

Board and Information Services
Tel. 604 432-6250 Fax 604 451-6686

File: CR-12-01
Ref: RD 2019 May 24

MAY 31 2019

Kate O'Connell, City Clerk
City of Burnaby
4949 Canada Way
Burnaby BC V5G 1M2
VIA EMAIL: kate.oconnell@burnaby.ca

Dear Ms. O'Connell:

Re: Sensitive Ecosystem Inventory – Sub-Regional Profiles and Assessment of Ecosystem Loss

At its May 24, 2019 regular meeting, the Board of Directors of the Metro Vancouver Regional District Metro Vancouver (Metro Vancouver) adopted the following resolutions:

That the MVRD Board:

- a) receive for information the report titled “Sensitive Ecosystem Inventory – Sub-Regional Profiles and Assessment of Ecosystem Loss”, dated April 10, 2019; and,*
- b) distribute the report to member jurisdiction Councils for information.*

Enclosed is a copy of the staff report for your information.

Metro Vancouver's Sensitive Ecosystem Inventory is a GIS inventory of ecologically significant lands across the region. The Sensitive Ecosystem Inventory was originally completed in 2013 in response to the need for up-to-date, standardized information for the region to facilitate conservation of important ecological areas through informed land use and conservation planning. The recent update to 2018 provides key insights into the state of the region's most important ecological areas and changes over a 5-year period, which are summarized in the attached report.

Referred to:

Environment and Social Planning Committee (2019.09.03)

Copied to:

City Manager, Dir. Corporate Services, Dir. Engineering, Dir. Planning and Building,
Dir. Parks, Recreation and Cultural Services

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Through Metro Vancouver's Regional Planning Advisory Committee – Environment SubCommittee, your staff have been provided access to the updated Sensitive Ecosystem Inventory data. If you have any questions or for more information, please contact Josephine Clark, Planner, Regional Planning, by phone at 604-451-6166 or by email at Josephine.Clark@metrovancover.org.

Sincerely,



Chris Plagnol
Corporate Officer

CP/sn

cc: Neal Carley, General Manager, Planning and Environment
Josephine Clark, Planner, Regional Planning, Planning and Environment

Encl: Report dated April 10, 2019, titled "Sensitive Ecosystem Inventory – Sub-Regional Profiles and Assessment of Ecosystem Loss" (Doc # 29328558)

To: Climate Action Committee

From: Josephine Clark, Planner, Regional Planning
Planning and Environment Department

Date: April 10, 2019 Meeting Date: May 17, 2019

Subject: **Sensitive Ecosystem Inventory – Sub-Regional Profiles and Assessment of
Ecosystem Loss**

RECOMMENDATION

That the MVRD Board:

- a) receive for information the report titled “Sensitive Ecosystem Inventory – Sub-Regional Profiles and Assessment of Ecosystem Loss”, dated April 10, 2019; and,
 - b) distribute the report to member jurisdiction Councils for information.
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PURPOSE

To provide the Climate Action Committee and MVRD Board with sub-regional analysis from the updated Metro Vancouver Sensitive Ecosystem Inventory, and an in-depth assessment of ecosystem loss.

BACKGROUND

The Climate Action Committee’s 2019 Work Plan includes “Ecological Health - Sensitive Ecosystem Inventory - update and implications” in the second quarter.

The results of the first 5-year update of the Metro Vancouver Sensitive Ecosystem Inventory were presented to the Climate Action Committee at the June 2018 meeting. This report provides additional results from the 5-year Sensitive Ecosystem Inventory update including sub-regional analysis and an assessment of ecosystem loss at the regional, regional core (primarily developed areas), and sub-regional levels.

METRO VANCOUVER’S SENSITIVE ECOSYSTEM INVENTORY

Metro Vancouver’s Sensitive Ecosystem Inventory is a GIS inventory of ecologically significant lands across the region. The Sensitive Ecosystem Inventory was originally completed in 2013 in response to the need for up-to-date, standardized information for the region to facilitate conservation of important ecological areas through informed land use and conservation planning. The Sensitive Ecosystem Inventory maps ‘Sensitive Ecosystems’, including wetlands, older forests and woodlands, as well as ‘Modified Ecosystems’ such as old fields and young forests that are younger and more human modified but still have ecological value and importance to biodiversity. Sensitive and modified ecosystems provide key ecosystem services to the region including carbon storage, and flood absorption, and contribute to our resilience to climate change. They also provide vital habitat and connectivity for biodiversity.

In 2018, the first 5-year update was completed to ensure the Sensitive Ecosystem Inventory continues to be an effective and relevant land use and conservation planning tool. The purpose of the update was to document changes to mapped ecosystems and quantify the amount, rate and type of ecosystem loss. Initial results from the update were provided to the Climate Action Committee in June 2018 (Reference 1).

RESULTS

Sensitive Ecosystem Inventory results are reported for the region, regional core and sub-regions, and these areas are shown in Maps 1 and 2. The regional core is the more urbanized southern part of the region and is most relevant to policy and planning.



Map 1 – Region and Regional Core Extents



Map 2 – Sub-Region Extents

Assessment of Ecosystem Loss

The 5-year Sensitive Ecosystem Inventory update found a total loss of 1,640 ha (0.9%) of sensitive and modified ecosystem for the region, 1,190 ha (3.4%) of which were within the regional core. The ecosystem classes with the highest recorded losses were:

- Mature Forests (aged 80-250 years) – 518 ha (-2%)
- Young Forests (aged 30-80 years) – 459 ha (-2%)
- Old Field – 426 ha (-20%)
- Riparian – 96 ha (-0.3%)
- Wetland – 120 ha (-1.2%)

Charts 1 and 2 summarize the main causes of ecosystem loss in the region and in the regional core respectively. Logging activities resulted in the highest losses at the regional level. These occurred within the academic research forests and as part of commercial logging operations. Other causes of loss were clearing and mowing (no further development or other activity on the site was observed), agriculture, residential development, transportation and communication (which includes road building), and utilities. Smaller categories of loss include resource extraction, industrial activities, and

recreation. Loss at the regional core level showed similar patterns, except very little logging took place.

