	Sx PG I	> 0.99	> 0.99	> 0.99	0.99	Purden Lake, Mount Pope, Bobtail Mountain, Kakwa, Bowron Lake, Wapiti Lake, Eksers, Francois Lake, Monkman, Finger Tatuk, Fraser River, Cinema Bog, Cottonwood River, Pinnacles, Ten Mile Lake, Aleza Lake, Crooked River, Giscome Portage Trail, Sutherland, Sugarbowl-Grizzly Den, Sutherland River, Arctic Pacific Lakes, Heather Dina Lake, Patsuk Creek, Whiskers Point, Bednesti Lake, Dahl Lake, Nechako River, Paarens Beach, Stuart River, Evanoff, Meridian Road/Vanderhoof, Pine Le Moray, Stuart Lake, Carp Lake, Chunamon Creek, Omineca, Tacheeda Lakes, Nazko Lake, Kluskoil Lake, Bocoock Peak, Close-To-The-Edge, Slim Creek, Bijoux Falls, Blackwater Creek, Heather Lake, Muscovite Lake, Raspberry Harbour, Tudyah Lake, Beaumont, Chilako River, Drywilliam Lake, Nechako Canyon, Fort George Canyon, Three Sisters, West Lake, Narcosli Lake, Puntchesakut Lake
46	Sx NE I	> 0.99	> 0.99	> 0.99	0.99	Wells Gray, Purcell Wilderness Conservancy, Glacier National Park, Goat Range, Valhalla, Granby, Gladstone, Kokanee Glacier, Mt. Revelstoke National Park, West Arm, Cummins Lakes, Monashee, Dunn Peak, NN460, NN557, Silver Star, Upper Adams River, Syringa, Lockhart Creek, Greenbush-Caribou, Goosegrass Creek, Enderby Cliffs, Mt Griffin, Momich Lakes, Kingfisher Creek, Champion Lakes, Lew Creek, Foster Arm, North Thompson Oxbows - Manteau, McDonald Creek, Englishman River, Eagle River South Side, Finn Creek, Kootenay Lake, Harbor Dungon Lakes, Pilot Bay, Wap Ck Delta Flpl, Blanket Creek, North Thompson Oxbows East, Kokanee Creek, Mabel Lake, Adams Lake - Spillman Beaches, Nancy Greene, White Lk S Shore, Blue River Black Spruce, Shuswap Lake Marine - Marble Point, NN472, Shuswap Lake Marine - Albas, King George VI, Silver Beach, Eagle River Dragonflies, Arrow Lakes, Shuswap Lake - Hermit Bay Site, Skookumchuck Rapids, Purcell Wilderness Conservancy, Ryan, Wire Cache, Martha Creek, Beaver Creek, Adams Lake
47	PI TO I	> 0.99	> 0.99	> 0.99	0.99	Wells Gray, Stein Valley, EC Manning, Cathedral, NN1317, Dunn Peak, Lac du Bois Grasslands, Bonaparte, Okanagan Mountain, Myra-Bellevue, Antoine/Fred, Arrowstone, Coquihalla Summit, Tunkwa, NN1315, White Lake, Two Spring, Chapperon-Shorts, Trepanier, NN1319, Arthur Seat, Duffey Lake, Roche Lake, NN1651, Vaseux, Cornwall Hills, Elephant Hill, Soap Lake, Roderick Haig-Brown, Paul Lake, Conkle Lake, Shorthorn Creek, NN1751, Mount Savona, Skihist Park Extensi, NN1320, NN1580, Harry Lake Aspen, Marble Canyon, NN1554, Juniper Beach, Niskonlith Lake, Buse Lake, Oregon Jack, Chasm, Kettle River, Bromley Rock, Kentucky-Alleyne, Skaha Bluffs, North Thompson River, Lac Le Jeune, Eakin Creek Floodplain, Turnbull Creek, Chu Chua Cottonwood, Shuttleworth, Naramata Creek, McConnell Lake, Downing, North Thompson Islands, Painted Bluffs, Monck, Okanagan Lake, NN1523, Epsom Park, Coldwater River, NN1626, Walloper Lake, Otter Lake, Steelhead, Skihist, Walhachin Oxbows, NN1080, Johnstone Creek, Pritchard Park

## Appendix 1. continued.

Rank	SPU	Probability of 1, 3, 5, 10				Protected areas (in order of most to least likely to be adequate)
48	Hw M h	> 0.99	> 0.99	> 0.99	> 0.99	Kalum Parks, Garibaldi, Kitlope Heritage Conservancy, Liumchen E.R., Brooks Peninsula, Carmanah Walbran, Clayoquot Arm, Clayoquot Plateau, Cypress, Desolation Sound Marine, East Redonda Island, Gold Muchalat, Golden Ears, Hakai, Indian Arm, Inland Lake, Mount Judge Howay, Mt. Richardson, Nimpkish Lake, Pacific Rim - West Coast Trail, Pinecone Burke, Schoen Lake, South Texada Island, Spiipiyus, Strathcona, Sydney Inlet, Tahsish Kwois, Tantalís, White Ridge, Woss Lake, Tetrahedron, Weymer Creek, Sumas Mountain, Flores Island, Wood Mountain Ski, International Ridge, Mount Elliot, Mount Seymour, Tranquil Creek, Gwaii Haanas, Claud Elliott Creek, Haley Lake, San Juan Ridge, Artlish Caves, Fiordland, Gamble Creek, Gitnadoix River, Khutzeymateen, Klewnuggit Inlet Marine, Lowe Inlet Marine, Vladimir J. Krajina, Tsitika Mountain E.R.
49	Sx TO I	> 0.99	> 0.99	> 0.99	> 0.99	Wells Gray, Tweedsmuir (South), Ts'il-os, Stein Valley, Southern Chilcotin M, EC Manning, Churn Creek, Homathko River -Tatlayoko, Cathedral, NN1317, Nunsti, Dunn Peak, Lac du Bois Grasslands, Nazko Lake, Edge Hills, Okanagan Mountain, Myra-Bellevue, Antoine/Fred, Arrowstone, Coquihalla Summit, Tunkwa, NN1315, Junction Sheep Range, White Lake, Flat Lake, White Pelican, Two Spring, Chasm, Chapperon-Shorts, Trepanier, NN1319, Moose Valley, Arthur Seat, Duffey Lake, Roche Lake, Bridge Delta, NN1651, Vaseux, Cornwall Hills, French Bar Creek, Narcosli Lake, Elephant Hill, Soap Lake, Roderick Haig-Brown, Paul Lake, Conkle Lake, Shorthorn Creek, NN1751, Mount Savona, Skihist Park Extensi, NN1320, Bull Canyon, NN1580, Green Lake, Big Bar Lake, Marble Canyon, NN1554, Juniper Beach, Niskonlith Lake, Buse Lake, Oregon Jack, Big Creek, Chasm, Kettle River, Bromley Rock, Kentucky-Alleyne, Skaha Bluffs, North Thompson River, Lac Le Jeune, Eakin Creek Floodplain, Turnbull Creek, Chu Chua Cottonwood, Shuttleworth, Naramata Creek, McConnell Lake, North Thompson Islands, Painted Bluffs, Cariboo Nature, Monck, NN1523, Epsom Park, Coldwater River, NN1626, Otter
50	Fd M I	> 0.99	> 0.99	> 0.99	> 0.99	Strathcona, Garibaldi, Hakai, Golden Ears, Brooks Peninsula, Pinecone Burke, Checleset Bay, Pacific Rim - West Coast Trail, Cape Scott, Carmanah Walbran, Pacific Rim National, Broughton Archipelago Marine, Tantalís, Tahsish Kwois, Pacific Rim - Broken Islands Group, Schoen Lake, Indian Arm, Desolation Sound Marine, Hesquiat Peninsula, Flores Island, Woss Lake, East Redonda Island, Mount Judge Howay, Tetrahedron, Vargas Island, Lanz and Cox Islands, Bligh Island, Nimpkish Lake, Clayoquot Arm, Main Lake, Clayoquot Plateau, Spiipiyus, Cypress, Helliwell, Inland Lake, Sydney Inlet, Maquinna, Sulphur Passage, Liumchen E.R., Nuchatlitz, God's Pocket Marine, Penrose Island Marine, Juan De Fuca, Marble River, White Ridge, Gowlland Tod, Ha'thayim Marine, Sasquatch, Sartine Island E.R., Elk Falls, South Texada Island, Mt. Richardson, Anne Vallee (Triangle Island) E.R., Catala Island Marine, Small Inlet, Cormorant Channel, Raft Cove, Octopus Islands Marine, Cowichan River, Brackendale Eagles, Big Bunsby Marine, Cultus Lake, Gold Muchalat, Quatsino, Read Island, Kwakutil - Lawn Point, Surge Narrows, Duke c

