

## **Environmental Indicator: Protected Areas in British Columbia**

**Primary Indicator:**      *The percentage of the provincial land base having protected area status.*

**Selection of Indicator:** The percentage of the provincial land base with protected area status is a *response* indicator. It measures progress on the achievement of the provincial goal of protecting viable, representative examples of the natural diversity and cultural, natural and recreational features in the province. Designating representative areas of all ecosystem types as protected will help achieve this goal as well as provide natural benchmarks for scientific research and provide outdoor classrooms. Protected areas create a variety of recreational opportunities, and contribute to the growth of tourism and economic diversification.

**Data and Sources:**

**Table 1. Growth of Protected Areas in British Columbia**

<b>Year</b>	<b>Area Protected (millions of hectares)</b>	<b>% of Provincial Land Base Protected</b>
1890	0.3	0.3
1900	0.3	0.3
1910	0.3	0.3
1920	1.1	1.1
1930	1.1	1.2
1940	3.0	3.2
1950	4.1	4.3
1960	3.9	4.1
1970	3.1	3.3
1980	5.1	5.4
1991	5.7	6.1
1992	5.8	6.1
1993	6.8	7.2
1994	8.0	8.4
1995	8.7	9.2
1996	8.9	9.4
1997	10.1	10.6
1998	10.1	10.7
1999	10.8	11.4
2000	11.6	12.2
2001	11.9	12.5

Sources: Ministry of Sustainable Resource Management, (2002) and BC Parks, (1995).

Note: The table includes all areas protected as of December 2001. For reference, the provincial land base is 94.7 million hectares.

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**Methodology and Reliability:** For this indicator protected areas include national parks, ecological reserves, Class A and C parks, recreation areas, and protected areas that fall under the *Environment and Land Use Act*. They also include protected areas that have been announced but are not yet legally designated under the *Protected Areas of British Columbia Act*, *Park Act*, *Ecological Reserve Act* or other protected areas legislation. They do not include wildlife reserves, migratory bird sanctuaries and regional parks.

Decision Support Services of the Ministry of Sustainable Resource Management provided the total provincial land base area with protected area status. The percentage protected is derived by dividing the number of hectares in the province meeting the protected area status definition (excluding marine waters) by the total number of hectares in the provincial land base. Some recently announced protected areas have not yet been formally designated, therefore the exact size of each protected area may change.

**References:**

British Columbia. 1993. *A Protected Areas Strategy For British Columbia*. Province of British Columbia, Victoria, BC.

**Secondary Measure:** *Percentage of ecosection types with protected area status.*

**Selection of Indicator:** This indicator is a measure of how much of each type of ecosection was protected in 2002 as compared with earlier years. Protected areas in each ecosection and the percentage of the total of each ecosection in protected areas were compiled for the 100 terrestrial ecosections in British Columbia. This was done for 1991, which was before a strategy for protecting areas was implemented and for subsequent years (1997, 1999, and 2002) which were after the strategy was implemented. The protected areas of 12 marine ecosections were also compiled for 1991, 1999 and 2002. Marine ecosections have a low level of representation within the protected areas system, compared to many terrestrial ecosections.

**Data and Sources:**

**Table 2. Percentage of Terrestrial Ecoprovinces and Ecosections with Protected Area Status.**

ECOPROVINCE	Code	Percentage Protected			
		1991	1997	1999	2002
<b>NORTHERN BOREAL MOUNTAINS</b>		<b>4.0</b>	<b>16.2</b>	<b>18.7</b>	<b>21.3</b>
Cassiar Ranges	CAR	0.0	1.1	1.1	8.5
Eastern Muskwa Ranges	EMR	12.7	34.7	34.7	39.8
Hyland Highland	HYH	0.2	7.6	6.7	7.7
Icefield Ranges	ICR	0.0	100.0	100.0	100.00
Kechika Mountains	KEM	0.0	6.2	6.2	16.11
Liard Plain	LIP	0.5	0.6	0.6	0.6
Muskwa Foothills	MUF	0.5	31.6	31.1	31.2
Southern Boreal Plateau	SBP	43.2	43.2	43.0	47.8
Stikine Plateau	STP	6.6	6.6	6.5	7.9
Tagish Highland	TAH	21.6	21.6	21.0	21.0