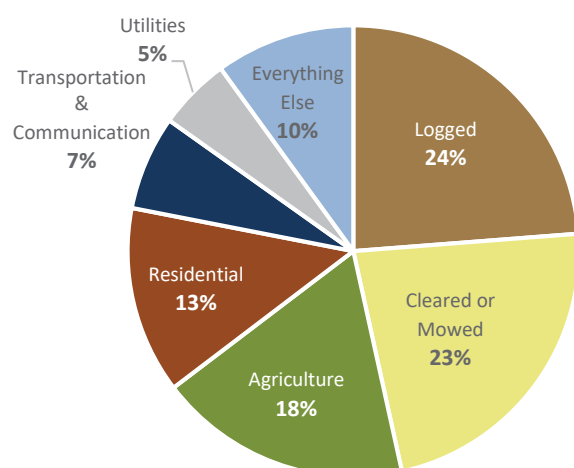


Chart 1 – Causes of ecosystem loss for the region

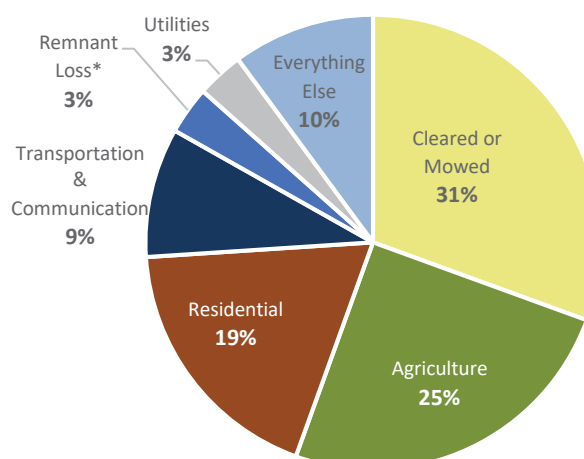


Chart 2 – Causes of ecosystem loss for the regional core

*Remnant Loss – ecosystems that due to adjacent loss are now very small and fall below the minimum size for inclusion in the Sensitive Ecosystem Inventory

Attachment 1 provides a breakdown of causes of loss for the ecosystems classes listed above which experienced the highest levels of loss. Logging was the cause of most loss for mature and young forests. For old fields, over 80% of loss was a result of agriculture or clearing and mowing. It is possible that some of these sites may be allowed to return to an old field state over time. However, if this was a system in balance we would expect a similar amount of additions of old fields to the inventory as losses, but only 35 ha was added, compared to 426 ha lost.

Old field additions were due to areas naturally aging to the point they met the criteria for inclusion within this class. Additions to other classes totaled 3 ha and appeared to be due largely to restoration activities.

Changes in Ecosystem Quality

Ecosystems in the Sensitive Ecosystem Inventory are assessed for 'ecosystem quality', which is determined through an evaluation of their condition, visible disturbances, context within the landscape, and size. As shown in Table 1 below, at the regional level, a high percentage of ecosystems in the Sensitive Ecosystem Inventory are rated higher quality (84.7%), but this number drops considerably when looking at the regional core (39.1%). This difference is due to the dominating effect of the watersheds and large provincial parks in the north which contain very large areas of undisturbed ecosystems.

	% Ecosystems rated Higher Quality	Change over 5-years
Region	84.7%	-0.3%
Regional Core	39.1%	-0.7%

Table 1 – Ecosystem quality for the region and regional core

Changes in ecosystem quality were assessed during the recent Sensitive Ecosystem Inventory update. A decrease of less than 1% was detected at both the region and regional core level.

Sub-Regional Profiles

Attachment 2 provides breakdowns of the Sensitive Ecosystem Inventory analysis for each sub-region, as well as the region and regional core for comparison. The following information is included within the profiles:

- Map of sub-region extent;
- Top three sensitive or modified ecosystems present in the sub-region by area;
- Proportion of the sub-region that is a sensitive or modified ecosystem;
- Percent of ecosystems rated higher quality in the sub-region and change over 5-years;
- Proportion of regional sensitive or modified ecosystems found within the sub-region; and
- Ecosystem loss information including the proportion of regional loss that occurred within the sub-region.

In 2013 with the first release of the Sensitive Ecosystem Inventory, a ‘Sub-Regional Profiles’ document (Reference 2) was created with a public audience in mind and is available on the Metro Vancouver website. An updated version of the sub-regional profiles will be created using the information in Attachment 2.

Next Steps

This report is provided to the Climate Action Committee in keeping with its Terms of Reference, which identify that the Environment portfolio of Regional Planning provides data, monitoring and research to support the Committee’s role in guiding and monitoring the organization’s actions under the *Ecological Health Framework*. Staff welcome any feedback or direction that arises from consideration of the Sensitive Ecosystem Inventory.

This report will be provided to the Regional Planning Committee through its role in updating *Metro Vancouver 2040: Shaping Our Future (Metro 2040)*, the regional growth strategy. A key environmental objective of this update is to better integrate sensitive ecosystems into the regional growth strategy. Staff will report back to the Climate Action Committee as work on the update to *Metro 2040* advances.

ALTERNATIVES

1. That the MVRD Board:
 - a) receive for information the report titled “Sensitive Ecosystem Inventory – Sub-Regional Profiles and Assessment of Ecosystem Loss”, dated April 10, 2019; and,
 - b) distribute the report to member jurisdiction Councils for information.
2. That the Climate Action Committee receive for information the report titled “Sensitive Ecosystem Inventory – Sub-Regional Profiles and Assessment of Ecosystem Loss”, dated April 10, 2019.

FINANCIAL IMPLICATIONS

If the MVRD Board chooses Alternative 1, the report will be distributed to member jurisdiction Councils for information. The report highlights the loss of sensitive ecosystems in the region between 2009 and 2014, and identifies the causes for ecosystem loss both for the region and within the regional core (excluding the North Shore watersheds, estuaries and intertidal areas). Residential development was the cause of 19% of the loss of ecosystems in the regional core between 2009 and 2014. Agriculture was the cause of the 25% of that same loss. Metro Vancouver will be looking at how better to monitor and address this loss through the update to the Regional Growth Strategy, and member jurisdictions play a critical role in the protection of ecosystems in the region. If the Committee chooses Alternative 2, no further action will be taken.

