



MINISTRY OF FORESTS AND RANGE

RESULTS

Corporate Reporting System

Species Monitoring Reports



March 1, 2009
(version 1)

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Background and Introduction

Gathering information on species management is a core stewardship function of the Ministry to monitor:

- climate change's impact on reforested stands;
- stocking standards application and its outcome of achieving preferred versus acceptable species composition; and,
- reforestation of young stand species composition in comparison of previous and current timber profile.

Chief Forester's Future Forest Ecosystem Initiative (FFEI): Tree Species Selection Project is developing a "tree species selection decision support system" based on best available information on tree species management to assist with decision making in the context of climate change.

Currently tree species information exists in multiple corporate data sources: Harvesting Billing System (HBS), inventory (VRIMS), disturbance and forest cover (RESULTS), and SPAR. The Ministry collects detailed information for each of its respective business areas for a pre-specified use. Some of this information is considered potentially valuable beyond its intended scope. The Ministry can leverage this corporate data to answer complex business questions that span multiple corporate information systems. One of the challenges is that this detailed information is its 'raw' collected. This requires knowledge of where to access and ability to "mine" and collate the information on a regular basis to provide regular trend analysis for strategic levels. This is repetitive that is heavily reliant specific skills set and staff resources.

The RESULTS Project Team embarked on a pilot project (June 2007) to create a sample set of corporate business reports to demonstrate ability to "mine" across corporate systems.

This initial set of Tree Species Monitoring Reports are a pilot to explore the opportunity to use various Ministry corporate information sources to provide strategic level reports.

The objectives are to:

- provide applied forestry examples for a "business intelligence-type" tool;
- understand the data modeling/data summarization processes to enable reporting;
- determine what level of data resolution is optimal for strategic decision making;
- understand infrastructure requirements and limitations;
- enable intended audience to test the report outputs(s) for usability and interpretability; and,
- understand the technical aspect of development and testing cross-application style reports.

RESULTS CRS Species Monitoring Report

This project produces a series of Tree Species monitoring reports to support the FFEI and other stewardship requirements. While this initiative is not under FFEI framework, it attempts to demonstrate corporate information system's role in assisting in providing information needs at a strategic level. Other themes can be later explored subject to overall user feedback on this project's deliverable.

The Corporate Reporting System(CRS) was used as the reporting tool for this pilot. As a stepping stone for developing a true "business intelligence tool" it *mashes* business information from a variety of applications . Using CRS restricts the, data representation to either a fixed .pdf output or a CSV option. However with the CSV option there is then the opportunity for users to create their own customized graphs using Excel or other tools.

Species Monitoring Reports

Four new reports are available through RESULTS CRS to assist in species monitoring at a strategic level based on four time intervals. All four reports use a consistent format to enable easy comparison of pre-harvest and post-harvest species composition.

- Volume billed based on harvest billing information for an opening;
- Lead species from the previous stand label submitted for an opening;
- Planted species based on the planting report submitted for an opening; and,
- Regenerated species based on forest cover for immature tree species that have current age greater than or equal to 7 years.

Specific data generalizations were completed to provide the ability to summarize by biogeoclimatic zone/subzone which is not available for the billing information.

These reports offer two output formats:

- .pdf outputs with graphical and tabular output
- CSV data to allow ability create different tabular summaries or graphic format

These reports are intended to provide strategic level trends and not intended to be used in a detailed manner. Generalizations and assumptions performed may cause the numbers to deviate slightly from the data source. If users need to obtain more detailed level information, they are encouraged to go the get the data from the original source.

RESULTS CRS Species Monitoring Report

• Home

Corporate Reporting System

MY BOOKMARKS
empty

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Reports

1. [Billed Volume Based on Reported Results Openings](#) +
2. [Planting by Species](#) +
3. [Previous Leading Species for Results Openings](#) +
4. [Regenerated Forest Cover](#) +

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Note that there are a few outstanding items that are being worked on in a second migration (to be completed before March 31st,2009):

- standardization of colour palette for species for all four tables to enable easy visual comparisons; and,
- refinement of logic to resolve area deviations when using the BGC Zone/subzone filters.