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<b>ECOPROVINCE</b>		<b>Percentage Protected</b>			
<b>Ecosection</b>	<b>Code</b>	<b>1991</b>	<b>1997</b>	<b>1999</b>	<b>2002</b>
Tahltan Highland	THH	1.6	1.6	1.6	2.8
Tatshenshini Basin	TAB	0.0	69.4	69.5	69.5
Telsin Plateau	TEP	6.3	6.3	6.3	6.3
Tuya Range	TUR	0.0	0.0	0.0	1.3
Western Muskwa Ranges	WMR	9.0	9.0	9.2	18.0
<b>TAIGA PLAINS</b>		<b>0.0</b>	<b>2.2</b>	<b>2.3</b>	<b>2.1</b>
Etsho Plateau	ETP	0.1	2.2	2.2	2.1
Fort Nelson Lowlands	FNL	0.0	0.5	0.5	0.5
Muskwa Plateau	MUP	0.0	3.8	3.4	3.4
Petitot Plain	PEP	0.0	3.0	3.0	3.1
<b>BOREAL PLAINS</b>		<b>0.0</b>	<b>0.3</b>	<b>1.4</b>	<b>1.4</b>
Clear Hills	CLH	0.0	0.8	0.7	0.7
Halfway Plateau	HAP	0.0	0.0	0.1	0.1
Kiskatinaw Plateau	KIP	0.0	0.0	2.6	2.6
Peace Lowland	PEL	0.1	0.3	2.5	2.6
<b>SOUTHERN INTERIOR</b>		<b>2.4</b>	<b>4.2</b>	<b>6.5</b>	<b>8.4</b>
Leeward Pacific Basin	LPR	11.4	22.9	25.5	25.5
Northern Okanagan Basin	NOB	3.4	3.4	3.6	4.9
Northern Okanagan Highland	NOH	1.4	1.4	1.4	4.1
Northern Thompson Upland	NTU	0.2	5.0	5.1	5.1
Okanagan Range	OKR	18.5	18.5	18.6	30.8
Pavillion Ranges	PAR	0.5	8.7	8.6	7.7
Southern Chilcotin Ranges	SCR	0.0	7.6	7.5	13.9
Southern Okanagan Basin	SOB	0.3	0.3	0.3	13.9
Southern Okanagan Highland	SOH	0.1	0.1	0.1	0.7
Southern Thompson Upland	STU	0.4	0.9	0.9	1.6
Thompson Basin	THB	0.3	7.4	7.5	6.2
<b>SOUTHERN INTERIOR MOUNTAINS</b>		<b>11.3</b>	<b>14.2</b>	<b>17.1</b>	<b>17.4</b>
Big Bend Trench	BBT	0.5	0.5	0.9	0.9
Border Ranges	BRR	1.2	4.2	4.2	4.2
Bowron Valley	BOV	3.3	3.3	3.2	3.2
Central Columbia Mountains	CCM	5.9	17.9	17.8	18.9
Central Park Ranges	CPK	9.0	13.1	13.2	13.2
Crown of the Continent	COC	0.0	17.9	18.1	18.1
East Kootenay Trench	EKT	0.6	0.6	0.7	0.7
Eastern Purcell Mountains	EPM	1.1	18.8	18.6	18.9
Front Ranges	FRR	24.6	24.6	40.4	40.4
McGillivray Range	MCR	0.1	1.3	1.3	1.3
Northern Columbia Mountains	NCM	16.9	20.2	22.8	23.1
Northern Park Ranges	NPK	30.9	31.0	32.1	32.2
Quensel Highland	QUH	9.6	11.9	12.3	12.3
Selkirk Foothills	SFH	0.9	11.2	11.2	11.2
Shuswap Highland	SHH	14.5	15.8	15.8	17.0
Southern Columbia Mountains	SCM	0.3	6.4	6.4	6.4
Southern Park Ranges	SPK	26.5	31.0	31.0	31.1
Upper Fraser Trench	UFT	0.0	0.0	7.3	7.2