Costs associated with the Metro Vancouver Sensitive Ecosystem Inventory update were included in MVRD Board-approved Regional Planning program budgets and work plans.

SUMMARY / CONCLUSION

The Metro Vancouver Sensitive Ecosystem Inventory update provides key insights into the state of the region's most important ecological areas and changes over a 5-year period. Causes of loss observed in the Sensitive Ecosystem Inventory update were assessed and quantified. Logging, clearing and mowing, agriculture, and residential development were among the primary causes of ecosystem loss recorded for the region. Very little logging was documented within the regional core but other causes of loss were similar. Ecosystem quality was assessed and was found to have decreased slightly for the region and regional core, a change of -0.3% and -0.7% respectively. Sub-regional breakdowns of information from the Sensitive Ecosystem Inventory are provided in Attachment 2 and will be made available on the Metro Vancouver website in a format suitable for a public audience. Staff recommend Alternative 1, that the MVRD Board receive the Sensitive Ecosystem Inventory update for information and distribute the report to member jurisdiction councils.

Attachments (29630740)

1. Summary of ecosystem loss by Sensitive Ecosystem Inventory class
2. Sensitive Ecosystem Inventory Sub-Regional Profiles

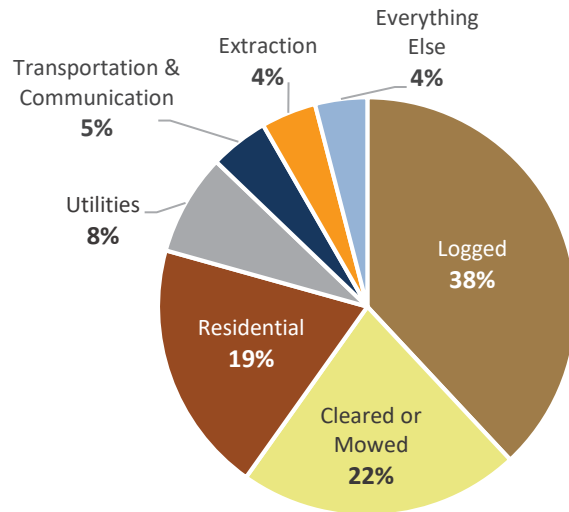
References

1. [Update of the Metro Vancouver Sensitive Ecosystem Inventory](#), dated, June 6, 2018
2. [Metro Vancouver Sensitive Ecosystem Inventory Sub-Regional Profiles \(2013\)](#)

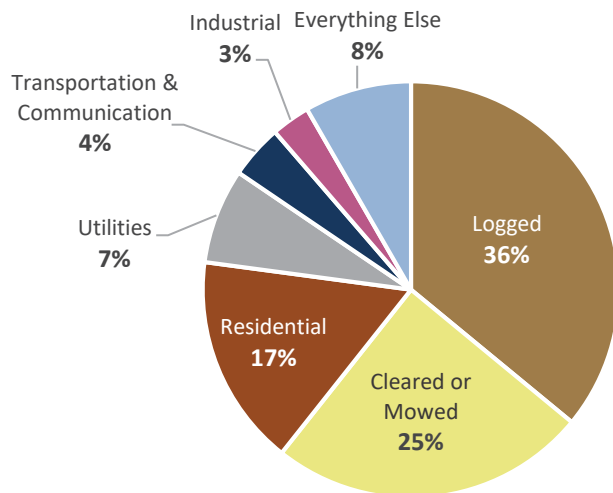
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Sensitive Ecosystem Inventory – Causes of Loss by Sensitive or Modified Ecosystem Class

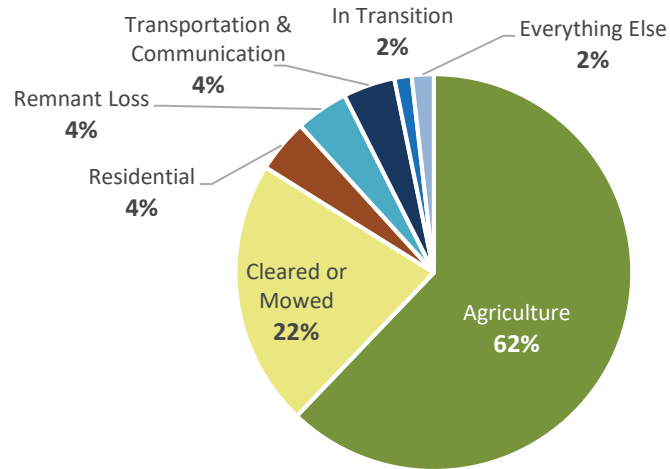
The following charts present the causes of loss for the sensitive and modified ecosystem classes that experienced the highest levels of loss in the 5-year SEI update completed in 2018.



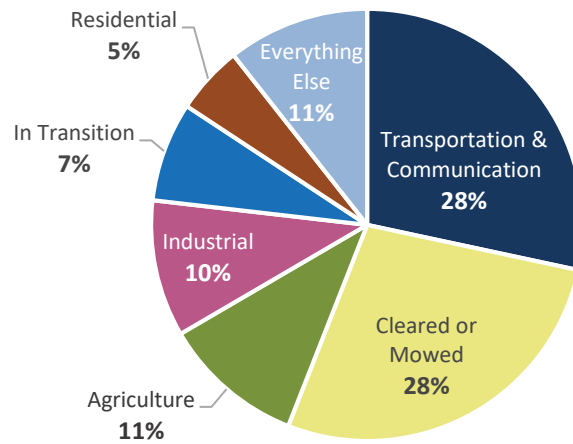
Causes of loss for Mature Forest (80-250 yrs) ecosystems
Loss = 518 ha