## Appendix 1. continued.

Rank	SPU	Probability of 1, 3, 5, 10				Protected areas (in order of most to least likely to be adequate)
51	Ss M a	> 0.99	> 0.99	> 0.99	> 0.99	Kitlope Heritage Conservancy, Strathcona, Garibaldi, Gwaii Haanas, Hakai, Fiordland, Kalum Parks, Naikoon - Park Site, Gitnadoix River, Golden Ears, Khutzeymateen, Brooks Peninsula, Pinecone Burke, Checleset Bay, Pacific Rim - West Coast Trail, Cape Scott, Carmanah Walbran, Pacific Rim National, Dewdney and Glide Islands, Broughton Archipelago Marine, Byers/Conroy/Harvey/Sinnett Islands, Tantalus, Tahsish Kwois, Pacific Rim - Broken Islands Group, Great Glacier, Vladimir J. Krajina, Schoen Lake, Indian Arm, Desolation Sound Marine, Hesquiat Peninsula, Craig Headwaters, Lava Forks, Flores Island, Woss Lake, East Redonda Island, Mount Judge Howay, Tetrahedron, Vargas Island, Lanz and Cox Islands, Bligh Island, Moore/McKenny/Whitmore Islands, Nimpkish Lake, Clayoquot Arm, Main Lake, Clayoquot Plateau, Spipiyus, Cypress, Helliwell, Inland Lake, Sydney Inlet, Maquinna, Sulphur Passage, Liumchen E.R., Nuchatlitz, God's Pocket Marine, Penrose Island Marine, Klewnuggit Inlet Marine, Juan De Fuca, Marble River, Union Passage Marine, White Ridge, Gowlland Tod, Ha'thayim Marine, Sasquatch, Elk Falls, South Texada Island, Mt. Richardson, Anne Vallee (Triang
52	Ba M a	> 0.99	> 0.99	> 0.99	> 0.99	Kitlope Heritage Conservancy, Strathcona, Garibaldi, Gwaii Haanas, Hakai, Fiordland, Kalum Parks, Naikoon - Park Site, Gitnadoix River, Golden Ears, Khutzeymateen, Brooks Peninsula, Pinecone Burke, Checleset Bay, Pacific Rim - West Coast Trail, Cape Scott, Carmanah Walbran, Pacific Rim National, Dewdney and Glide Islands, Broughton Archipelago Marine, Byers/Conroy/Harvey/Sinnett Islands, Tantalus, Tahsish Kwois, Pacific Rim - Broken Islands Group, Vladimir J. Krajina, Schoen Lake, Indian Arm, Desolation Sound Marine, Hesquiat Peninsula, Flores Island, Woss Lake, East Redonda Island, Mount Judge Howay, Tetrahedron, Vargas Island, Lanz and Cox Islands, Bligh Island, Moore/McKenny/Whitmore Islands, Nimpkish Lake, Clayoquot Arm, Main Lake, Clayoquot Plateau, Spipiyus, Cypress, Helliwell, Inland Lake, Sydney Inlet, Maquinna, Sulphur Passage, Liumchen E.R., Nuchatlitz, God's Pocket Marine, Penrose Island Marine, Klewnuggit Inlet Marine, Juan De Fuca, Marble River, Union Passage Marine, White Ridge, Gowlland Tod, Ha'thayim Marine, Sasquatch, Sartine Island E.R., Elk Falls, South Texada Island, Mt. Richardson, Anne Vallee (Triangle Island) E.R., Catala
53	Hw M I	> 0.99	> 0.99	> 0.99	> 0.99	Kitlope Heritage Conservancy, Strathcona, Garibaldi, Gwaii Haanas, Hakai, Fiordland, Kalum Parks, Naikoon - Park Site, Gitnadoix River, Golden Ears, Khutzeymateen, Brooks Peninsula, Pinecone Burke, Checleset Bay, Pacific Rim - West Coast Trail, Cape Scott, Carmanah Walbran, Pacific Rim National, Dewdney and Glide Islands, Broughton Archipelago Marine, Byers/Conroy/Harvey/Sinnett Islands, Tantalus, Tahsish Kwois, Pacific Rim - Broken Islands Group, Vladimir J. Krajina, Schoen Lake, Indian Arm, Desolation Sound Marine, Hesquiat Peninsula, Flores Island, Woss Lake, East Redonda Island, Mount Judge Howay, Tetrahedron, Vargas Island, Lanz and Cox Islands, Bligh Island, Moore/McKenny/Whitmore Islands, Nimpkish Lake, Clayoquot Arm, Main Lake, Clayoquot Plateau, Spipiyus, Cypress, Helliwell, Inland Lake, Sydney Inlet, Maquinna, Sulphur Passage, Nuchatlitz, God's Pocket Marine, Penrose Island Marine, Klewnuggit Inlet Marine, Juan De Fuca, Marble River, Union Passage Marine, White Ridge, Gowlland Tod, Ha'thayim Marine, Sasquatch, Sartine Island E.R., Elk Falls, South Texada Island, Mt. Richardson, Anne Vallee (Triangle Island) E.R., Catala Island Marine, Gamble C

**Appendix 2.** List of protected areas ranked by their importance for in situ conservation of genetic resources of conifer populations in seed planning units.

Rank	Score	Name	Area	Seedplanningunitscovered
1	0.74	Tweedsmuir	990448	Ba SM a, Cw M I, Cw SM a, Fd SM a, PI BV h, PI BV I, Sx BV h, Sx BV I, Sx BVP h, Sx BVP I, Sxs SM a, Sx TO h, Sx TO I,
2	0.69	Swan Lake Kispiox River	62360	PI NS h, PI NS I, Sxs NS a
3	0.55	Glacier National Park	135828	Fdi EK a, Fdi NE h, Fdi NE I, Lw EK a, Lw NEK h, PI EK h, PI EK I, PI NE h, PI NE I, Pw KQ a, Sx EK a, Sx NE h, Sx NE I
4	0.53	Purcell Wilderness Cons.	198071	PI EK h, Sx EK a, Fdi EK a, Fdi NE h, Fdi NE I, Lw EK a, Lw NE h, Lw NE I, PI EK h, PI EK I, PI NE h, PI NE I, Pw KQ a, Sx EK a, Sx NE h, Sx NE I
5	0.50	Sustut	75687	PI BV h, PI BV I, PI BVC h, PI BVC I, PI BVC o, PI CP h, PI CP I, Sx BV h, Sx BV I
6	0.48	Damdochax	8107	PI BV h, PI BV I, PI NS h, PI NS I, Sx BV I
7	0.41	Babine Mountains	31477	PI BV h, PI BV I, Sx BV h, Sx BV I
8	0.39	Kalum Parks	76065	Ba M a, Ba SM a, Cw M h, Cw M I, Cw SM a, Hw M h, Hw M I, PI NS I, Ss M a, Sxs NS a, Sxs SM a, Yc M a
9	0.37	GrahamLaurier	99982	PI CP h, PI PR h, PI PR I, Sx PG h, Sx PR h, Sx PR I
10	0.36	Kakwa	170893	Fdi PG a, PI PG h, PI PG I, PI PR h, Sx PG h, Sx PG I, Sx PGN h, Sx PR h, Sx PR I
11	0.35	Wapiti Lake	16837	PI CP h, PI PR h, Sx PG h, Sx PG I, Sx PR h, Sx PR I
12	0.32	Gingietl Creek	2900	Ba SM a, Cw M I, Cw SM a, PI NS I, Sxs NS a, Sxs SM a
13	0.31	Monkman	62896	Fdi PG a, PI CP h, PI CP I, PI PR h, PI PR I, Sx PG h, Sx PG I, Sx PR I
14	0.30	Height of the Rockies	54179	Fdi EK a, Lw EK a, PI EK h, PI EK I, Pw KQ a, Sx EK a
15	0.30	Kootenay	138421	Fdi EK a, Lw EK a, PI EK h, PI EK I, Pw KQ a, Sx EK a
16	0.30	Yoho	128708	Fdi EK a, Lw EK a, PI EK h, PI EK I, Pw KQ a, Sx EK a
17	0.30	Garibaldi	188361	Ba M a, Ba SM a, Bg M I, Cw M h, Cw M I, Cw SM a, Fd M h, Fd M I, Fd SM a, Hw M h, Hw M I, Pw M a, Ss M a, Sxs SM a, Yc M a
18	0.29	Butler Ridge	6845	PI PR h, PI PR I, Sx PR h, Sx PR I
19	0.29	Gwillim Lake	32458	PI PR h, PI PR I, Sx PR h, Sx PR I
20	0.28	Ram Creek	122	Fdi EK a, Lw EK a, PI EK h, PI EK I, Sx EK a
21	0.28	Babine River Corridor	15348	PI BV I, PI NS I, Sx BV I, Sxs NS a
22	0.27	Nisga'a Memorial Lava Bed	17880	Ba SM a, Cw SM a, PI NS I, Sxs NS a, Sxs SM a
23	0.26	SchoolhouseLake	4702	Fdi CT a, Fdi QL a, PI PG I, Sx PGN I
24	0.25	Dunn Peak	19567	Fdi NE h, Fdi NE I, Fdi QLN h, Fdi QLN I, PI NE h, PI NE I, PI TO h, PI TO I, Pw KQ a, Sx NE h, Sx NE I, Sx TO h, Sx TO I
25	0.24	Gladstone	39446	Fdi NE h, Fdi NE I, Lw NE h, Lw NE I, PI NE h, PI NE I, PI TON h, PI TON I, Pw KQ a, Sx NE h, Sx NE I, Sx TON h, Sx TON I
26	0.24	Goat Range	78772	Fdi NE h, Fdi NE I, Lw NE h, Lw NE I, PI NE h, PI NE I, Pw KQ a, Sx NE h, Sx NE I
27	0.24	Granby	40614	Fdi NE h, Fdi NE I, Lw NE h, Lw NE I, PI NE h, PI NE I, PI TON h, Pw KQ a, Sx NE h, Sx NE I, Sx TON h
28	0.24	Greenbush-Caribou	2786	Fdi NE h, Fdi NE I, Lw NE h, Lw NE I, PI NE h, PI NE I, Pw KQ a, Sx NE h, Sx NE I
29	0.24	Lew Creek	1161	Fdi NE h, Fdi NE I, Lw NE h, Lw NE I, PI NE h, PI NE I, Pw KQ a, Sx NE h, Sx NE I
30	0.24	LockhartCreek	3734	Fdi NE h, Fdi NE I, Lw NE h, Lw NE I, Lw NEK h, PI NE h, PI NE I, Pw KQ a, Sx NE h, Sx NE I, Sx NEK I
31	0.24	Monashee	21722	Fdi NE h, Fdi NE I, Lw NE h, Lw NE I, PI NE h, PI NE I, Pw KQ a, Sx NE h, Sx NE I
32	0.24	Syringa	4447	Fdi NE h, Fdi NE I, Lw NE h, Lw NE I, PI NE h, PI NE I, Pw KQ a, Sx NE h, Sx NE I
33	0.24	Valhalla	49814	Fdi NE h, Fdi NE I, Lw NE h, Lw NE I, PI NE h, PI NE I, Pw KQ a, Sx NE h, Sx NE I
34	0.24	West Arm	25088	Fdi NE h, Fdi NE I, Lw NE h, Lw NE I, PI NE h, PI NE I, Pw KQ a, Sx NE h, Sx NE I