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ECOPROVINCE	Code	Percentage Protected			
		1991	1997	1999	2002
<b>SUB-BOREAL INTERIOR</b>		<b>1.3</b>	<b>2.2</b>	<b>4.9</b>	<b>6.6</b>
Babine Uplands	BAU	0.1	0.8	3.6	3.7
Eastern Skeena Mountains	ESM	0.3	0.3	8.9	9.0
Hart Foothills	HAF	1.2	1.2	4.8	4.8
Hart Ranges	HAR	7.6	7.6	14.4	15.3
Manson Plateau	MAP	0.0	0.0	4.1	4.5
McGregor Plateau	MCP	0.2	0.2	0.5	0.6
Misinchinka Ranges	MIR	0.0	8.4	8.4	8.6
Nechako Lowland	NEL	1.3	0.17	3.7	3.7
Northern Skeena Mountains	NSM	0.4	0.4	2.2	3.1
Parsnip Trench	PAT	0.1	0.1	0.1	2.7
Peace Foothills	PEF	0.0	5.2	6.5	6.5
Southern Omineca Mountains	SOM	0.0	0.0	0.7	14.7
Southern Skeena Mountains	SSM	4.1	5.4	5.1	5.2
<b>CENTRAL INTERIOR</b>		<b>8.0</b>	<b>13.6</b>	<b>13.6</b>	<b>14.5</b>
Bulkley Basin	BUB	0.5	1.3	2.6	2.6
Bulkley Ranges	BUR	0.0	0.0	0.0	0.0
Cariboo Basin	CAB	0.1	1.1	1.1	1.1
Cariboo Plateau	CAP	0.0	0.7	0.7	0.7
Central Chilcotin Ranges	CCR	0.1	34.0	34.0	38.4
Chilcotin Plateau	CHP	0.1	3.9	4.0	4.0
Fraser River Basin	FRB	0.1	9.0	13.8	13.9
Nazko Upland	NAU	3.6	7.6	10.9	11.0
Nechako Upland	NEU	51.4	51.3	51.6	51.6
Western Chilcotin Upland	WCU	12.7	23.6	23.6	30.1
Western Chilcotin Ranges	WCR	30.2	30.2	30.1	23.6
<b>GEORGIA PUGET BASIN</b>		<b>8.7</b>	<b>9.1</b>	<b>9.8</b>	<b>9.6</b>
Fraser Lowland	FRL	1.0	1.4	1.5	1.5
Georgia Lowland	GEL	5.1	5.1	8.2	8.7
Leeward Island Mountains	LIM	15.5	15.9	16.0	16.0
Naniamo Lowland	NAL	0.8	1.3	1.4	1.4
Strait of Georgia	SOG	3.1	3.8	6.0	5.6
<b>PACIFIC SHELF AND MOUNTAINS</b>		<b>5.9</b>	<b>9.2</b>	<b>11.0</b>	<b>11.1</b>
Alaska Panhandle Mountains	APM	0.4	0.4	0.4	0.4
Alsek Ranges	ALR	0.0	67.4	67.3	67.3
Boundary Ranges	BOR	2.8	2.8	2.7	4.0
Eastern Pacific Ranges	EPR	13.6	13.5	18.9	18.9
Hecate Lowland	HEL	3.7	4.0	4.0	4.0
Kitimat Ranges	KIR	8.0	18.5	18.1	18.2
Nahwitti Lowland	NWL	4.4	7.8	7.6	7.6
Nass Basin	NAB	0.2	3.9	6.2	6.2
Nass Ranges	NAR	0.1	1.2	4.2	4.2
Northern Island Mountains	NIM	6.2	9.0	9.2	9.2
Northern Pacific Ranges	NPR	0.8	1.5	2.2	2.2
Northwestern Cascade Ranges	NWC	5.3	5.5	10.3	10.3
Outer Fiordland	OUF	1.7	2.2	3.4	3.2
Queen Charlotte Strait	QCT	0.3	3.52	3.5	6.1
Queen Charlotte Lowlands	QCL	21.4	21.4	21.4	21.4