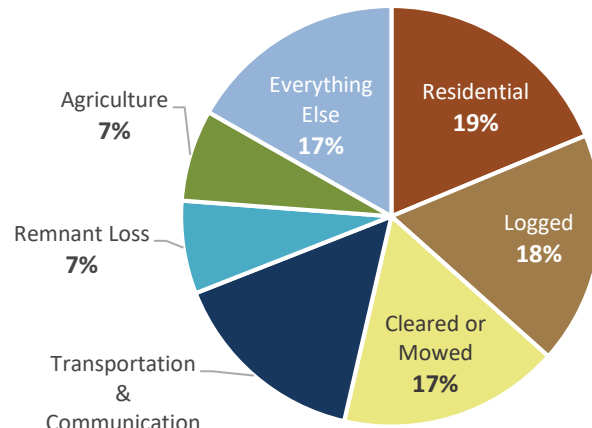
Causes of loss for Young Forest (30-80 yrs) ecosystems
Total = 459 ha



Causes of loss for Old Field ecosystems
Total = 426 ha

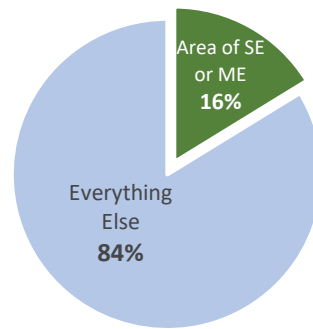
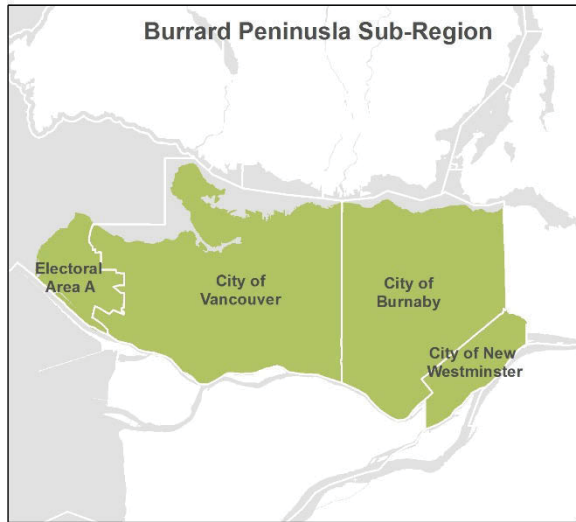


Causes of loss for Wetland ecosystems
Total = 120 ha



Causes of loss for Riparian ecosystems
Total = 96 ha

Sensitive Ecosystem Inventory – Burrard Peninsula Sub-Regional Profile



Proportion of Burrard Peninsula that is a Sensitive Ecosystem (SE) or Modified Ecosystem (ME)

Ecosystem Profile:

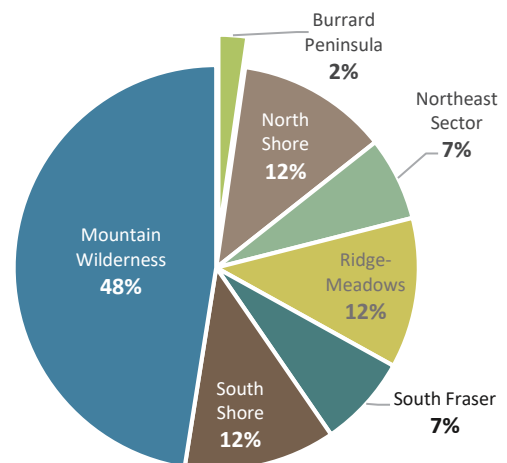
Top 3 Sensitive or Modified Ecosystems in Burrard Peninsula by area	
Mature Forest	1,216 ha
Riparian	1,013 ha
Young Forest	522 ha

Ecosystem Quality:

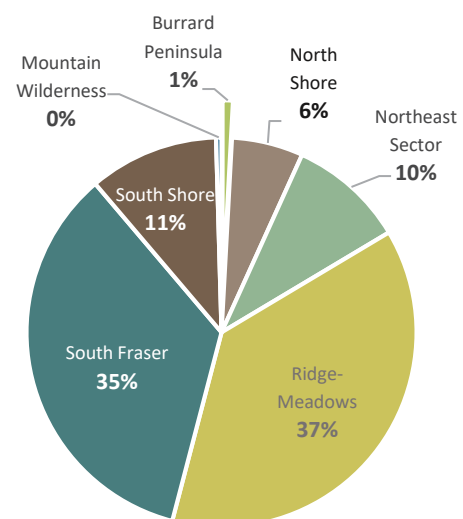
% Ecosystems rated 'Higher Quality' in Burrard Peninsula	44.5%
Change in % of Ecosystems rated 'Higher Quality' in Burrard Peninsula	0%

Ecosystem Loss:

- 14 ha of Sensitive or Modified Ecosystems were lost in Burrard Peninsula
- Sensitive or Modified Ecosystems that experienced the most loss in Burrard Peninsula:
 - -1.2% of Wetland (-6 ha)
 - -0.8% of Young Forest (-4 ha)
 - -0.2% of Mature Forest (-3 ha)
- Top 3 causes of loss in Burrard Peninsula were in transition (construction was in process but the purpose was unclear), transportation and communication, and recreation



Proportion of regional Sensitive or Modified Ecosystems found within the Burrard Peninsula Sub-Region



Proportion of regional loss that occurred within the Burrard Peninsula Sub-Region

Sensitive Ecosystem Inventory – North Shore Sub-Regional Profile



Ecosystem Profile:

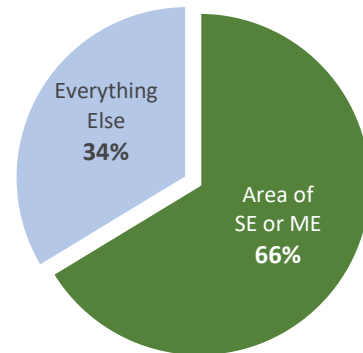
Top 3 Sensitive or Modified Ecosystems in North Shore by area	
Mature Forest	6,856 ha
Young Forest	4,101 ha
Old Forest	3,733 ha

Ecosystem Quality:

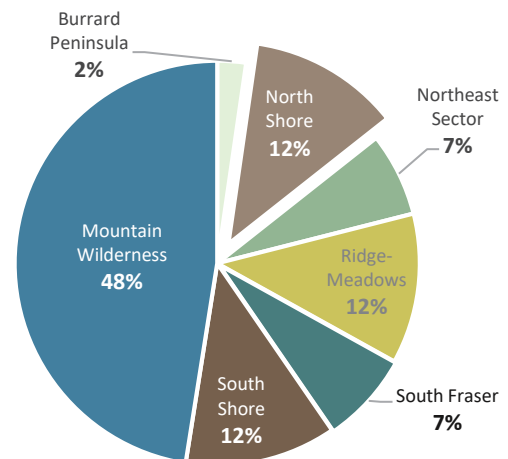
% Ecosystems rated 'Higher Quality' in North Shore	86.2%
Change in % of Ecosystems rated 'Higher Quality' in North Shore	-0.5%

Ecosystem Loss:

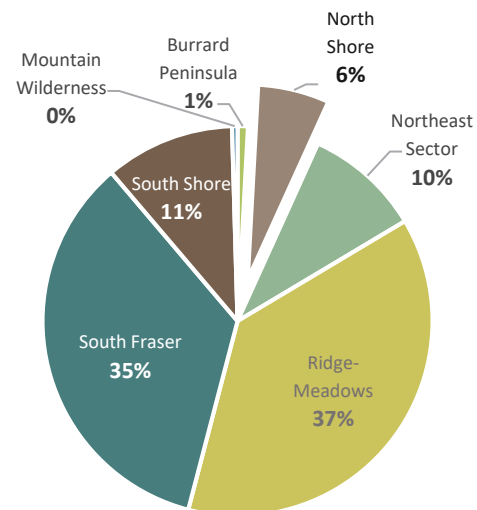
- 97 ha of Sensitive or Modified Ecosystems were lost in North Shore
- Sensitive or Modified Ecosystems that experienced the most loss in North Shore:
 - 1% of Mature Forest (-69 ha)
 - 0.3% of Young Forest (-13 ha)
 - 0.3% of Riparian (-10 ha)
- Top 3 causes of loss in North Shore were clearing and mowing, in transition (construction was in process but the purpose was unclear), and transportation and communication



Proportion of North Shore that is a Sensitive Ecosystem (SE) or Modified Ecosystem (ME)

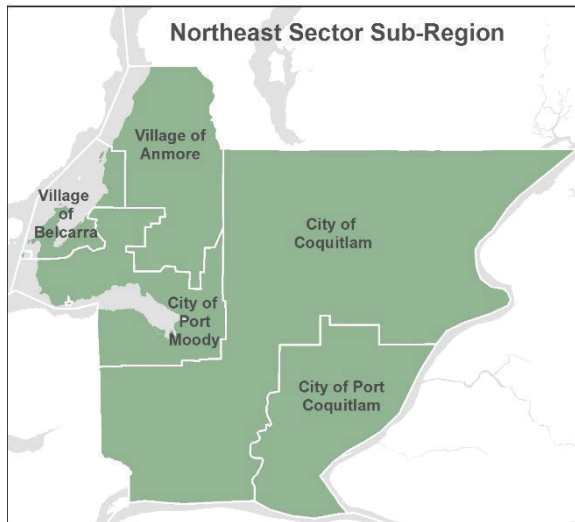


Proportion of regional Sensitive or Modified Ecosystems found within the North Shore Sub-Region



Proportion of regional loss that occurred within the North Shore Sub-Region

Sensitive Ecosystem Inventory – Northeast Sector Sub-Regional Profile



Ecosystem Profile:

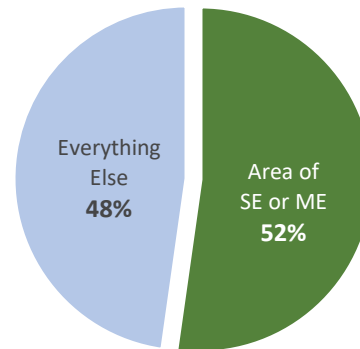
Top 3 Sensitive or Modified Ecosystems in Northeast Sector by area	
Mature Forest	4,057 ha
Riparian	2,684 ha
Young Forest	2,443 ha

Ecosystem Quality:

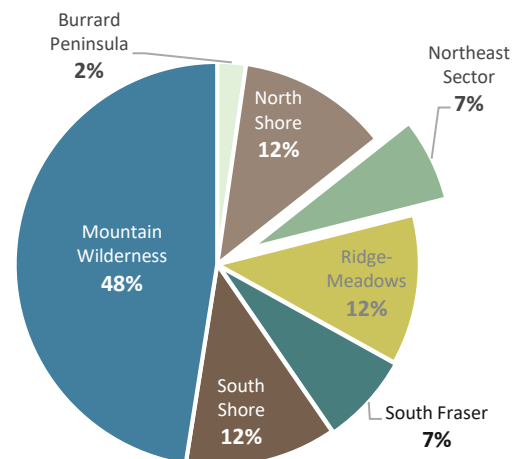
% Ecosystems rated 'Higher Quality' in Northeast Sector	-73.7%
Change in % of Ecosystems rated 'Higher Quality' in Northeast Sector	-0.3%

Ecosystem Loss:

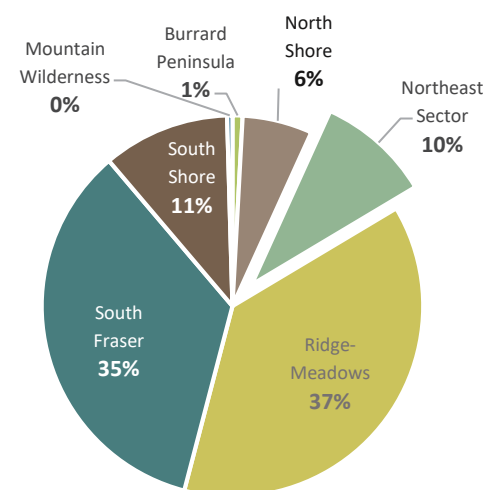
- 158 ha of Sensitive or Modified Ecosystems were lost in Northeast Sector
- Sensitive or Modified Ecosystems that experienced the most loss in Northeast Sector:
 - -2% of Mature Forest (-83 ha)
 - -1.5% of Young Forest (-38 ha)
 - -2.3% of Wetland (-22 ha)
- Top 3 causes of loss in Northeast Sector were residential development, utilities, and extraction