## Appendix 2. continued.

Rank	Score	Name	Area	Seedplanningunitscovered
35	0.24	Kitwanga Mountain	600	Cw SM a, PI NS I, Sxs NS a, Sxs SM a
36	0.24	Kitlope Heritage Cons.	321251	Ba M a, Ba SM a, Cw M h, Cw M I, Cw SM a, Fd SM a, Hw M h, Hw M I, Ss M a, Sxs SM a, Yc M a
37	0.24	Green Lake (10)	330	Fdi CT a, PI PG I, Sx PGN I, Sx TO I
38	0.23	Pink Mountain	98	PI PR h, Sx PR h
39	0.23	Emar Lakes	1618	Fdi CT a, PI PG h, Sx PGN h, Sx PGN o
40	0.23	Taweel	4393	Fdi CT a, PI PG h, Sx PGN h, Sx PGN I, Sx PGN o
41	0.23	Akamina-Kishinena	10782	Fdi EK a, Lw EK a, PI EK h, Sx EK a
42	0.23	Kokanee Glacier	31905	Fdi NE h, Lw NE h, Lw NE I, PI NE h, PI NE I, Pw KQ a, Sx NE h, Sx NE I
43	0.23	Silver Star	6083	Fdi NE h, Lw NE h, Lw NE I, PI NE h, PI NE I, PI TON h, PI TON I, Pw KQ a, Sx NE h, Sx NE I, Sx TON h, Sx TON I
44	0.22	Columbia Lake	257	Fdi EK a, Lw EK a, PI EK I, Pw KQ a, Sx EK a
45	0.22	Mount Fernie	254	Fdi EK a, Lw EK a, PI EK I, Pw KQ a, Sx EK a
46	0.22	Premier Lake	838	Fdi EK a, Lw EK a, PI EK I, Pw KQ a, Sx EK a
47	0.22	Whiteswan Lake	2371	Fdi EK a, Lw EK a, PI EK I, Pw KQ a, Sx EK a
48	0.22	Windermere Lake	205	Fdi EK a, Lw EK a, PI EK I, Pw KQ a, Sx EK a
49	0.21	Englishman River	431	Fdi NE h, Lw NE h, Lw NE I, PI NE h, PI NE I, Sx NE h, Sx NE I
50	0.20	Sugarbowl-Grizzly Den	20319	Fdi PG a, Fdi QL a, PI CP I, PI PG h, PI PG I, Sx PG h, Sx PG I
51	0.20	Ruth Lake	27	Fdi CT a
52	0.20	Homathko River - Tatlayoko	35566	Ba SM a, Cw M I, Cw SM a, Fd SM a, Sx TO h, Sx TO I, Sxs SM a
53	0.20	Crowsnest	53	Fdi EK a, Lw EK a, PI EK I, Sx EK a
54	0.20	Elk Valley	78	Fdi EK a, Lw EK a, PI EK I, Sx EK a
55	0.20	Norbury Lake	103	Fdi EK a, Lw EK a, PI EK I, Sx EK a
56	0.20	Cummins Lakes	21827	Fdi QL a, Lw EK a, PI PG h, Pw KQ a, Sx NE h, Sx NE I
57	0.19	Mt. Revelstoke National Park	26055	Fdi NE h, Fdi NE I, Lw NE I, PI NE h, PI NE I, Pw KQ a, Sx NE h, Sx NE I
58	0.19	NN557	7322	Fdi NE h, Fdi NE I, Lw NE I, PI NE h, PI NE I, Pw KQ a, Sx NE h, Sx NE I
59	0.19	Boulder Creek	54	PI NS I, Sxs NS a
60	0.19	Catherine Creek E.R.	45	PI NS I, Sxs NS a
61	0.19	Ross Lake	340	PI NS I, Sxs NS a
62	0.19	Kingfisher Creek	1452	Fdi NE h, Lw NE h, PI NE h, PI NE I, Sx NE h, Sx NE I
63	0.18	Wells Gray	540651	Fdi QL a, Fdi QLN h, Fdi QLN I, PI PG h, PI PG I, PI PGN h, PI PGN I, PI PGN o, PI TO I, Pw KQ a, Sx NE h, Sx NE I, Sx PGN h, Sx PGN I, Sx PGN o, Sx TO I
64	0.17	Finger Tatuk	17162	Fdi PG a, PI BV h, PI BV I, PI BVP I, Sx PG h, Sx PG I
65	0.17	Sutherland	13384	Fdi PG a, PI BV h, PI BV I, Sx BVP I, Sx PG h, Sx PG I
66	0.17	Sutherland River	4835	Fdi PG a, PI BV h, PI BV I, Sx PG h, Sx PG I
67	0.17	Duffey Lake	2097	Cw SM a, Fd SM a, PI TO h, PI TO I, Sx TO h, Sx TO I, Sxs SM a
68	0.17	EC Manning	70835	Cw SM a, Fd SM a, PI TO h, PI TO I, Sx TO h, Sx TO I, Sxs SM a
69	0.17	Stein Valley	108435	Cw SM a, Fd SM a, PI TO h, PI TO I, Sx TO h, Sx TO I, Sxs SM a
70	0.17	Brandywine Falls	141	Ba SM a, Cw M I, Cw SM a, Fd SM a, Sxs SM a
71	0.17	Clendinning	30352	Ba SM a, Cw M I, Cw SM a, Fd SM a, Sxs SM a
72	0.17	Coquihalla Canyon	116	Ba SM a, Cw M I, Cw SM a, Fd SM a, Sxs SM a
73	0.17	Coquihalla River	102	Ba SM a, Cw M I, Cw SM a, Fd SM a, Sxs SM a
74	0.17	Nahatlatch	1994	Ba SM a, Cw M I, Cw SM a, Fd SM a, Sxs SM a
75	0.17	Nairn Falls	180	Ba SM a, Cw M I, Cw SM a, Fd SM a, Sxs SM a
76	0.17	Silver Lake	110	Ba SM a, Cw M I, Cw SM a, Fd SM a, Sxs SM a
77	0.17	Skagit Valley	27970	Ba SM a, Cw M I, Cw SM a, Fd SM a, Sxs SM a
78	0.16	Netalzul Meadows	293	PI BV I, PI NS I, Sx BV I
79	0.16	Northern Rocky Mountains	666142	Sx PR h, Sx PR I
80	0.16	Bugaboo	13817	PI EK h, PI NE h, Sx EK a
81	0.16	Foster Arm	1020	Fdi QL a, PI PG h, PI PG I, Pw KQ a, Sx NE h, Sx NE I, Sx PGN I, Sx PGN o
82	0.16	Goosegrass Creek	2586	Fdi QL a, Fdi QLN h, PI PG h, PI PG I, PI PGN h, Pw KQ a, Sx NE h, Sx NE I



## Appendix 2. continued.

Rank	Score	Name	Area	Seedplanningunitscovered
83	0.16	Arctic Pacific Lakes	13895	Fdi PG a, PI CP h, PI CP I, Sx PG h, Sx PG I
84	0.16	Heather Dina Lake	5686	Fdi PG a, PI CP h, PI CP I, Sx PG h, Sx PG I
85	0.16	Patsuk Creek	489	Fdi PG a, PI CP h, PI CP I, Sx PG h, Sx PG I
86	0.16	Whiskers Point	132	Fdi PG a, PI CP h, PI CP I, Sx PG h, Sx PG I
87	0.15	Burges & James Gadsden	402	Fdi EK a, PI EK I, Pw KQ a, Sx EK a
88	0.15	Okanagan Mountain	10744	Fdi NE h, Lw NE I, PI TO h, PI TO I, PI TON I, Pw KQ a, Sx TO h, Sx TO I, Sx TON I
89	0.15	Bearhole Lake	12707	PI PR h, Sx PR I
90	0.15	Sikanni Chief Falls	799	PI PR h, PI PR I, Sx PR I
91	0.14	Erg Mountain	1012	Fdi PG a, Fdi QL a, PI PG h, PI PG I, Sx PG h, Sx PGN h, Sx PGN I, Sx PGN o
92	0.14	Bowron Lake	139776	Fdi QL a, PI PG h, PI PG I, Sx PG h, Sx PG I, Sx PGN h, Sx PGN I, Sx PGN o
93	0.14	Evanoff	1475	Fdi QL a, PI PG h, PI PG I, Sx PG h, Sx PG I
94	0.14	Gilnockie	2820	Fdi EK a, Fdi NE h, Lw NEK h, Lw NEK I, PI NE h, PI NE I, Pw KQ a, Sx NEK h, Sx NEK I
95	0.14	Francois Lake	7217	Fdi PG a, PI BV h, PI BV I, Sx BVP h, Sx BVP I, Sx PG I
96	0.14	Meridian Road/Vanderhoof	270	Fdi PG a, PI BV h, Sx PG h, Sx PG I
97	0.14	Kalamalka Lake	2958	Fdi NE h, Fdi NE I, Lw NE h, Lw NE I, PI TON I, Pw KQ a, Sx TON h, Sx TON I
98	0.14	Pine Le Moray	33043	PI CP h, PI CP I, Sx PG h, Sx PG I
99	0.14	Kikomun Creek	751	Fdi EK a, PI EK I, Sx EK a
100	0.14	Marl Creek	169	Fdi EK a, PI EK I, Sx EK a
101	0.14	Thunder Hill	38	Fdi EK a, PI EK I, Sx EK a
102	0.14	Wasa Lake	136	Fdi EK a, PI EK I, Sx EK a
103	0.14	Liumchen E.R.	2162	Ba M a, Cw M h, Fd M h, Fd M I, Hw M h, Pw M a, Ss M a, Sxs SM a, Yc M a
104	0.13	Nancy Greene	197	Fdi NE h, Lw NE I, PI NE I, Pw KQ a, Sx NE h, Sx NE I
105	0.13	Mount Griffin	1259	Fdi NE h, Fdi NE I, PI NE h, PI NE I, Sx NE h
106	0.13	Kleanza Creek	220	Ba SM a, Cw M I, Cw SM a, Sxs SM a
107	0.13	Williams Creek	692	Ba SM a, Cw M I, Cw SM a, Sxs SM a
108	0.13	Brooks Peninsula	44135	Ba M a, Bg M I, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
109	0.13	Carmanah Walbran	16491	Ba M a, Bg M I, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
110	0.13	Clayoquot Arm	3559	Ba M a, Bg M I, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
111	0.13	Clayoquot Plateau	3123	Ba M a, Bg M I, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
112	0.13	Cypress	2864	Ba M a, Bg M I, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
113	0.13	Desolation Sound Marine	8002	Ba M a, Bg M I, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
114	0.13	East Redonda Island	6230	Ba M a, Bg M I, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
115	0.13	Gold Muchalat	645	Ba M a, Bg M I, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
116	0.13	Golden Ears	55441	Ba M a, Bg M I, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
117	0.13	Hakai	121607	Ba M a, Bg M I, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
118	0.13	Indian Arm	8369	Ba M a, Bg M I, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
119	0.13	Inland Lake	2764	Ba M a, Bg M I, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
120	0.13	Mount Judge Howay	6193	Ba M a, Bg M I, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a