Reporting Parameters

All reports contain similar reporting filters except:

Report Name	Differences
Billed Volume by Species	- Uses Billing Date Starting Date available as of 1995-01-01
Previous Leading Stand Label by Species	- Uses Disturbance Start Date Starting Date available as of 1988-01-01
Planting by Species	-Uses Disturbance Start Date Starting Date available as of 1988-01-01
Regenerated Forest Cover by Species	- Uses Disturbance Start Date Starting Date available as of 1988-01-01 - Available to filter on Stand Type – Even or Uneven

RESULTS CRS Species Monitoring Report


Org Unit: (DOS).....Okanagan Shuswap Forest District


Management Unit: U-22 - Okanagan TSA

Include all associated Timber Supply Blocks: Y

BGC Zone:

BGC Subzone:

Billing Start Date: 

Billing End Date: 

Format: Acrobat PDF

Includes only those records with timber marks that have licences with management unit types of:

- Timber Supply Areas (U);
- Timber Supply Blocks (V);
- Tree Farm Licences (T); or
- Outside Management Units (Z).
-

Any combination of Org Unit, Management Unit and BGC Zone/subzone can be used. Not all are required to be entered. The more filters entered, the more restrictive the report output that matches the criteria.

“Include all associated Timber Supply Blocks” is set to “Y” when U-prefix is used to ensure that any records that are associated with a related Timber Supply Block belonging within the same Timber Supply Area (TSA) to be included to be inclusive of all areas reported under the TSA. If the Include all associated Timber Supply Blocks is set to “N” then the report only reports the Management Unit specified.

PDF Output limitation

CRS requires pre-defined .pdf outputs. The reports have been defaulted in x-axis by year and y-axis by volume or area based on actual values and proportional by species. Actual data is also provided in a tabular format with more raw empirical values available in the CSV output should users wish to present other than the defaulted .pdf format.

RESULTS CRS Species Monitoring Report

Volume Billed Based on Reported RESULTS Openings

Data Source

This report is based on information obtained from Harvest Billing System. Billing Date is only available starting from 1995-01-01 onwards.

CSV Content

Details available in the CSV format.

- Region
- District
- Management Unit Type
- Management Unit ID
- Management Unit Description
- BGC Zone
- BGC Subzone
- Quota Type Code
- Billing Year
- Species Category
- Total Volume

RESULTS CRS Species Monitoring Report

Quota Type Code is obtained from the Timber mark should there be desire to separate volumes by different quota types.

Code Value	Quota Type Code Description
A	Normal replaceable AAC
B	Temporary AAC approved by Chief Forester
C	Forest Service Reserve
D	Small Business Apportionment
J	Non-Quota Timber sold in a TSA/TFL, includes salvage or opportunity wood and Private Timber Marks.
K	Undercut from TFLs/FLs (Small Business)
L	Undercut of TFLs/FLs (OTHER) (expired 89 /06/
M	Non-QUOTA, Small Business Only (expired 89/0
O	Opportunity wood (Timber outside net lan d ba
P	Any Timber sale sold under a Pulpwood Agreement

Limitations

Species reported into Harvest Billing System is generalized into broad species categories.

BGC Zone/Subzone is based on timber marks from HBS is based on similar prime timber mark identified for the opening in RESULTS. The largest NAR for a timber mark BGC/subzone combination is used to associated with the similar timber mark to the billed volume. This is a coarse representation of the most dominant BGC Zone/subzone at the timber mark level.

This report is based on volume billed and does not include the residual stand composition as in the case of partial cut or volumes retained for non-timber objectives.

RESULTS CRS Species Monitoring Report

PDF Report Format

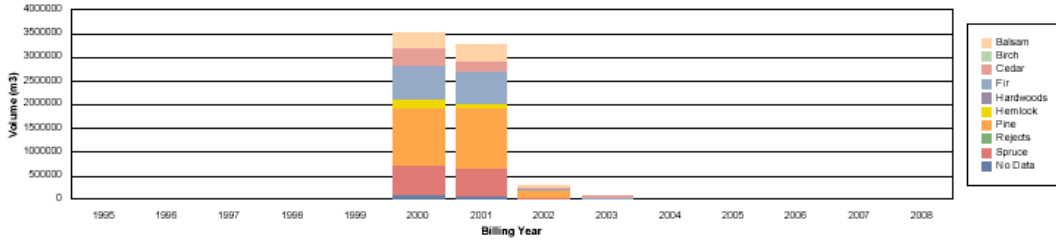


Ministry of Forests and Range
Billed Volume Based on Reported
RESULTS Openings Report