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ECOPROVINCE		Percentage Protected			
Ecosection	Code	1991	1997	1999	2002
Skidegate Plateau	SKP	11.9	11.9	11.9	11.9
Southern Pacific Ranges	SPR	10.3	14.9	16.4	16.4
Windward Island Mountains	WIM	8.7	17.1	17.5	17.3
Windward Queen Charlotte Mountains	WQC	33.8	33.8	33.8	34.1
<b>PROVINCIAL TOTAL</b>		<b>6.1</b>	<b>10.6</b>	<b>11.4</b>	<b>12.5</b>

Source: Ministry of Sustainable Resource Management, Decision Support Services, (2002), and BC Parks (1995).

Note: Terrestrial ecosections are as described in: Demarchi, D. 1993. Ecoregions of British Columbia.

**Table 3. Area and Percentage of Marine Ecosystems and Ecosections with Protected Area Status.**

ECOPROVINCE			Percentage Protected		
Ecosection	Code	(km <sup>2</sup> )	1991	1999	2002
<b>PACIFIC SHELF AND MOUNTAINS</b>		<b>124,517</b>	<b>3.9</b>	<b>4.3</b>	<b>4.3</b>
Continental Slope	CS	33,298	4.6	4.6	4.6
Dixon Entrance	DIE	10,890	0.1	0.1	0.1
Hecate Strait	HES	12,804	9.8	9.8	9.8
Johnstone Strait	JS	2,522	1.1	3.7	3.7
North Coast Fjords	NCF	9,613	2.8	3.1	3.1
Queen Charlotte Sound	QCS	36,390	3.1	3.1	3.1
Queen Charlotte Strait	QCT	2,297	0.2	3.3	3.3
Vancouver Island Shelf	VIS	16,703	4.0	5.4	5.4
<b>GEORGIA PUGET BASIN</b>		<b>9,408</b>	<b>0.96</b>	<b>1.0</b>	<b>1.0</b>
Juan de Fuca Strait	JDF	1,503	1.1	1.4	1.4
Strait of Georgia	SOG	7,905	0.4	1.1	1.0
<b>NORTHEAST PACIFIC</b>		<b>319,482</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
Subartic Pacific	SP	170,978	0.0	0.0	0.0
Transitional Pacific	TP	148,504	0.0	0.0	0.0
<b>Total Marine Area Protected</b>		<b>453,407</b>	<b>1.10</b>	<b>1.19</b>	<b>1.19</b>

Source: Ministry of Sustainable Resource Management, Decision Support Services and BC Parks 2002.

Note: Marine ecosections are as described in: Howes, D. E., M. A. Zacharias and J. R. Harper. 1996. Demarchi, D. 1993. The Marine Ecoregions of British Columbia.

**Methodology and Reliability:**

For the purpose of this indicator, protected areas included in this analysis were:

- Class A parks and recreation areas under the *Park Act*;
- protected areas established under the *Environment and Land Use Act*;
- ecological reserves;
- Pacific Rim National Park Reserve; and
- Gwaii Haanas National Park Reserve/Haida Heritage Site (not yet officially designated, but managed as if it was a national marine conservation area reserve ).

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Most of the data were from BC Parks' park registry. Other sources included: individual park maps at various scales, park boundary descriptions, data from Decision Support Services of the Ministry of Sustainable Resource Management, CHS marine charts and NTS 1:50,000 maps. Data conflicts arising from using maps with different scales were resolved at a coarse scale using simple mapping techniques.

Slight changes in the percentage of protected area for each ecosection may have occurred as parks boundaries were mapped to different standards. BC Parks has started remapping all of the park boundaries to a 1:20,000 mapping standard. As boundaries are matched to this standard, slight variations may occur, making the same park either slightly larger or slightly smaller.

In 1996, a new marine ecological classification system was developed by the former Land Use and Coordination Office for marine ecosections. It identified 12 marine ecosections based on physical, oceanographic and biological characteristics such as current, wave exposure, subsurface relief and substrate.