## Appendix 2. continued.

Rank	Score	Name	Area	Seedplanningunitscovered
121	0.13	Mt. Richardson	1001	Ba M a, Bg M I, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
122	0.13	Nimpkish Lake	3923	Ba M a, Bg M I, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
123	0.13	Pacific Rim - West Coast Trail	26519	Ba M a, Bg M I, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
124	0.13	Pinecone Burke	37253	Ba M a, Bg M I, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
125	0.13	Schoen Lake	8906	Ba M a, Bg M I, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
126	0.13	South Texada Island	1068	Ba M a, Bg M I, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
127	0.13	Spiipiyus	2981	Ba M a, Bg M I, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
128	0.13	Strathcona	247028	Ba M a, Bg M I, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
129	0.13	Sydney Inlet	2701	Ba M a, Bg M I, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
130	0.13	Tahsish Kwois	10920	Ba M a, Bg M I, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
131	0.13	Tantalis	11360	Ba M a, Bg M I, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
132	0.13	White Ridge	1346	Ba M a, Bg M I, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
133	0.13	Woss Lake	6527	Ba M a, Bg M I, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
134	0.13	Carp Lake	38097	Fdi PG a, PI CP h, PI CP I, Sx PG I
135	0.13	Chunamon Creek	339	Fdi PG a, PI CP h, PI CP I, Sx PG I
136	0.13	Omineca	134763	Fdi PG a, PI CP h, PI CP I, Sx PG I
137	0.13	Tacheeda Lakes	504	Fdi PG a, PI CP h, PI CP I, Sx PG I
138	0.13	Stagleap	1203	Lw NE h, PI NE h, Sx NE h
139	0.13	Mount Assiniboine	39004	PI EK h, Sx EK a
140	0.13	Purcell Wilderness Cons.	198071	Fdi EK a, Fdi NE h, Fdi NE I, Lw EK a, Lw NE h, Lw NE I, Lw NEK h, PI EK h, PI EK I, PI NE h, PI NE I, Pw KQ a, Sx EK a, Sx NE h, Sx NE I, Sx NEK h
141	0.13	Top of the World	8767	PI EK h, Sx EK a
142	0.12	Roby Rock Lake	41179	Fdi PG a, PI BV h, PI BV I, PI BVC I, PI BVC o, Sx BVP h, Sx BVP I
143	0.12	Birkenhead Lake	9777	Ba SM a, Cw SM a, Fd SM a, Sxs SM a
144	0.12	Bishop River	20302	Ba SM a, Cw SM a, Fd SM a, Sxs SM a
145	0.12	Chilliwack Lake/Greendrop	9119	Ba SM a, Cw SM a, Fd SM a, Sxs SM a
146	0.12	Mehatl Creek	23893	Ba SM a, Cw SM a, Fd SM a, Sxs SM a
147	0.12	Upper Lillooet	19996	Ba SM a, Cw SM a, Fd SM a, Sxs SM a
148	0.12	Enderby Cliffs	2359	Fdi NE h, Fdi NE I, Lw NE I, PI NE I, PI TON I, Pw KQ a, Sx NE I, Sx TON I
149	0.12	Nazko Lake	12052	PI PG h, PI PG I, Sx PG h, Sx PG I, Sx TO I
150	0.12	Kianuko	11658	Fdi NE h, Fdi NE I, Lw NEK h, Lw NEK I, PI NE h, PI NE I, Pw KQ a, Sx NEK h, Sx NEK I
151	0.12	Hamber	25167	Fdi QL a, PI PG h, Pw KQ a, Sx NE h
152	0.12	Tetrahedron	6060	Ba M a, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
153	0.12	Weymer Creek	316	Ba M a, Cw M h, Fd M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
154	0.11	Coquihalla Summit	5759	Cw SM a, Fd SM a, PI TO I, Sx TO I, Sxs SM a
155	0.11	Bearhole Lake	5054	PI PR h, PI PR I, Sx PR I
156	0.11	Sumas Mountain	183	Ba M a, Cw M h, Fd M h, Fd M I, Hw M h, Pw M a, Ss M a, Yc M a
157	0.11	Mount Robson	219374	Fdi QL a, PI PG h, PI PG I, Pw KQ a, Sx PGN h, Sx PGN I, Sx PGN o
158	0.11	Nation	19836	Fdi PG a, PI BVC I, PI CP h, PI CP I, Sx BVP h, Sx BVP I
159	0.11	Kluskoi Lake	15697	PI PG h, PI PG I, Sx PG h, Sx PG I

## Appendix 2. continued.

Rank	Score	Name	Area	Seedplanningunitscovered
160	0.11	Mt Griffin E.R.	1760	Fdi NE I, PI NE h, PI NE I, Pw KQ a, Sx NE I
161	0.10	Entiako	47709	PI BV h, PI BV I, Sx BVP h, Sx BVP I
162	0.10	Uncha Mountain Red Hills	9327	PI BV h, PI BV I, Sx BVP h, Sx BVP I
163	0.10	Alexandra Bridge	50	Ba SM a, Cw M I, Sxs SM a
164	0.10	Homathko Estuary	452	Ba SM a, Cw M I, Sxs SM a
165	0.10	Kitsumkalum	41	Ba SM a, Cw M I, Sxs SM a
166	0.10	Lakelse Lake	353	Ba SM a, Cw M I, Sxs SM a
167	0.10	NN242	895	Ba SM a, Cw M I, Sxs SM a
168	0.10	NN460	10682	Fdi NE I, Fdi QLN h, Fdi QLN I, PI NE I, PI PGN h, PI PGN I, PI PGN o, Pw KQ a, Sx NE h, Sx NE I
169	0.10	Flores Island	6906	Ba M a, Bg M I, Cw M h, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
170	0.10	Champion Lakes	1425	Fdi NE h, Lw NE I, PI NE I, Pw KQ a, Sx NE I
171	0.10	King George VI	162	Fdi NE h, Fdi NE I, Lw NE I, PI NE I, Sx NE I
172	0.10	St. Mary's Alpine	9317	Fdi NE h, Lw NEK h, PI NE h, PI NE I, Pw KQ a, Sx NEK h
173	0.10	Mudzenchoot	644	Fdi PG a, PI CP h, Sx PG h
174	0.10	Wood Mountain Ski	102	Ba M a, Cw M h, Fd M h, Fd M I, Hw M h, Ss M a, Yc M a
175	0.10	NN558	1742	Fdi NE h, PI NE h, Sx NE h
176	0.10	Bocock Peak	1143	PI CP h, Sx PG h, Sx PG I
177	0.10	Momich Lakes	1593	Fdi NE h, Fdi NE I, PI NE I, Pw KQ a, Sx NE I
178	0.10	Barkerville	66	Fdi QL a, PI PG h, Sx PG h
179	0.10	Wendle	207	Fdi QL a, PI PG h, Sx PG h
180	0.10	West Twin	22320	Fdi QL a, PI PG h, Sx PG h, Sx PGN h
181	0.10	North Thompson Oxbows - Manteau	514	Fdi QL a, PI PG I, Pw KQ a, Sx NE I
182	0.10	North Thompson Oxbows East	288	Fdi QL a, PI PG I, Pw KQ a, Sx NE I
183	0.10	InternationalRidge	1864	Cw M h, Fd M h, Hw M h, Pw M a, Yc M a
184	0.10	Mount Elliot	330	Cw M h, Fd M h, Hw M h, Pw M a, Yc M a
185	0.10	Mount Seymour	3550	Cw M h, Fd M h, Hw M h, Pw M a, Yc M a
186	0.10	TranquilCreek	298	Cw M h, Fd M h, Hw M h, Pw M a, Yc M a
187	0.09	Close-To-The-Edge	414	PI PG h, Sx PG h
188	0.09	CaribooMountains	0	Fdi QL a, PI PG h, PI PG I, Sx PGN h, Sx PGN I, Sx PGN o
189	0.09	Lower Rausch	1279	Fdi QL a, PI PG h, PI PG I, Sx PGN h, Sx PGN I, Sx PGN o
190	0.09	Ptarmigan Creek	3306	PI PG h, Sx PG h
191	0.09	Upper (Middle) Rausch	5580	Fdi QL a, PI PG h, PI PG I, Sx PGN h, Sx PGN I, Sx PGN o
192	0.09	Blanket Creek	318	Fdi NE I, Lw NE I, PI NE I, Pw KQ a, Sx NE I
193	0.09	Kokanee Creek	218	Fdi NE I, Lw NE I, PI NE I, Pw KQ a, Sx NE I
194	0.09	Kootenay Lake (5)	363	Fdi NE I, Lw NE I, PI NE I, Pw KQ a, Sx NE I
195	0.09	McDonald Creek	461	Fdi NE I, Lw NE I, PI NE I, Pw KQ a, Sx NE I
196	0.09	Pilot Bay	336	Fdi NE I, Lw NE I, PI NE I, Pw KQ a, Sx NE I
197	0.09	Wap Ck Delta Flpl	319	Fdi NE I, Lw NE I, PI NE I, Pw KQ a, Sx NE I
198	0.09	White Lk S Shore	181	Fdi NE I, Lw NE I, PI NE I, PI TON I, Pw KQ a, Sx NE I, Sx TON I
199	0.09	BuckinghorseRiver Way	36	PI PR h
200	0.09	CallaghanLake	2667	Cw SM a, Fd SM a, Sxs SM a
201	0.09	Cerise	1312	Cw SM a, Fd SM a, Sxs SM a
202	0.09	Joffre Lakes	1476	Cw SM a, Fd SM a, Sxs SM a
203	0.09	Stoyoma Creek	74	Cw SM a, Fd SM a, Sxs SM a
204	0.09	Tweedsmuir Park Addition	7082	Cw SM a, Fd SM a, Sxs SM a
205	0.09	Chase	35945	PI CP h, PI CP I
206	0.09	Ed Bird Estella Lake	5264	PI CP h, PI CP I
207	0.09	Finlay-Russel	117069	PI CP h, PI CP I
208	0.09	Kwadacha Wilderness	117750	PI CP h, PI CP I
209	0.09	Andrews Bay	46	PI BV I, Sx BV I