Proportion of Northeast Sector that is a Sensitive Ecosystem (SE) or Modified Ecosystem (ME)

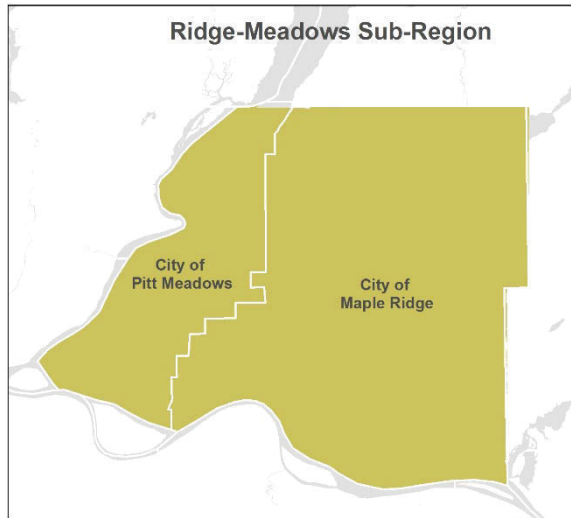


Proportion of regional Sensitive or Modified Ecosystems found within the Northeast Sector Sub-Region



Proportion of regional loss that occurred within the Northeast Sector Sub-Region

Sensitive Ecosystem Inventory – Ridge-Meadows Sub-Regional Profile



Ecosystem Profile:

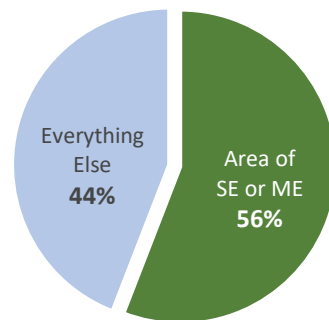
Top 3 Sensitive or Modified Ecosystems in Ridge-Meadows by area	
Mature Forest	6,774 ha
Young Forest	5,056 ha
Riparian	4,435 ha

Ecosystem Quality:

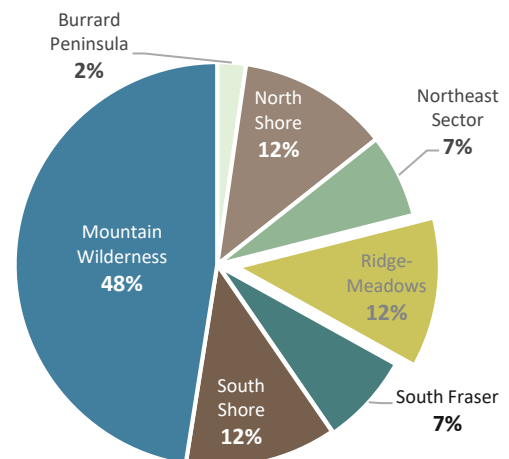
% Ecosystems rated 'Higher Quality' in Ridge-Meadows	78.4%
Change in % of Ecosystems rated 'Higher Quality' in Ridge-Meadows	-1.3%

Ecosystem Loss:

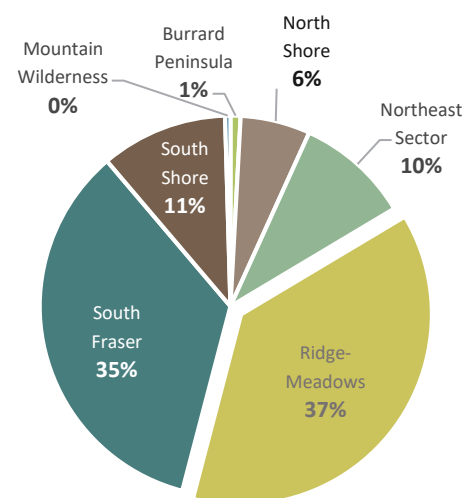
- 616 ha of Sensitive or Modified Ecosystems were lost in Ridge-Meadows
- Sensitive or Modified Ecosystems that experienced the most loss in Ridge-Meadows:
 - -4.3% of Mature Forest (-306 ha)
 - -4.0% of Young Forest (-213 ha)
 - -25.3% of Old Field (-47 ha)
- Top 3 causes of loss in Ridge-Meadows were logging, residential development, and clearing and mowing.



Proportion of Ridge-Meadows that is a Sensitive Ecosystem (SE) or Modified Ecosystem (ME)

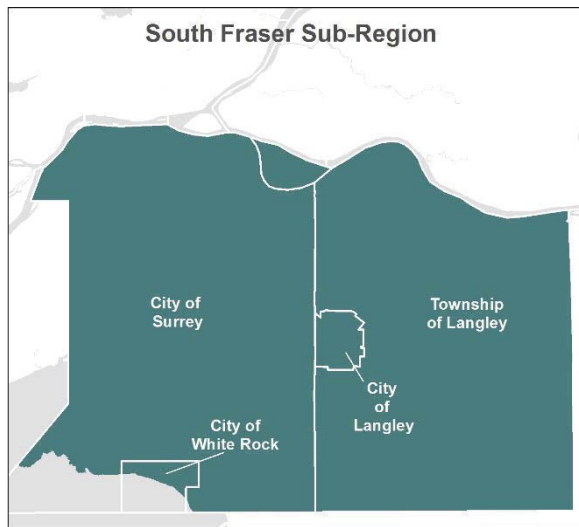


Proportion of regional Sensitive or Modified Ecosystems found within the Ridge-Meadows Sub-Region



Proportion of regional loss that occurred within the Ridge-Meadows Sub-Region

Sensitive Ecosystem Inventory – South Fraser Sub-Regional Profile



Ecosystem Profile:

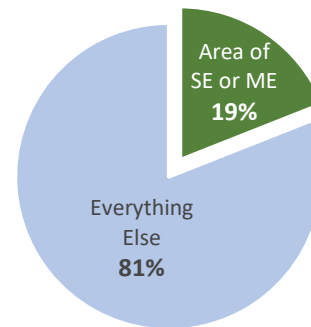
Top 3 Sensitive or Modified Ecosystems in South Fraser by area	
Riparian	4,735 ha
Young Forest	2,164 ha
Wetland	1,952 ha