**References:**

British Columbia. 1993. *A Protected Areas Strategy For British Columbia*. Province of British Columbia, Victoria, BC.

Demarchi, D. 1993. *Ecoregions of British Columbia*. Ministry of Environment, Lands and Parks, Victoria, BC.

Environment of Canada and Government of British Columbia. 1998. *Marine Protected Areas: A Strategy for Canada's Pacific Coast (Discussion Paper – August 1998)*. Fisheries and Oceans Canada, Vancouver, BC.

Howes, D., and M. Zacharias. 1997. An Analysis of Marine Protected Areas in British Columbia. *Natural Areas Journal*. 17(4):4–13.

**Secondary Measure:**    *Size of British Columbia's protected areas.*

**Selection of Indicator:** The size of protected areas is important when considering the conservation goal of a protected area. Wide ranging mammals such as Grizzly Bear, Cougar (or Mountain Lion) and Wolf, need a large area to ensure the continuation of the population (Grumbine 1990). Small-protected areas can be important to link together larger reserves and to protect small patches of endangered habitat in a landscape mosaic that has been developed. This indicator provides a compositional breakdown of the protected areas system within British Columbia.

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**Data and Source:**

**Table 4. Number of Protected Areas in British Columbia in Each Size Category.**

Size Category (hectares)	Number of Protected Areas
<10	150
10-100	257
100-1,000	277
1,000-10,000	141
10,000-100,000	79
100,000-1,000,000	20
>1,000,000	2
<b>Total</b>	<b>926</b>

Source: Ministry of Sustainable Resource Management, Decision Support Services, 2002

**Methodology and Reliability:** Data provided are estimates only. Terrestrial protected areas with marine components are included in this analysis. Contiguous protected areas are considered as a single protected area. Therefore, most of the larger areas actually consist of several smaller areas. No individual protected area in British Columbia is greater than 1 million hectares.

A complete list of the protected areas that comprise the two largest size categories is given in Appendix A.

**References:**

Grumbine, R. E. 1990. Viable populations, reserve size, and federal lands management: A critique. *Conservation Biology* 4, No.2: 127-39.

**Secondary Measure:** *Comparison of percentage of protected areas across Canada.*

**Selection of Indicator:** All jurisdictions in Canada maintain a system of protected areas managed for the conservation of natural diversity and maintenance of ecosystem integrity. British Columbia is the second most biologically diverse province or territory in Canada. As such, British Columbia plays an important role in conserving biological diversity in Canada. This indicator compares British Columbia's record with that of other jurisdictions in Canada.

**Data and Sources:**

**Table 5. Percentage of Protected Areas, by Jurisdiction in Canada, 2001.**

Jurisdiction	Percentage Protected
British Columbia	12.5
Alberta	12.5
Yukon	12.1
Ontario <sup>1</sup>	8.9
Manitoba	8.4
Nova Scotia	8.3
Canada	7.3

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<b>Jurisdiction</b>	<b>Percentage Protected</b>
Saskatchewan	6.4
Northwest Territories	6.3
Newfoundland/ Labrador	4.5
Quebec <sup>1</sup>	4.3
PEI	4.2
New Brunswick	3.2

Sources: Numbers for British Columbia, Alberta, Yukon, Manitoba, Nova Scotia, Saskatchewan, Newfoundland/Labrador, PEI, New Brunswick and the Northwest Territories are current for 2001 and are provided by the jurisdictions.

<sup>1</sup> The numbers for Ontario, and Quebec are from the World Wildlife Fund, July 2000. No numbers are available for Nunavut. The value for Canada is slightly underestimated as it does not include up to date information from Ontario, Quebec or Nunavut.

**Methodology and Reliability:** Figures were provided by each jurisdiction, except Ontario and Quebec, and are current to 2001. Records for Ontario and Quebec were taken from a World Wildlife Fund (WWF 2000) report and are current to July 2000. Criteria used by the WWF for protected areas include:

1. In land-base areas, no logging or mining is permitted, nor the development of hydroelectric dams or oil and gas resources. Other activities are considered on a case-by-case basis, to determine whether they will have negative effects on the area.
2. Protected areas must be permanent, which usually means they are formally designated under a piece of legislation.