## Appendix 2. continued.

Rank	Score	Name	Area	Seedplanningunitscovered
210	0.09	Babine Lake Marine (2)	151	PI BV I, Sx BV I, Sx BVP I
211	0.09	Call Lake	60	PI BV I, Sx BV I
212	0.09	Morice River	356	PI BV I, Sx BV I
213	0.09	Rainbow alley	110	PI BV I, Sx BV I
214	0.09	Red Bluff	156	PI BV I, Sx BV I
215	0.09	Torkelson Lake	248	PI BV I, Sx BV I
216	0.09	Tyhee Lake	39	PI BV I, Sx BV I
217	0.09	Wistaria	41	PI BV I, Sx BV I
218	0.08	Gwaii Haanas	148658	Ba M a, Bq M I, Cw M h, Hw M h, Hw M I, Ss M a, Yc M a
219	0.08	Elk Lakes	17965	PI EK h
220	0.08	Claud Elliott Creek	245	Cw M h, Fd M h, Hw M h, Yc M a
221	0.08	Haley Lake	113	Cw M h, Fd M h, Hw M h, Yc M a
222	0.08	San Juan Ridge	90	Cw M h, Fd M h, Hw M h, Yc M a
223	0.08	Artlish Caves	285	Ba M a, Bq M I, Fd M I, Hw M h, Hw M I, Pw M a, Ss M a, Yc M a
224	0.08	Arrowstone	6159	PI TO h, PI TO I, Sx TO h, Sx TO I
225	0.08	Arthur Seat	2333	PI TO h, PI TO I, Sx TO h, Sx TO I
226	0.08	Cathedral	33176	PI TO h, PI TO I, Sx TO h, Sx TO I
227	0.08	Cornwall Hills	1236	PI TO h, PI TO I, Sx TO h, Sx TO I
228	0.08	Mount Savona	382	PI TO h, PI TO I, Sx TO h, Sx TO I
229	0.08	NN1315	4739	PI TO h, PI TO I, Sx TO h, Sx TO I
230	0.08	NN1317	26068	PI TO h, PI TO I, Sx TO h, Sx TO I
231	0.08	NN1554	278	PI TO h, PI TO I, Sx TO h, Sx TO I
232	0.08	Trepanier	2867	PI TO h, PI TO I, Sx TO h, Sx TO I
233	0.08	Cascade	12886	PI TO h, Sx TO h, Sxs SM a
234	0.08	Pine Pass	10117	PI CP h, Sx PG h
235	0.08	Slim Creek	506	Fdi QL a, PI PG I, Sx PG I
236	0.08	NN472	164	Fdi NE h, Fdi NE I, PI NE I, Sx NE I
237	0.08	Blue River Black Spruce	172	Fdi QL a, PI PG I, Sx NE I
238	0.08	Bijoux Falls	40	Fdi PG a, PI CP I, Sx PG I
239	0.08	Blackwater Creek	233	Fdi PG a, PI CP I, Sx PG I
240	0.08	Heather Lake	284	Fdi PG a, PI CP I, Sx PG I
241	0.08	Muscovite Lake	5741	Fdi PG a, PI CP I, Sx PG I
242	0.08	Raspberry Harbour	121	Fdi PG a, PI CP I, Sx PG I
243	0.08	Tudyah Lake	52	Fdi PG a, PI CP I, Sx PG I
244	0.08	Meziadin Lake	219	PI NS I
245	0.08	Ningunsaw River	3477	PI NS I
246	0.08	Swan Lake	1158	PI PR I, Sx PR I, Sx TO h
247	0.07	Conkle Lake	702	Fdi NE h, Lw NE I, PI TO I, PI TON I, Sx TO I, Sx TON I
248	0.07	White Pelican	4026	PI PG h, Sx PG h, Sx TO I
249	0.07	Arrow Lakes (4)	90	Fdi NE I, Lw NE I, PI NE I, Sx NE I
250	0.07	Eagle River South Side	396	Fdi NE I, Lw NE I, PI NE I, Sx NE I
251	0.07	Mabel Lake	203	Fdi NE I, Lw NE I, PI NE I, Sx NE I
252	0.07	Purcell Wilderness Conservancy	64	Fdi NE I, Lw NE I, PI NE I, Sx NE I
253	0.07	Ryan	59	Fdi NE I, Lw NE I, PI NE I, Sx NE I
254	0.07	Shuswap Lake - Hermit Bay Site	78	Fdi NE I, Lw NE I, PI NE I, Sx NE I
255	0.07	Shuswap Lake Marine - Albas	163	Fdi NE I, Lw NE I, PI NE I, Sx NE I
256	0.07	Shuswap Lake Marine - Marble Point	166	Fdi NE I, Lw NE I, PI NE I, Sx NE I
257	0.07	Silver Beach	150	Fdi NE I, Lw NE I, PI NE I, Sx NE I
258	0.07	Skookumchuck Rapids	68	Fdi NE I, Lw NE I, PI NE I, Sx NE I
259	0.07	Fiordland	84752	Ba M a, Cw M h, Hw M h, Hw M I, Ss M a, Yc M a

## Appendix 2. continued.

Rank	Score	Name	Area	Seedplanningunitscovered
260	0.07	Gamble Creek	963	Ba M a, Cw M h, Hw M h, Hw M l, Ss M a, Yc M a
261	0.07	Gitnadoix River	57744	Ba M a, Cw M h, Hw M h, Hw M l, Ss M a, Yc M a
262	0.07	Khutzeymateen	45080	Ba M a, Cw M h, Hw M h, Hw M l, Ss M a, Yc M a
263	0.07	Klewnuggit Inlet Marine	1783	Ba M a, Cw M h, Hw M h, Hw M l, Ss M a, Yc M a
264	0.07	Lowe Inlet Marine	763	Ba M a, Cw M h, Hw M h, Hw M l, Ss M a, Yc M a
265	0.07	Vladimir J. Krajina	9126	Ba M a, Cw M h, Hw M h, Hw M l, Ss M a, Yc M a
266	0.07	NN432	4606	PI BV h, Sx BVP h, Sx BVP I
267	0.07	Bonaparte	11848	PI TO h, PI TO I, Sx TO h
268	0.07	Harry Lake Aspen	327	PI TO h, PI TO I, Sx TO h
269	0.07	Adams Lake - Spillman Beaches	203	Fdi NE I, PI NE I, Pw KQ a, Sx NE I
270	0.07	Upper Adams River	5858	Fdi NE I, Fdi QLN I, PI NE I, PI PGN I, Pw KQ a, Sx NE I
271	0.07	Beaumont	179	Fdi PG a, PI BV I, Sx PG I
272	0.07	Bobtail Mountain	1361	Fdi PG a, PI BVP h, PI BVP I, Sx PG h, Sx PG I
273	0.07	Chilako River	73	Fdi PG a, PI BV I, Sx PG I
274	0.07	Drywilliam Lake	95	Fdi PG a, PI BV I, Sx PG I
275	0.07	Mount Pope	2032	Fdi PG a, PI BVC h, PI BVC I, PI BVC o, PI BVP h, PI BVP I, Sx PG h, Sx PG I
276	0.07	Nechako Canyon	1216	Fdi PG a, PI BV I, Sx PG I
277	0.07	Nicolium River	24	Ba SM a, Fd SM a
278	0.06	Holiday Creek Arch	395	Fdi QL a, PI PG h, Sx PGN h
279	0.06	Fort George Canyon	178	Fdi PG a, PI PG I, Sx PG I
280	0.06	Fraser River	4903	Fdi PG a, Fdi PGc AL, PI PG I, Sx PG I
281	0.06	Three Sisters	969	Fdi PG a, PI PG I, Sx PG I
282	0.06	West Lake	258	Fdi PG a, PI PG I, Sx PG I
283	0.06	Roderick Haig-Brown	804	Fdi NE I, Lw NE I, PI TO I, PI TON I, Sx TO I, Sx TON I
284	0.06	Bowen Island	395	Ba M a, Bg M l, Fd M l, Hw M l, Pw M a, Ss M a, Yc M a
285	0.06	Halkett Bay	314	Ba M a, Bg M l, Fd M l, Hw M l, Pw M a, Ss M a, Yc M a
286	0.06	Sooke Mountain	451	Ba M a, Bg M l, Fd M l, Hw M l, Pw M a, Ss M a, Yc M a
287	0.06	Close-To-The-Edge	288	Fdi PG a, PI PG h, PI PG I, Sx PG I
288	0.06	Mount Tinsdale	376	PI PG h, Sx PG h
289	0.06	Ptarmigan Creek	1306	Fdi QL a, PI PG h, PI PG I, Sx PGN I
290	0.06	Cariboo River	3138	Fdi QL a, PI PG I, Sx PGN I
291	0.06	Horsefly Lake	153	Fdi QL a, PI PG I, Sx PGN I
292	0.06	Jackman Flats	615	Fdi QL a, PI PG I, Sx PGN I
293	0.06	Rearguard Falls	46	Fdi QL a, PI PG I, Sx PGN I
294	0.06	West Twin	9999	Fdi QL a, PI PG I, Sx PGN I
295	0.06	Cody Caves	45	Fdi NE h, Sx NE h
296	0.06	Narcosli Lake	1083	PI PG h, Sx PG I, Sx TO I
297	0.06	Apex Mountain	548	PI TO h, Sx TO h
298	0.06	Bedard Aspen	183	PI TO h, Sx TO h
299	0.06	Blue Earth Lake	689	PI TO h, Sx TO h
300	0.06	Brent	4486	PI TO h, Sx TO h
301	0.06	Cayoosh Goats	3843	PI TO h, Sx TO h
302	0.06	Eneas Lakes	1036	PI TO h, Sx TO h
303	0.06	Pennask	1282	PI TO h, Sx TO h
304	0.06	Porcupine Meadows	2715	PI TO h, Sx TO h
305	0.06	Skwaha Lake	822	PI TO h, Sx TO h
306	0.06	Tsintsunko Lakes	353	PI TO h, Sx TO h
307	0.06	Beatton	310	PI PR I, Sx PR I
308	0.06	Beatton River	186	PI PR I, Sx PR I
309	0.06	Beatton-Doig Canyon & Beatton River Site	865	PI PR I, Sx PR I
310	0.06	Cecil Lake	121	PI PR I, Sx PR I