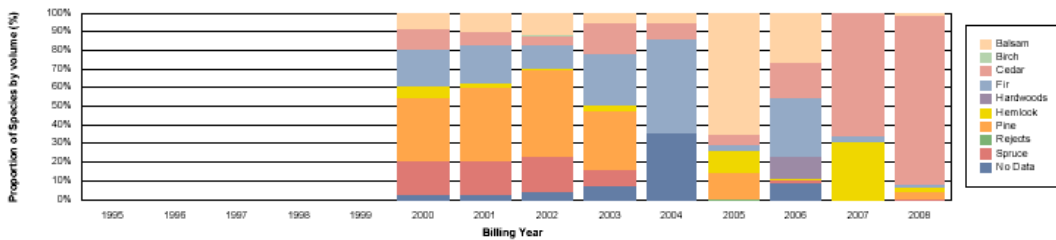
Page: 1 of 2
Date Printed: 2009-02-16
User Id: IDIR/MTSCI
Database: DBO01
Report Id: RSLTRPT012
File:

Org Unit:	DOS - Okanagan Shuswap Forest District	Management Unit:	Include Blocks:	Yes
BGC Zone:		BGC Subzone:		
Billing Start Date:	1995-01-01	Billing End Date:	2008-12-31	

Volume Billed by Billing Year and Species for RESULTS Openings for Okanagan Shuswap Forest District



Proportion of Volume Billed by Billing Year and Species for RESULTS Openings for Okanagan Shuswap Forest District



Ministry of Forests and Range
Billed Volume Based on Reported
RESULTS Openings Report

Page: 2 of 2
Date Printed: 2009-02-16
User Id: IDIR/MTSCI
Database: DBO01
Report Id: RSLTRPT012
File:

Org Unit:	DOS - Okanagan Shuswap Forest District	Management Unit:	Include Blocks:	Yes
BGC Zone:		BGC Subzone:		
Billing Start Date:	1995-01-01	Billing End Date:	2008-12-31	

	Volume (m3)											Total
	No Data	Balsam	Birch	Cedar	Fir	Hardwoods	Hemlock	Larch	Pine	Rejects	Spruce	
1995	0	0	0	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	300,124	6,230	355,078	706,813	8,374	216,408	98,822	1,185,586	15,171	618,017	3,510,403
2001	0	313,817	6,916	230,528	672,719	3,459	92,121	85,948	1,250,529	8,765	595,766	3,280,389
2002	0	32,596	1,214	14,133	36,884	38	3,872	11,931	131,074	465	54,178	286,174
2003	0	4,096	49	14,078	23,501	1	2,501	8,246	26,327	300	6,702	83,789
2004	0	558	0	844	5,284	4	4	3,878	3	0	0	10,376
2005	0	1,570	0	147	76	0	288	0	338	12	0	2,428
2006	0	284	0	183	311	119	6	84	0	0	16	983
2007	0	0	0	1,287	59	0	600	0	0	0	0	1,957
2008	0	5	0	414	7	0	10	0	16	0	2	454
Total	0	652,790	14,408	618,703	1,445,453	11,993	315,607	206,709	2,593,853	24,713	1,274,683	7,156,913

End of Report

RESULTS CRS Species Monitoring Report

Previous Leading Species for RESULTS

Data Source

This report is based on openings in RESULTS for records with Disturbance Start Date start from 1988-01-01 onwards.

Methodology

Only the first previous stand label species is used and applied to the net area to be reforested (NAR) of the opening. No empirical values are provided in the previous stand label – only leading and second leading species. Therefore the leading species is associated with the total NAR.

Tree species reported from the previous stand label is generalized into broad categories to simplify for purposes illustrating trends.

Previous stand label is mandatory only as of April 2007. Historical records may be incomplete. Missing previous stand label is presented as “No Species”.

To determine BGC Zone/Subzone – largest Standards Units NAR BGC Zone/Subzone is assigned to the opening.

CVS Content

Details available in the CSV format.