All areas in Canada that met these criteria were included in the WWF report regardless of their size.

**References:**

World Wildlife Fund. Endangered Spaces: The wilderness campaign that changed the Canadian Landscape 1989-2000. 2000. Toronto, Canada, World Wildlife Fund Canada.

World Wildlife Fund Canada News Release. "*Milestones achieved but government promises to protect Canada's wilderness still fall short.*" July 6, 2000

International Union for the Conservation of Nature. 1998. *1997 United Nations List of Protected Areas*. Prepared by WCMC and WCPA. IUCN, Gland, Switzerland and Cambridge, UK. 412pp.

**Secondary Measure:** *The percentage of forested area that is protected, by elevation and age, in British Columbia.*

**Selection of Indicator:** This indicator shows how much of the forest area of the province is in protected areas and the composition of those forests by age and elevation. Forests cover approximately two-thirds of the province and provide essential habitat to many species of plants and animals, including rare, threatened and endangered species. Some species are only associated with forest types of a certain age or elevation, therefore, to preserve these species, protected forests should include a variety of forest types at different ages and elevations.

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The economic exploitation of the province's forests (primarily for timber, but also for conversion to agricultural and urban land use) generally started at low elevations and expanded to higher elevations only in recent decades. By the 1990s, opportunities for protection of low elevation forests had become limited in some parts of the province, therefore protection of low elevation forest is of special concern. Similarly, the economic exploitation of forests also typically started in old forests with large trees of greater economic value. By the 1990s, opportunities to protect old forests were limited so the percentage of old forests that is protected is also of special concern.

Protected forests can also be analyzed with respect to how representative they are of different types of forest, as classified under the regional, zonal and local ecosystem classifications used in BC. These are: ecoprovinces, ecoregions and ecosections (Demarchi, 1993); biogeoclimatic zones, subzones, variants and phases (Meidinger and Pojar, 1991); and broad ecosystem units and site series units (Resources Inventory Committee, 1998). The zonal and local site series classifications are collectively referred to as biogeoclimatic ecosystem classification (BEC).

**Data and Sources:**

In 1999, there was 2,624,400 ha of protected forests, which was 4.3% of the total forested area. In 2001, there was 5,835,600 ha of protected forests, comprising 9.5% of the total.

**Table 6. Area and Percentage of Forests with Protected Areas Status in British Columbia, by Elevation and Age Class.**

<b>Low Elevation Forest</b>				
	140 years and younger		Older than 140 years	
	%	Hectares	%	Hectares
1991	1.04%	448,422	2.12%	913,400
2001	3.23%	1,394,895	3.88%	1,673,700
<b>High Elevation Forest</b>				
	140 years and younger		Older than 140 years	
	%	Hectares	%	Hectares
1991	1.12%	207,235	5.72%	1,055,300
2001	3.91%	721,590	11.09%	2,045,400

Source: Ministry of Sustainable Resource Management and Ministry of Forests 2002.

Notes: For this indicator, the total area of the province is 94.94 million hectares. The exact size of the province will change according to the mapping methodology used.

Data by Biogeoclimatic Ecosystem Classification system subzone/variant are available as an MS Excel spreadsheets in Appendix B.

**Methodology and Reliability:**

For this analysis, high elevation forests were defined as those found in four BEC zones: alpine tundra, spruce-willow-birch, Engelmann spruce-subalpine fir, and mountain hemlock. Forests in all other BEC zones were defined as low elevation forests.

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A geographic information system (GIS) was used to compile and analyze a comprehensive inventory of the provincial land base and forest cover, intersected with coverages of protected areas, ecosections and BEC subzones/variants.