## Appendix 2. continued.

Rank	Score	Name	Area	Seedplanningunitscovered
311	0.06	Charlie Lake	85	PI PR I, Sx PR I
312	0.06	ChinchagaLakes	1391	PI PR I, Sx PR I
313	0.06	Clayhurst	300	PI PR I, Sx PR I
314	0.06	Hole-in-the-Wall	137	PI PR I, Sx PR I
315	0.06	Kiskatinaw	54	PI PR I, Sx PR I
316	0.06	Milligan Hills	7227	PI PR I, Sx PR I
317	0.06	Moberly Lake	104	PI PR I, Sx PR I
318	0.06	One Island Lake	59	PI PR I, Sx PR I
319	0.06	PEACE RIVER / BODREAU	7967	PI PR I, Sx PR I
320	0.06	Peace River Corridor (Alces River)	45	PI PR I, Sx PR I
321	0.06	Peace River Corridor (Peace River Islands)	1874	PI PR I, Sx PR I
322	0.06	Peace River Corridor (WakAnaahtaah)	95	PI PR I, Sx PR I
323	0.06	PEACE-MOBERLY subzone	11508	PI PR I, Sx PR I
324	0.06	Pine River Breaks	615	PI PR I, Sx PR I
325	0.06	Rolla Canyon E.R.	43	PI PR I, Sx PR I
326	0.06	Sikanni Chief Canyon	4710	PI PR I, Sx PR I
327	0.06	Sukunka Falls	423	PI PR I, Sx PR I
328	0.06	Graystokes	11920	Lw NE h, PI TON h, Sx TON h
329	0.06	NN114	349	PI BVC I, Sx BV I
330	0.06	Takla Lake Marine	41	PI BVC I, Sx BV I
331	0.05	Seven Sisters	27140	Cw SM a, Sxs SM a
332	0.05	Hook (Deep) Bay	63	Fdi PG a, PI BV I, Sx BVP I
333	0.05	Pinkut Creek East	32	Fdi PG a, PI BV I
334	0.05	Adams Lake (Refuge Bay)	44	Fdi NE I, PI NE I, Sx NE I
335	0.05	Beaver Creek	44	Fdi NE I, PI NE I, Sx NE I
336	0.05	Eagle River Dragonflies	112	Fdi NE I, PI NE I, Sx NE I
337	0.05	MarthaCreek	52	Fdi NE I, PI NE I, Sx NE I
338	0.05	Cinema Boq	64	Fdi PGc AL, PI PG I, Sx PG I
339	0.05	CottonwoodRiver	65	Fdi PGc AL, PI PG I, Sx PG I
340	0.05	Pinnacles	124	Fdi PGc AL, PI PG I, Sx PG I
341	0.05	PuntchesakutLake	37	PI PG I, Sx PG I
342	0.05	Ten Mile Lake	255	Fdi PGc AL, PI PG I, Sx PG I
343	0.04	Antoine/Fred	7405	PI TO I, Sx TO h, Sx TO I
344	0.04	Chapperon-Shorts	3014	PI TO I, Sx TO h, Sx TO I
345	0.04	Lac du Bois Grasslands	15434	PI TO I, Sx TO h, Sx TO I
346	0.04	McConnell Lake	102	PI TO I, Sx TO h, Sx TO I
347	0.04	NN1320	351	PI TO I, Sx TO h, Sx TO I
348	0.04	NN1580	340	PI TO I, Sx TO h, Sx TO I
349	0.04	Alice Lake	399	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
350	0.04	Ambrose Lake	255	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
351	0.04	Atlatzi River	261	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
352	0.04	Big Bunsby Marine	689	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
353	0.04	Bligh Island	4680	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
354	0.04	BrackendaleEagles	710	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
355	0.04	Broughton ArchipelagoMarine	12138	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
356	0.04	Cape Scott	21982	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a

## Appendix 2. continued.

Rank	Score	Name	Area	Seedplanningunitscovered
357	0.04	Catala Island Marine	970	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
358	0.04	Checleset Bay	34937	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
359	0.04	CormorantChannel	766	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
360	0.04	Cowichan River	717	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
361	0.04	Cultus Lake	649	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
362	0.04	Davis Lake	222	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
363	0.04	God's Pocket Marine	2046	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
364	0.04	Goldstream	315	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
365	0.04	Gowlland Tod	1271	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
366	0.04	Ha'thayim Marine	1261	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
367	0.04	Juan De Fuca	1608	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
368	0.04	Kwakutil - Lawn Point	585	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
369	0.04	Lanz and Cox Islands	5561	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
370	0.04	Lasqueti Island	211	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
371	0.04	Little Qualicum Falls	452	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
372	0.04	Marble River	1472	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
373	0.04	Mount Tuam	200	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
374	0.04	Newcastle Island Marine	363	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
375	0.04	Pacific Rim - Broken Islands Group	10680	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
376	0.04	Pacific Rim National	13559	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
377	0.04	Penrose Island Marine	1921	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
378	0.04	PrincessMargaret Marine	480	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
379	0.04	Quatsino	643	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
380	0.04	Raft Cove	750	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
381	0.04	Read Island	636	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
382	0.04	Roscoe Bay	239	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
383	0.04	Santa-Boca	440	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
384	0.04	Sasquatch	1226	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
385	0.04	Simson	484	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
386	0.04	Small Inlet	872	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
387	0.04	South Otter Bay	246	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
388	0.04	Stamp River - Money's Pool	280	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
389	0.04	Sulphur Passage	2192	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
390	0.04	Thurston Bay Marine	387	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
391	0.04	Vargas Island	5725	Ba M a, Bg M I, Fd M I, Hw M I, Pw M a, Ss M a
392	0.04	Niskonlith Lake	244	Fdi NE I, PI TO I, PI TON I, Sx TO I, Sx TON I
393	0.04	Columbia Lake	29	Fdi EK a
394	0.04	Elko	25	Fdi EK a
395	0.04	Kwadacha	45251	PI CP I
396	0.04	Adams Lake (Bush Creek Site)	100	Fdi NE I, Lw NE I, PI TON I, Sx TON I
397	0.04	Herald	80	Fdi NE I, Lw NE I, PI TON I, Sx TON I
398	0.04	Shuswap Lake	154	Fdi NE I, Lw NE I, PI TON I, Sx TON I
399	0.04	Shuswap Lake Marine - Paradise Point	64	Fdi NE I, Lw NE I, PI TON I, Sx TON I
400	0.04	Shuswap Riv Isl	186	Fdi NE I, Lw NE I, PI TON I, Sx TON I