Ecosystem Quality:

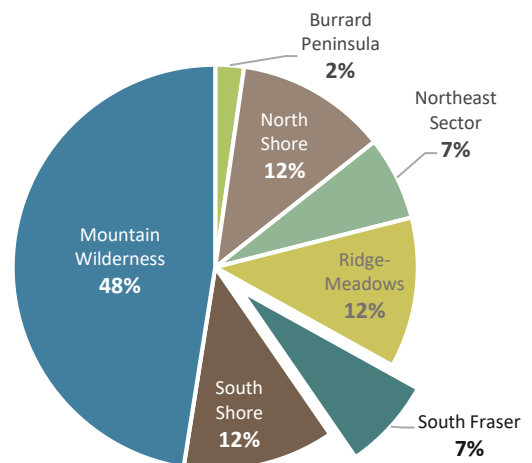
% Ecosystems rated 'Higher Quality' in South Fraser	23.3%
Change in % of Ecosystems rated 'Higher Quality' in South Fraser	-0.4%

Ecosystem Loss:

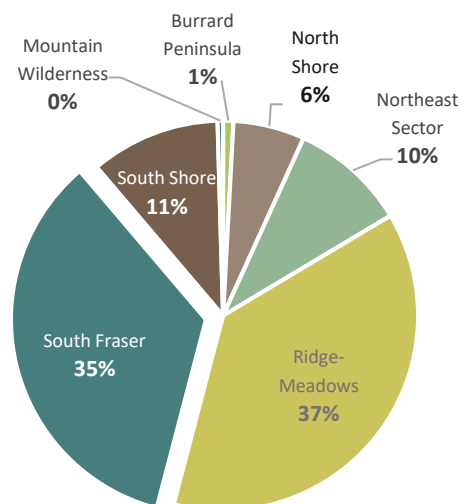
- 568 ha of Sensitive or Modified Ecosystems were lost in South Fraser
- Sensitive or Modified Ecosystems that experienced the most loss in South Fraser:
 - -24.1% of Old Field (270 ha)
 - -7.8% of Young Forest (184 ha)
 - -4.6% of Mature Forest (54 ha)
- Top 3 causes of loss in South Fraser were agriculture, clearing and mowing, and residential development



Proportion of South Fraser that is a Sensitive Ecosystem (SE) or Modified Ecosystem (ME)



Proportion of regional Sensitive or Modified Ecosystems found within the South Fraser Sub-Region



Proportion of regional loss that occurred within the South Fraser Sub-Region

Sensitive Ecosystem Inventory – South Shore Sub-Regional Profile



Ecosystem Profile:

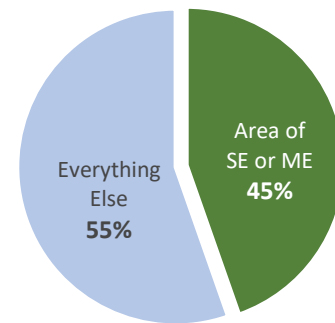
Top 3 Sensitive or Modified Ecosystems in South Shore by area	
Estuarine	7,139 ha
Intertidal	6,559 ha
Riparian	3,661 ha

Ecosystem Quality:

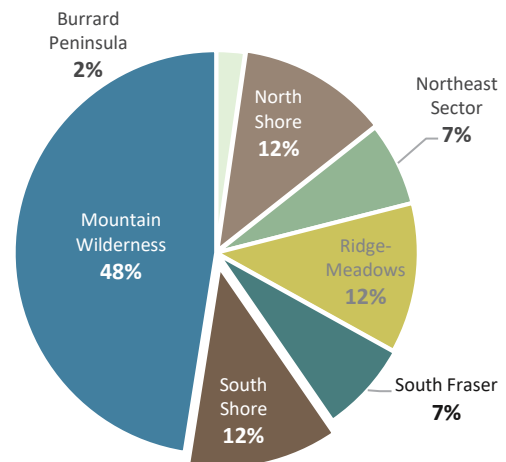
% Ecosystems rated 'Higher Quality' in South Shore	86.2%
Change in % of Ecosystems rated 'Higher Quality' in South Shore	-0.1%

Ecosystem Loss:

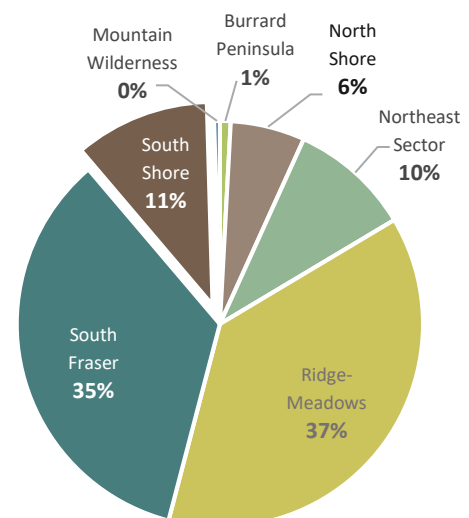
- 176 ha of Sensitive or Modified Ecosystems were lost in South Shore
- Sensitive or Modified Ecosystems that experienced the most loss in South Shore:
 - 18.9% of Old Field (106 ha)
 - 1.8% of Wetland (57 ha)
 - 0.2% of Riparian (8 ha)
- Top 3 causes of loss in South Shore were agriculture, clearing or mowing, and transportation and communication.