- Region
- District
- Management Unit Type
- Management Unit ID
- Management Unit Description
- BGC Zone
- BGC Subzone
- Disturbance Start Date
- Species Category
- Net Area to be Reforested

Limitations

Previous stand label does not provide empirical values for tree species. Only the 1st species is used and applied to the reported NAR. Previous stand label was an optional field until April 1, 2007. Records with no previous stand label reported will be assigned “No Species”.

RESULTS CRS Species Monitoring Report

PDF Report Format

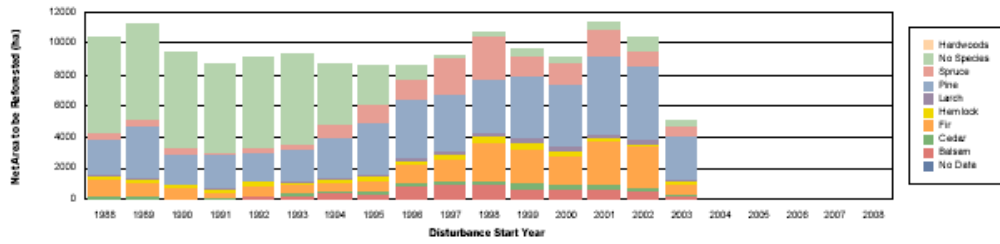


Ministry of Forests and Range
 Previous Leading Species for
 RESULTS Openings Report

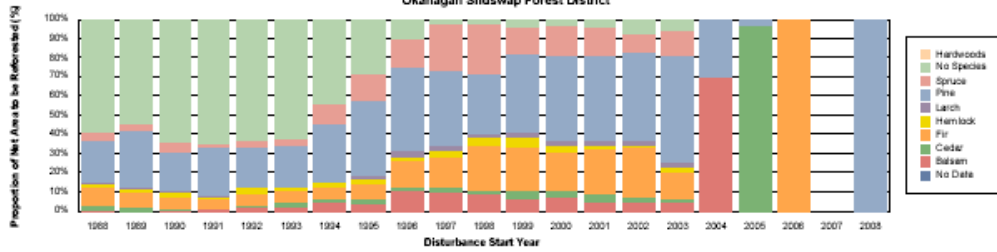
Page: 1 of 3
 Date Printed: 2009-02-18
 User Id: IDRMT501
 Database: DEQ01
 Report Id: RSLTRPT013

Org Unit:	DOS - Okanagan Shuswap Forest District	Management Unit:	Include Blocks:	Yes
BGC Zone:		BGC Subzone:		
Disturbance Start Date:	1988-01-01	Disturbance End Date:	2008-12-31	

Previous Leading Species by Disturbance Start Year for RESULTS Openings for Okanagan Shuswap Forest District



Proportion of Previous Leading Species by Disturbance Start Year for RESULTS Openings for Okanagan Shuswap Forest District



RESULTS CRS Species Monitoring Report



Ministry of Forests and Range
**Previous Leading Species for
 RESULTS Openings Report**

Page: 2 of 3
 Date Printed: 2009-02-16
 User id: IDRM7501
 Database: D6Q01
 Report id: RSLTRPT013
 File:

Org Unit: DOB - Okanagan Shuswap Forest District Management Unit: Include Blocks: Yes
 BGC Zone: BGC Subzone: Disturbance Start Date: 1988-01-01 Disturbance End Date: 2008-12-31

	NAR(ha)										Total
	No Data	Balsam	Cedar	Fir	Hardwoods	Hemlock	Larch	Pine	Spruce	No Species	
1988	0	35	271	982	0	217	33	2,255	395	6,117	10,408
1989	0	0	220	912	0	199	61	3,347	404	6,116	11,256
1990	0	49	44	645	0	220	31	1,950	441	6,084	9,467
1991	0	153	95	352	0	178	43	2,141	174	5,587	8,628
1992	0	184	99	575	4	335	33	1,872	309	5,762	9,135
1993	0	204	210	550	0	162	39	2,057	345	5,785	9,354
1994	0	444	135	492	0	235	48	2,650	865	3,630	8,653
1995	0	339	235	675	13	237	30	3,385	1,165	2,426	8,571
1996	0	325	153	1,188	3	195	254	3,730	1,265	841	8,584
1997	0	332	269	1,370	0	355	235	3,557	2,345	158	9,262
1998	0	372	237	2,434	14	423	205	3,352	2,849	170	10,715
1999	0	488	417	2,132	0	485	285	4,054	1,269	385	9,659
2000	0	553	299	1,851	0	340	251	3,852	1,414	277	9,057
2001	0	591	425	2,740	0	197	231	5,046	1,594	485	11,381
2002	0	533	247	2,685	5	135	275	4,716	1,205	785	10,354
2003	0	245	97	670	0	199	125	2,811	654	291	5,031
2004	0	25	0	0	0	0	0	11	0	0	36
2005	0	0	3	0	0	0	0	0	0	0	3
2006	0	0	0	16	0	0	0	0	0	0	16
2007	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	32	0	0	32