## Appendix 2. continued.

Rank	Score	Name	Area	Seedplanningunitscovered
401	0.04	Mount Elphinstone	139	Ba M a, Fd M I, Hw M I, Ss M a, Yc M a
402	0.04	Aleza Lake	228	Fdi PG a, PI CPP I, Sx PG I
403	0.04	Bednesti Lake	137	Fdi PG a, PI BVP I, Sx PG I
404	0.04	Crooked River	970	Fdi PG a, PI CPP I, Sx PG I
405	0.04	Dahl Lake	1585	Fdi PG a, PI BVP I, Sx PG I
406	0.04	Eksers	3981	Fdi PG a, PI BVP I, PI CPP I, Sx PG I
407	0.04	Giscome Portage Trail	159	Fdi PG a, PI CPP I, Sx PG I
408	0.04	Nechako River	158	Fdi PG a, PI BVP I, Sx PG I
409	0.04	Paarens Beach	50	Fdi PG a, PI BVP I, Sx PG I
410	0.04	Purden Lake	3214	Fdi PG a, PI CPP h, PI CPP I, PI CPP o, Sx PG I
411	0.04	Stuart Lake	344	Fdi PG a, PI BVC I, Sx PG I
412	0.04	Stuart River	21028	Fdi PG a, PI BVP I, Sx PG I
413	0.04	Craig Headwaters	7571	Ba SM a, Ss M a
414	0.04	Great Glacier	9314	Ba SM a, Ss M a
415	0.04	Lava Forks	7388	Ba SM a, Ss M a
416	0.03	Adams Lake - Poplar Point	32	Fdi NE I, PI NE I
417	0.03	NN475	36	Fdi NE I, PI NE I
418	0.03	Finn Creek	384	Fdi QLN I, PI PGN I, Pw KQ a, Sx NE I
419	0.03	Harbor Dungon Lakes	356	Fdi QLN I, PI PGN I, Pw KQ a, Sx NE I
420	0.03	Blue River Pine	28	Fdi QL a
421	0.03	Waloper Lake	56	PI TO I, Sx TO h
422	0.03	Fraser River	177	Ba M a, Bg M I, Fd M I, Hw M I, Ss M a
423	0.03	Jedediah Island Marine	195	Ba M a, Bg M I, Fd M I, Hw M I, Ss M a
424	0.03	John Dean	173	Ba M a, Bg M I, Fd M I, Hw M I, Ss M a
425	0.03	Smuggler Cove Marine	189	Ba M a, Bg M I, Fd M I, Hw M I, Ss M a
426	0.03	Surge Narrows	524	Ba M a, Bg M I, Fd M I, Hw M I, Ss M a
427	0.03	Burns Lake	65	PI BV I, Sx BVP I
428	0.03	Entiako	73270	PI BV I, Sx BVP I
429	0.03	Bridge Delta	1945	Sx TO h, Sx TO I
430	0.03	Churn Creek	36757	Sx TO h, Sx TO I
431	0.03	Edge Hills	11502	Sx TO h, Sx TO I
432	0.03	French Bar Creek	1128	Sx TO h, Sx TO I
433	0.03	Nunsti	20534	Sx TO h, Sx TO I
434	0.03	Southern Chilcotin M	71281	Sx TO h, Sx TO I
435	0.03	Ts'il-os	235134	Sx TO h, Sx TO I
436	0.03	FH Barber	25	Ba SM a
437	0.03	High Lakes Basin	570	PI PG h, Sx PGN h
438	0.03	Mount Terry Fox	1931	PI PG h, Sx PGN h
439	0.03	Small River Caves	1810	PI PG h, Sx PGN h
440	0.03	Sunbeam Creek	508	PI PG h, Sx PGN h
441	0.03	Jewel Lake	50	Fdi NE h, PI TON I, Sx TON I
442	0.03	Wrinkly Face Cliff	43	Fdi NE h, PI TON I
443	0.03	Codville Lagoon Marine	833	Ba M a, Bg M I, Hw M I, Ss M a
444	0.02	Bromley Rock	156	PI TO I, Sx TO I
445	0.02	Buse Lake	228	PI TO I, Sx TO I
446	0.02	Chasm	3135	Sx TO I
447	0.02	Chu Chua Cottonwood	108	PI TO I, Sx TO I
448	0.02	Coldwater River	74	PI TO I, Sx TO I
449	0.02	Eakin Creek Floodplain	123	Fdi QLN I, PI TO I, Sx TO I
450	0.02	Elephant Hill	968	PI TO I, Sx TO I



## Appendix 2. continued.

Rank	Score	Name	Area	Seedplanningunitscovered
451	0.02	Epsom Park	74	PI TO I, Sx TO I
452	0.02	Johnstone Creek	45	PI TO I, Sx TO I
453	0.02	Juniper Beach	252	PI TO I, Sx TO I
454	0.02	Kentucky-Alleyne	144	PI TO I, Sx TO I
455	0.02	Kettle River	177	PI TO I, Sx TO I
456	0.02	Lac Le Jeune	132	PI TO I, Sx TO I
457	0.02	MarbleCanyon	321	PI TO I, Sx TO I
458	0.02	Monck	89	PI TO I, Sx TO I
459	0.02	Myra-Bellevue	7867	PI TO I, Sx TO I
460	0.02	Naramata Creek	106	PI TO I, Sx TO I
461	0.02	NN1080	48	PI TO I, Sx TO I
462	0.02	NN1319	2473	PI TO I, Sx TO I
463	0.02	NN1523	88	PI TO I, Sx TO I
464	0.02	NN1626	57	PI TO I, Sx TO I
465	0.02	NN1651	1721	PI TO I, Sx TO I
466	0.02	NN1751	468	PI TO I, Sx TO I
467	0.02	North Thompson Islands	98	PI TO I, Sx TO I
468	0.02	North Thompson River	136	Fdi QLN I, PI TO I, Sx TO I
469	0.02	Oregon Jack	224	PI TO I, Sx TO I
470	0.02	Otter Lake	53	PI TO I, Sx TO I
471	0.02	Painted Bluffs	98	PI TO I, Sx TO I
472	0.02	Paul Lake	724	PI TO I, Sx TO I
473	0.02	Pritchard Park	43	PI TO I, Sx TO I
474	0.02	Roche Lake	2040	PI TO I, Sx TO I
475	0.02	ShorthornCreek	698	PI TO I, Sx TO I
476	0.02	Shuttleworth	106	PI TO I, Sx TO I
477	0.02	Skaha Bluffs	144	PI TO I, Sx TO I
478	0.02	Skihist	49	PI TO I, Sx TO I
479	0.02	Skihist Park Extensi	359	PI TO I, Sx TO I
480	0.02	Soap Lake	912	PI TO I, Sx TO I
481	0.02	Steelhead	51	PI TO I, Sx TO I
482	0.02	Tunkwa	5067	PI TO I, Sx TO I
483	0.02	TurnbullCreek	109	PI TO I, Sx TO I
484	0.02	Two Spring	4014	PI TO I, Sx TO I
485	0.02	Vaseux	1633	PI TO I, Sx TO I
486	0.02	Walhachin Oxbows	48	PI TO I, Sx TO I
487	0.02	White Lake	4397	PI TO I, Sx TO I
488	0.02	Anne Vallee (Triangle Island) E.R.	980	Ba M a, Fd M I, Hw M I, Ss M a
489	0.02	Beaumont Marine	57	Ba M a, Fd M I, Hw M I, Ss M a
490	0.02	BodegaRidge (Galiano Island)	155	Ba M a, Fd M I, Hw M I, Ss M a
491	0.02	Bowser	114	Ba M a, Fd M I, Hw M I, Ss M a
492	0.02	Boyle Point	130	Ba M a, Fd M I, Hw M I, Ss M a
493	0.02	Chemainus River	108	Ba M a, Fd M I, Hw M I, Ss M a
494	0.02	Clanninick Creek	64	Ba M a, Fd M I, Hw M I, Ss M a
495	0.02	Claud Elliott	293	Ba M a, Fd M I, Hw M I, Ss M a
496	0.02	Comox Lake Bluffs	44	Ba M a, Fd M I, Hw M I, Ss M a
497	0.02	Copeland Islands Marine	410	Ba M a, Fd M I, Hw M I, Ss M a
498	0.02	D'Arcy Island Marine	86	Ba M a, Fd M I, Hw M I, Ss M a
499	0.02	Dawley Passage	158	Ba M a, Fd M I, Hw M I, Ss M a
500	0.02	Dionisio Point	151	Ba M a, Fd M I, Hw M I, Ss M a
501	0.02	Discovery Island Marine	68	Ba M a, Fd M I, Hw M I, Ss M a

## Appendix 2. continued.

Rank	Score	Name	Area	Seedplanningunitscovered
502	0.02	Dixie Cove Marine	156	Ba M a, Fd M I, Hw M I, Ss M a
503	0.02	Duke of Edinburgh	519	Ba M a, Fd M I, Hw M I, Ss M a
504	0.02	Elk Falls	1086	Ba M a, Fd M I, Hw M I, Ss M a
505	0.02	Englishman River Falls	97	Ba M a, Fd M I, Hw M I, Ss M a
506	0.02	Epper Passage	306	Ba M a, Fd M I, Hw M I, Ss M a
507	0.02	Fossli	52	Ba M a, Fd M I, Hw M I, Ss M a
508	0.02	French Beach	55	Ba M a, Fd M I, Hw M I, Ss M a
509	0.02	Garden Bay Marine	157	Ba M a, Fd M I, Hw M I, Ss M a
510	0.02	Gibson Marine	143	Ba M a, Fd M I, Hw M I, Ss M a
511	0.02	Gordon Bay	52	Ba M a, Fd M I, Hw M I, Ss M a
512	0.02	Helliwell	2813	Ba M a, Fd M I, Hw M I, Ss M a
513	0.02	Hemer	95	Ba M a, Fd M I, Hw M I, Ss M a
514	0.02	Hesquiat Lake	57	Ba M a, Fd M I, Hw M I, Ss M a
515	0.02	Hesquiat Peninsula	7790	Ba M a, Fd M I, Hw M I, Ss M a
516	0.02	Horne Lake Caves	127	Ba M a, Fd M I, Hw M I, Ss M a
517	0.02	Jervis Island	91	Ba M a, Fd M I, Hw M I, Ss M a
518	0.02	Kennedy Lake	280	Ba M a, Fd M I, Hw M I, Ss M a
519	0.02	Kennedy River Bog	69	Ba M a, Fd M I, Hw M I, Ss M a
520	0.02	Kingcome River	148	Ba M a, Fd M I, Hw M I, Ss M a
521	0.02	Klanawa River	99	Ba M a, Fd M I, Hw M I, Ss M a
522	0.02	Klaskish River	161	Ba M a, Fd M I, Hw M I, Ss M a
523	0.02	Ladysmith Bog	138	Ba M a, Fd M I, Hw M I, Ss M a
524	0.02	Main Lake	3522	Ba M a, Fd M I, Hw M I, Ss M a
525	0.02	Mansons Landing	104	Ba M a, Fd M I, Hw M I, Ss M a
526	0.02	Maquinna	2614	Ba M a, Fd M I, Hw M I, Ss M a
527	0.02	Miracle Beach	136	Ba M a, Fd M I, Hw M I, Ss M a
528	0.02	Misty Lake	56	Ba M a, Fd M I, Hw M I, Ss M a
529	0.02	Mitlenatch Island Nature	162	Ba M a, Fd M I, Hw M I, Ss M a
530	0.02	Montague Harbour Marine	103	Ba M a, Fd M I, Hw M I, Ss M a
531	0.02	Morton Lake	74	Ba M a, Fd M I, Hw M I, Ss M a
532	0.02	Nitinat Lake	70	Ba M a, Fd M I, Hw M I, Ss M a
533	0.02	Nitinat River	160	Ba M a, Fd M I, Hw M I, Ss M a
534	0.02	Nuchatlitz	2105	Ba M a, Fd M I, Hw M I, Ss M a
535	0.02	Octopus Islands Marine	749	Ba M a, Fd M I, Hw M I, Ss M a
536	0.02	Pitt Polder	100	Ba M a, Fd M I, Hw M I, Ss M a
537	0.02	Plumper Cove Marine	57	Ba M a, Fd M I, Hw M I, Ss M a
538	0.02	Porpoise Bay	59	Ba M a, Fd M I, Hw M I, Ss M a
539	0.02	Rath Trevor Beach	349	Ba M a, Fd M I, Hw M I, Ss M a
540	0.02	Rebecca Spit Marine	167	Ba M a, Fd M I, Hw M I, Ss M a
541	0.02	Rendezvous Island South	164	Ba M a, Fd M I, Hw M I, Ss M a
542	0.02	Roberts Creek	41	Ba M a, Fd M I, Hw M I, Ss M a
543	0.02	Rolley Lake	116	Ba M a, Fd M I, Hw M I, Ss M a
544	0.02	Rosewall Creek	66	Ba M a, Fd M I, Hw M I, Ss M a
545	0.02	Rugged Point Marine	349	Ba M a, Fd M I, Hw M I, Ss M a
546	0.02	San Juan River Estuary	56	Ba M a, Fd M I, Hw M I, Ss M a
547	0.02	Sargeant Bay	142	Ba M a, Fd M I, Hw M I, Ss M a
548	0.02	Saturna Island	121	Ba M a, Fd M I, Hw M I, Ss M a
549	0.02	Sechelt - Tzoonie Narrows Site	81	Ba M a, Fd M I, Hw M I, Ss M a