A seamless and complete GIS database of the land base and forest cover was assembled at a large scale (1:20,000). Most of the province was mapped using Terrain Resource Information Management basemaps completed in 1996 (TRIM 1), which are based on 1981-1988 aerial photography. Four sources of data were used for forest cover:

1. Timber Supply Areas – (85.6 million ha): These data came from a Ministry of Sustainable Resource Management forest cover inventory developed by the Ministry of Forests (MOF). This contains detailed spatial files at 1:20,000, based on TRIM 1, and forest inventory and planning files that provide detailed attributes of the forest cover, with tree age and size attributes projected to 2001. The “snapshot” of the inventory used for the analysis was taken on February 7, 2001, and virtually all of the 2.9 million polygons in the inventory were updated for harvests and fires to within three years or less.
2. Tree Farm Licenses – (5.7 million ha): Licensee forest cover inventories were obtained by MOF for most tree farm licenses (TFLs) during the 1990s. They were updated for harvests and disturbances to within at most a few years before they were obtained by MOF, and consequently may now be up to 10 years out of date. They contain detailed spatial files, that may or may not be consistent with TRIM 1, and attribute files that are consistent with MOF format standards but may not be completely consistent with MOF field measurement standards. Tree age and size attributes were projected by MOF to 2001.
3. Parks – (1.4 million ha): The 1957 provincial forest inventory was the only inventory available for parks created in or before 1957 that had not had a commercial forest inventory since 1957. In 1994, MOF converted the data for these parks to compatible spatial and attribute formats and updated for major disturbances, such as fire, using satellite imagery. In 2001, MOF projected tree age and size attributes to 2001.
4. Areas for which there was no typing available – (2.2 million ha): No detailed forest inventory was available for several significant areas, including (roughly in order of decreasing area): Eastern Vancouver Island (E&N lands), Kitlope Provincial Park, Gwaii Haanas (South Moresby National Park Reserve), parts of TFL 45 (marginal forest, rock and ice at higher elevations around Knight Inlet), all of TFL 49 (near Kelowna), private land in the Elk River valley (near Fernie), the Greater Vancouver Water District’s watersheds, Manning Park and part of the Lower Fraser Valley (mostly agricultural and urban). Forest cover, including three age classes (0-20, 21-140 and >140 years) was derived from the Baseline Thematic Mapping compiled from Landsat 5 images in the early 1990s. The location and area of forest cover is considered accurate as of the early 1990s. The attribute information for forest in these areas is far more limited than for the other three inventories.

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National and provincial parks, ecological reserves and other types of protected areas as of December 21, 2001 were combined in a map at 1:250,000. Existing provincial parks were originally mapped at 1:20,000 and the detail feasible at this scale was carried into the 1:250,000 mapping. Proposed (confirmed, but not yet legislated) provincial parks and national parks were typically mapped at 1:250,000. Recent proposals for provincial parks put forward in the Central Coast Land and Resource Management Plan (LRMP) and the Lillooet LRMP, amounting to 0.5 million ha, were not included as they are still under review.

Ecoregion/ecosection mapping was provided by MSRM at 1:250,000. BEC zone/subzone/variant mapping was provided by MOF at 1:250,000.

**References:**

Demarchi, D. 1993. *Ecoregions of British Columbia*. Ministry of Environment, Lands and Parks, Victoria, BC.

Meidinger, D. and J. Pojar, 1991. *Ecosystems of British Columbia*. Ministry of Forests, Victoria, BC.

Resources Inventory Committee, 1998. Ecosystem Classification and Mapping for British Columbia: Classification and Correlation of the Broad Habitat Classes used in 1:250,000 Ecological Mapping, Victoria, BC. <http://srmwww.gov.bc.ca/risc/pubs/tecolo/bei/index.htm>

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**Appendix A. Contiguous Protected Areas in British Columbia  
Comprising the Two Largest Size Classes.**