Planting by Species

Data Source

This report is based on openings in RESULTS for records with Disturbance Start Date starting from 1988-01-01 onwards.

Methodology

Planting is submitted by area with details of tree species, number of trees planted and seedlot. Area is prorated by species by using the formula:
 (Species Planted)/(Total Trees Planted) x (Planted Area)

Example:

Planted Area = 10ha Total Trees Planted = 10,000 trees

Fdi 3,000

Sx 7,000

$(3,000/10,000) \times 10\text{ha} = \text{Fdi } 3\text{ha}$

$(7,000/10,000) \times 10\text{ha} = \text{Sx } 7\text{ha}$

BGC Zone/Subzone is assigned based on the largest Standards Unit's NAR BGC Zone/Subzone for the opening.

RESULTS CRS Species Monitoring Report

CVS Content

Aggregate the net area and summarise the data in CSV format.

- Region
- District
- Management Unit Type
- Management Unit ID
- Management Unit Description
- BGC Zone
- BGC Subzone
- Disturbance Start Date
- Genetic Class
- Genetic Worth Rating
- Prorated Area
- Confirm columns

Limitations

Disturbed areas for recent years maybe incomplete as silviculture obligation areas are allowed a specific timeframe to report their achieved regeneration results.

PDF Report Format

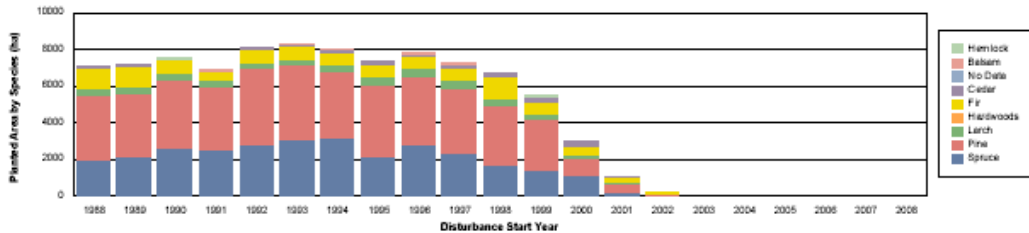


Ministry of Forests and Range
Planting by Species Report

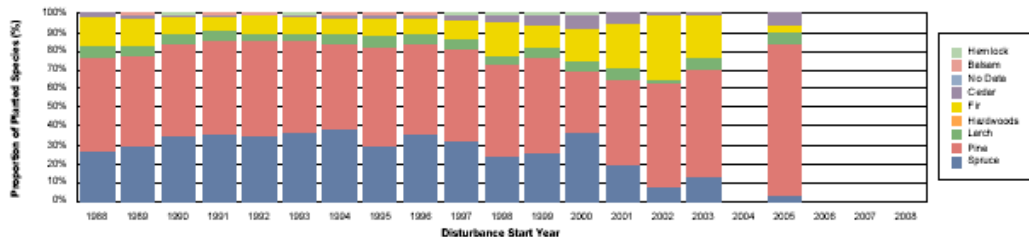
Page: 1 of 3
Date Printed: 2009-02-18
User ID: IDIRMTSC01
Database: D9301
Report ID: RSLTRPT014
File:

Org Unit:	DOS - Okanagan Shuswap Forest District	Management Unit:		Include Blocks:	Yes
BGC Zone:		BGC Subzone:			
Disturbance Start Date:	1988-01-01	Disturbance End Date:	2008-12-31		

Planted Area by Species for RESULTS by Disturbance Start Year by Species for Okanagan Shuswap Forest District