## Appendix 2. continued.

Rank	Score	Name	Area	Seed planning units covered
550	0.02	Skookumchuck Narrows	141	Ba M a, Fd M I, Hw M I, Ss M a
551	0.02	Spectacle Lake	65	Ba M a, Fd M I, Hw M I, Ss M a
552	0.02	Spider Lake	58	Ba M a, Fd M I, Hw M I, Ss M a
553	0.02	Sproat Lake	40	Ba M a, Fd M I, Hw M I, Ss M a
554	0.02	Taylor Arm	73	Ba M a, Fd M I, Hw M I, Ss M a
555	0.02	Teakerne Arm	138	Ba M a, Fd M I, Hw M I, Ss M a
556	0.02	Tribune Bay	95	Ba M a, Fd M I, Hw M I, Ss M a
557	0.02	Tsitika River	125	Ba M a, Fd M I, Hw M I, Ss M a
558	0.02	Tumbo Island	78	Ba M a, Fd M I, Hw M I, Ss M a
559	0.02	UBC Endowment Lands	79	Ba M a, Fd M I, Hw M I, Ss M a
560	0.02	Wallace Island Marine	83	Ba M a, Fd M I, Hw M I, Ss M a
561	0.02	Walsh Cove	91	Ba M a, Fd M I, Hw M I, Ss M a
562	0.02	White River	68	Ba M a, Fd M I, Hw M I, Ss M a
563	0.02	Winter Cove	95	Ba M a, Fd M I, Hw M I, Ss M a
564	0.02	Woodley Range	159	Ba M a, Fd M I, Hw M I, Ss M a
565	0.02	Andy Bailey	196	Sx PR I
566	0.02	Big Creek	68089	Sx TO h
567	0.02	Cardiff Mountain - E.R.	72	Sx TO h
568	0.02	Ekwan Lake	1743	Sx PR I
569	0.02	Fort Nelson River	119	Sx PR I
570	0.02	Grayling River Hot Springs E.R.	1421	Sx PR I
571	0.02	Hay River	2324	Sx PR I
572	0.02	Itcha Ilgachuz Park	108517	Sx TO h
573	0.02	Klua Lakes	28040	Sx PR I
574	0.02	Liard River Corridor	81202	Sx PR I
575	0.02	Marble Range	17003	Sx TO h
576	0.02	Maxhamish Lake	26911	Sx PR I
577	0.02	Muncho Lake	86079	Sx PR I
578	0.02	Parker Lake	214	Sx PR I
579	0.02	Prophet River Wayside	113	Sx PR I
580	0.02	Scatter River Old Growth	1178	Sx PR I
581	0.02	Sikanni Old Growth	1440	Sx PR I
582	0.02	Tetsa River	103	Sx PR I
583	0.02	Thinahtea North - PA	3675	Sx PR I
584	0.02	Thinahtea South - PA	16709	Sx PR I
585	0.02	Toad River Hot Springs	414	Sx PR I
586	0.02	Yalakom	5466	Sx TO h
587	0.02	McKinnon Esker	546	Fdi PG a
588	0.02	Tsitika Mountain E.R.	598	Hw M h
589	0.02	Drewry Point	25	Fdi NE I
590	0.02	Shuswap Lake Marine - Fowler Point	24	Fdi NE I
591	0.02	Wire Cache	57	Fdi QLN I, PI PGN I, Sx NE I
592	0.02	Anderson Bay	35	Ba M a, Fd M I, Hw M I
593	0.02	Arbutus Grove	22	Ba M a, Fd M I, Hw M I
594	0.02	Bridal Veil Falls	33	Ba M a, Fd M I, Hw M I

## Appendix 2. continued.

Rank	Score	Name	Area	Seedplanningunitscovered
595	0.02	Chilliwack River	25	Ba M a, Fd M I, Hw M I
596	0.02	Confederationand Haslam Lakes	27	Ba M a, Fd M I, Hw M I
597	0.02	Ferry Island	24	Ba M a, Fd M I, Hw M I
598	0.02	Fillongley	24	Ba M a, Fd M I, Hw M I
599	0.02	Galiano Island	21	Ba M a, Fd M I, Hw M I
600	0.02	Koksilah River	222	Ba M a, Fd M I, Hw M I
601	0.02	Loveland Bay	27	Ba M a, Fd M I, Hw M I
602	0.02	Murrin	24	Ba M a, Fd M I, Hw M I
603	0.02	Pirates Cove Marine	32	Ba M a, Fd M I, Hw M I
604	0.02	Princess Louisa Marine	58	Ba M a, Fd M I, Hw M I
605	0.02	Rock Bay Marine	482	Ba M a, Fd M I, Hw M I
606	0.02	Saltery Bay	59	Ba M a, Fd M I, Hw M I
607	0.02	Sandy Island Marine	28	Ba M a, Fd M I, Hw M I
608	0.02	Sartine Island E.R.	1092	Ba M a, Fd M I, Hw M I
609	0.02	Sechelt - Kunechin Point Site	44	Ba M a, Fd M I, Hw M I
610	0.02	Byers/Conroy/Harvey/ Sinnott Islands	11975	Ba M a, Hw M I, Ss M a
611	0.02	Dewdney and Glide Islands	12313	Ba M a, Hw M I, Ss M a
612	0.02	Diana Lake	252	Ba M a, Hw M I, Ss M a
613	0.02	Drizzle Lake	814	Ba M a, Hw M I, Ss M a
614	0.02	Moore/McKenny/Whit more Islands	4549	Ba M a, Hw M I, Ss M a
615	0.02	Naikoon - Park Site	70108	Ba M a, Hw M I, Ss M a
616	0.02	Pure Lake	143	Ba M a, Hw M I, Ss M a
617	0.02	Skeena River	105	Ba M a, Hw M I, Ss M a
618	0.02	Union Passage Marine	1384	Ba M a, Hw M I, Ss M a
619	0.01	Downing	101	PI TO I
620	0.01	OkanaganLake	88	PI TO I
621	0.01	Big Bar Lake	330	Sx TO I
622	0.01	Big Creek	216	Sx TO I
623	0.01	Bull Canyon	343	Sx TO I
624	0.01	CaribooNature	96	Sx TO I
625	0.01	Chasm	180	PI TO I, Sx TO I
626	0.01	Doc English Bluff	48	Sx TO I
627	0.01	Flat Lake	4261	Sx TO I
628	0.01	Junction Sheep Range	4588	Sx TO I
629	0.01	Moose Valley	2389	Sx TO I
630	0.01	Jackson Narrows Marine	63	Ba M a, Hw M I
631	0.01	Oliver Cove Marine	57	Ba M a, Hw M I
632	0.01	BorderLake	815	Ss M a
633	0.01	Choquette Hot Springs	53	Ss M a
634	0.00	Drumbeg	19	Hw M
635	0.00	Duck Lake	768	Hw M
636	0.00	Eves	19	Hw M
637	0.00	Kitson Island Marine	44	Hw M I
638	0.00	Mount Maxwell	200	Hw M
639	0.00	PorteauCove	58	Hw M
640	0.00	PriorCentennial	16	Hw M

**Appendix 2. continued.**

<b>Rank</b>	<b>Score</b>	<b>Name</b>	<b>Area</b>	<b>Seedplanningunitscovered</b>
641	0.00	Smelt Bay	17	Hw M
642	0.00	Big White Mountain	957	PI TON h
643	0.00	Caligata Lake	152	PI PGN h, Sx PGN h
644	0.00	Mount Blanchet	24346	PI BVC h, PI BVC I, PI BVC o, Sx BVP h, Sx BVP I
645	0.00	Takla Lake Marine (1)	160	PI BVC I, Sx BVP I
646	0.00	TrembleurLake	57	PI BVC I, Sx BVP I