<b>Protected Areas 100,000-1,000,000 Hectares</b>	
<b>Name</b>	<b>Size in hectares</b>
Tatshenshini- Alsek	947,324
<i>No. 1 Total:</i>	<i>947,324</i>
Atlin	244,709
<i>No. 2 Total:</i>	<i>244,709</i>
Dall River Old Growth	644
Denetiah	90,463
Denetiah (PA)	7,445
Dune Za Keyih	331,730
Dune Ze Keyih PA	16,058
<i>No. 3 Total:</i>	<i>446,341</i>
Kwadacha Wilderness	130,480
Northern Rocky Mountains	666,142
Northern Rocky Moutains - (PA)	764
Stone Mountain	20,560
<i>No. 4 Total:</i>	<i>817,945</i>
Omineca	130,306
Omineca - PA	3,323
<i>No. 5 Total:</i>	<i>133,629</i>
Kakwa	170,893
Kakwa (PA)	1,521
<i>No. 6 Total:</i>	<i>172,414</i>
Foch-Giltoyees	59,745
Gitnadoix River	57,744
<i>No. 7 Total:</i>	<i>117,489</i>
Bowron Lake	139,776
Cariboo Mountains	113,092
Wells Gray	540,651
<i>No. 8 Total:</i>	<i>793,518</i>
Mount Terry Fox	1,931
Mt. Robson (Swift Current River)	5,953
<i>No. 9 Total:</i>	<i>7,884</i>

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<b>Protected Areas 100,000-1,000,000 Hectares</b>	
<b>Name</b>	<b>Size in hectares</b>
Mount Robson	219,374
<i>No. 10 Total:</i>	<i>219,374</i>
Gwaii Haanas	148,658
<i>No. 11 Total:</i>	<i>148,658</i>
Itcha Ilgachuz - Ilgachuz Range - (ER)	2,719
Itcha Ilgachuz Park	108,517
<i>No. 12 Total:</i>	<i>111,236</i>
Hakai	121,607
<i>No. 13 Total:</i>	<i>121,607</i>
Dry Gulch	29
Kootenay	138,421
Mount Assiniboine	39,004
Yoho	128,708
<i>No. 14 Total:</i>	<i>306,162</i>
Glacier National Park	135,828
<i>No. 15 Total:</i>	<i>135,828</i>
Bishop River	19,839
Bishop River Total:	19,839
Tsyl-os'	235,880
Tsyl-os' Total:	235,880
<i>No. 16 Total:</i>	<i>255,720</i>
Big Creek	68,089
Big Creek Total:	68,089
Spruce Lake - <PA>	71,809
Spruce Lake - <PA> Total:	71,809
<i>No. 17 Total:</i>	<i>139,897</i>
Purcell Wilderness Conservancy Corridor - <PA>	2,025
Purcell Wilderness Conservancy	200,756
St. Mary's Alpine	9,317
<i>No. 18 Total:</i>	<i>212,098</i>
Mehatl Creek	23,893
Nahatlatch (PA)	64
Stein Valley	108,435
<i>No. 19 Total:</i>	<i>132,392</i>

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<b>Protected Areas 100,000-1,000,000 Hectares</b>	
<b>Name</b>	<b>Size in hectares</b>
Blackcomb Glacier	240
Garibaldi	188,361
Golden Ears	61,566
Pinecone Burke	37,253
<i>No. 20 Total:</i>	287,420
Strathcona	247,028
Strathcona Westmin	3,082
Strathcona-Megin River - (ER)	4
Strathcona-Westmin	5
Sulphur Passage	2,192
White Ridge	1,346
<i>No. 21 Total:</i>	253,656
<b>Grand Total</b>	<b>6,005,299</b>

<b>Protected Areas &gt; 1,000,000 Hectares</b>	
<b>Name</b>	<b>Size in hectares</b>
Chukachida	19,629
Finlay Russel	109,229
Finlay Russel - (PA)	13,566
Gladys Lake - (ER)	44,134
Klastline River	14,185
Mess Creek	22,852
Mount Edziza	229,135
Mount Edziza - (RA)	3,546
Pitman River - (PA)	16,368
Spatsizi Plateau Wilderness	641,773
Stikine River	199,725
Tatlatui	103,446
Upper Stikine Spatsizi Ext.	113,361
<i>No. 1 Total:</i>	1,530,949
Entiako	47,709
Entiako - (PA)	73,270
Fiordland	84,752
Kalum Parks	1
Kitlope Heritage Conservancy	321,251
Tweedsmuir (South)	430,833
Tweedsmuir North	556,418
<i>No. 2 Total:</i>	1,514,233
<b>Grand Total</b>	<b>3,045,183</b>