Proportion of Planted by Species for RESULTS by Disturbance Start Year by Species for Okanagan Shuswap Forest District



RESULTS CRS Species Monitoring Report



Ministry of Forests and Range
Planting by Species Report

Page: 2 of 3
Date Printed: 2009-02-18
User ID: IDIRIMTSOI
Database: D6Q01
Report ID: RSLTRPT014
File:

Org Unit: DOS - Okanagan Shuswap Forest District Management Unit: Include Blocks: Yes
BGC Zone: BGC Subzone: Disturbance Start Date: 1988-01-01 Disturbance End Date: 2008-12-31

	Planted Area (ha)									Total
	No Data	Balsam	Cedar	Fir	Hardwoods	Hemlock	Larch	Pine	Spruce	
1988	0	0	92	1,137	0	0	397	3,553	1,918	7,098
1989	0	24	117	1,058	0	0	450	3,629	2,153	7,211
1990	0	16	74	710	2	14	370	3,721	2,628	7,537
1991	0	27	71	514	0	0	316	3,556	2,445	6,895
1992	0	21	55	767	3	1	259	4,127	2,932	8,117
1993	0	44	96	715	0	2	329	4,054	3,050	8,315
1994	0	70	114	702	2	0	345	3,642	3,144	8,019
1995	0	25	137	692	0	0	459	3,880	2,194	7,375
1996	0	19	121	697	0		454	3,744	2,777	7,782
1997	0	52	155	791	0	6	384	3,576	2,335	7,282
1998	0	10	267	1,197	4	2	359	3,256	1,652	6,747
1999	0	40	250	667	0	21	281	2,768	1,399	5,446
2000	0	5	194	510	0	15	164	982	1,075	2,945
2001	0	0	52	292	0		72	480	254	1,098
2002	0	0	1	47	0		3	77	12	141
2003	0	0	0	9	0	0	2	23	5	40
2004	0	0	0	0	0	0	0	0	0	0
2005	0	0	1	1	0	0	1	16	1	20
2006	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0

RESULTS CRS Species Monitoring Report

Regenerated Forest Cover Report

Data Source

This report is based on openings in RESULTS for records with Disturbance Start Date starting from 1988-01-01 onwards.

Methodology

Polygons used are based on even-aged component “I” or “1” – Mature only.
Stand Type field is assigned based on polygons that are “I”-Even or “1” – Uneven

Only forest cover polygons with Immature Stocking Status with Current Age equal or greater than 7 years with forest cover species information are used.

Current Age equal or greater than 7 years:
 $(\text{Current Year} - \text{Reference Year}) + \text{Average Age of polygon}$

Calculation of Immature Area:
 $(\text{Species Percent} / 100) \times \text{Silviculture Polygon Area}$.

Example: Silviculture Polygon Area = 10ha
Fdi 70%, Sx 30%
 $(30/100) \times 10\text{ha} = \text{Fdi } 3\text{ha}$
 $(70/100) \times 10\text{ha} = \text{Sx } 7\text{ha}$

BGC Zone/Subzone is assigned based on the largest Standards Unit’s NAR BGC Zone/Subzone for the opening.

CVS Content

Aggregate the net area and summarize the data in CSV format.

- Region
- District
- Management Unit Type
- Management Unit ID
- Management Unit Description
- BGC Zone
- BGC Subzone
- Disturbance Start Date
- Stand Type
- Prorated Species Area

RESULTS CRS Species Monitoring Report

Limitations

Disturbed areas for recent years maybe incomplete as silviculture obligation areas are allowed a specific timeframe to report their achieved regeneration results.

PDF Report Format

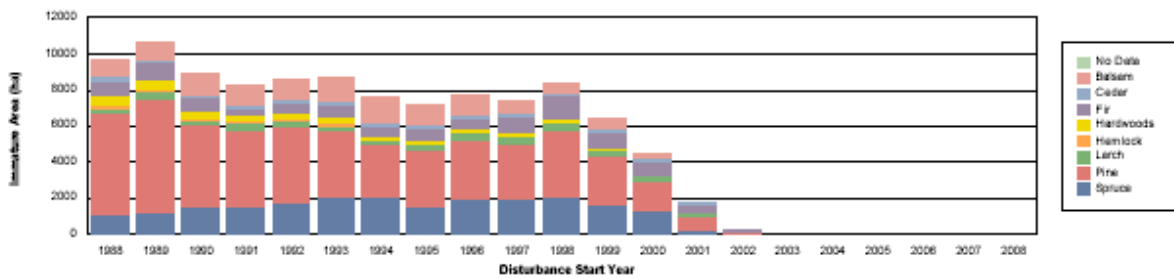


Ministry of Forests and Range
Regenerated Forest Cover Report

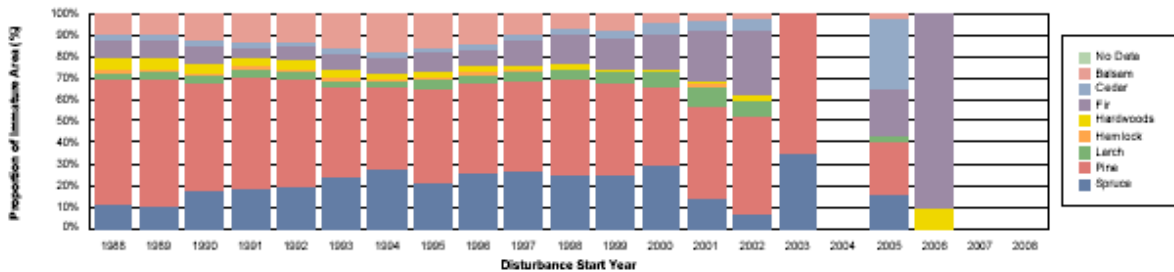
Page: 1 of 3
Date Printed: 2009-02-17
User Id: IDRMTSOI
Database: DBQ01
Report Id: RSLTRPT015
File:

Org Unit:	DOS - Okanagan Shuswap Forest District	Management Unit:	BGC Subzone:	Include Blocks:	Yes
BGC Zone:		Disturbance End Date:	2008-12-31	Stand Type:	All
Disturbance Start Date:	1988-01-01				

Regenerated Forest Cover for RESULTS by Disturbance Start Year by Species for Okanagan Shuswap Forest District



Proportion of Regenerated Forest Cover for RESULTS by Disturbance Start Year by Species for Okanagan Shuswap Forest District



RESULTS CRS Species Monitoring Report



Ministry of Forests and Range
Regenerated Forest Cover Report

Page: 2 of 5
Date Printed: 2009-02-17
User Id: IDIRMT901
Database: DEQ01
Report Id: RSLTRPT015
File:

Org Unit: DOS - Okanagan Shuswap Forest District
BGC Zone:
Disturbance Start Date: 1988-01-01
Management Unit:
BGC Subzone:
Disturbance End Date: 2008-12-31
Include Blocks: Yes
Stand Type: All

	Immature Area (ha)									Total
	No Data	Balsam	Cedar	Fir	Hardwoods	Hemlock	Larch	Pine	Spruce	
1988	0	829	318	815	919	190	297	5,824	1,091	9,639
1989	0	1,021	257	907	939	143	410	6,317	1,172	10,716
1990	0	1,064	222	759	441	97	261	4,492	1,579	8,864
1991	0	1,067	175	455	284	101	340	4,262	1,572	8,252
1992	0	1,069	179	552	378	74	297	4,292	1,716	8,577
1993	0	1,336	219	629	376	125	208	3,708	2,129	8,728
1994	0	1,308	190	555	250	23	210	2,896	2,101	7,531
1995	0	1,069	185	643	200	89	289	3,138	1,545	7,137
1996	0	1,056	221	584	225	62	308	3,279	1,882	7,724
1997	0	645	221	877	135	51	347	3,119	1,857	7,351
1998	0	550	183	1,201	218	21	405	3,733	2,098	8,410
1999	0	479	237	885	82	16	354	2,719	1,612	6,394
2000	0	168	212	726	22	22	301	1,617	1,322	4,459
2001	0	45	85	420	8	47	163	754	254	1,777
2002	0	4	13	66	5	0	17	102	15	222
2003	0	0	0	0	0	0	0	8	5	13
2004	0	0	0	0	0	0	0	0	0	0
2005	0	0	1	1	0	0	0	1	1	4
2006	0	0	0	2	0	0	0	0	0	3
2007	0	0	0	0	0	0	0	0	0	0