Proportion of South Shore that is a Sensitive Ecosystem (SE) or Modified Ecosystem (ME)

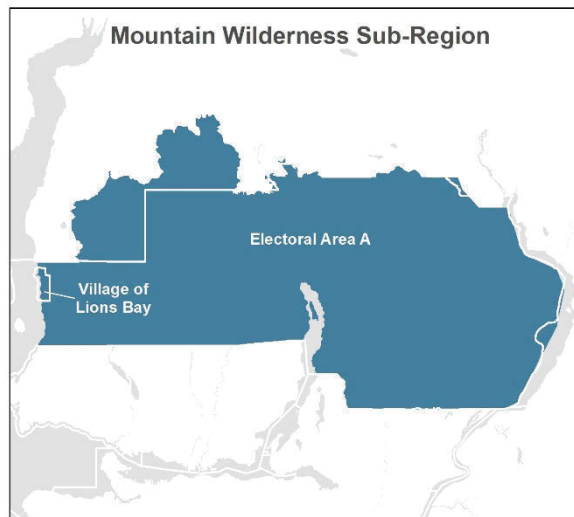


Proportion of regional Sensitive or Modified Ecosystems found within the South Shore Sub-Region



Proportion of regional loss that occurred within the South Shore Sub-Region

Sensitive Ecosystem Inventory – Mountain Wilderness Sub-Regional Profile



Ecosystem Profile:

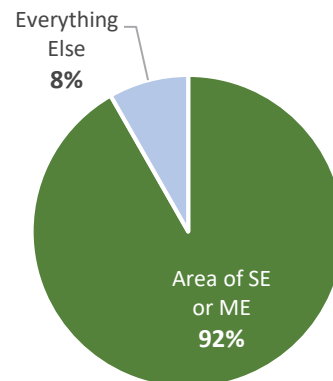
Top 3 Sensitive or Modified Ecosystems in Mountain Wilderness by area	
Old Forest	28,737 ha
Alpine	13,635 ha
Riparian	10,548 ha

Ecosystem Quality:

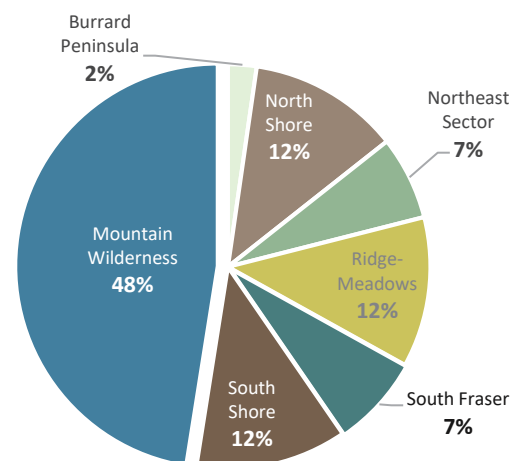
% Ecosystems rated 'Higher Quality' in Mountain Wilderness	98.4%
Change in % of Ecosystems rated 'Higher Quality' in Mountain Wilderness	-0.02%

Ecosystem Loss:

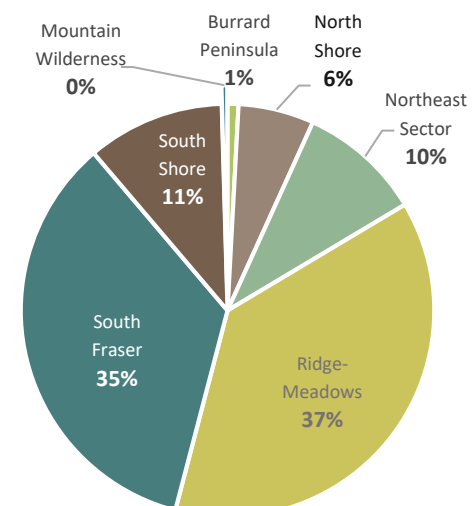
- 7 ha of Sensitive or Modified Ecosystems were lost in Mountain Wilderness
- Sensitive or Modified Ecosystems that experienced the most loss in Mountain Wilderness:
 - 0.1% of Young Forest (3.6 ha)
 - 0.1% of Mature Forest (3 ha)
 - 0.02% of Woodland (0.7 ha)
- The 2 causes of loss in Mountain Wilderness were clearing and mowing, and transportation and communication



Proportion of Mountain Wilderness that is a Sensitive Ecosystem (SE) or Modified Ecosystem (ME)

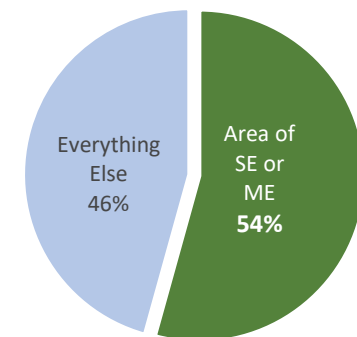
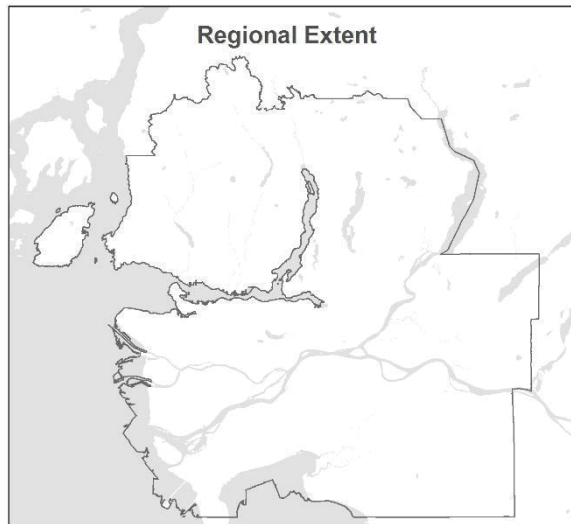


Proportion of regional Sensitive or Modified Ecosystems found within the Mountain Wilderness Sub-Region



Proportion of regional loss that occurred within the Mountain Wilderness Sub-Region

Sensitive Ecosystem Inventory - Regional Profile



Proportion of the region that is a Sensitive Ecosystem (SE) or Modified Ecosystem (ME)

Ecosystem Profile:

Top 3 Sensitive or Modified Ecosystems in the region by area	
Old Forest	34,332 ha
Riparian	30,611 ha
Mature Forest	26,089 ha

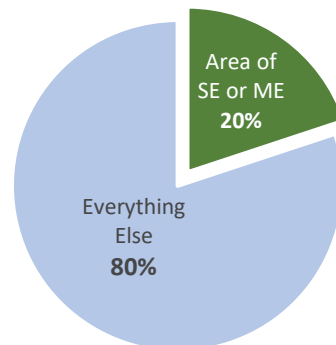
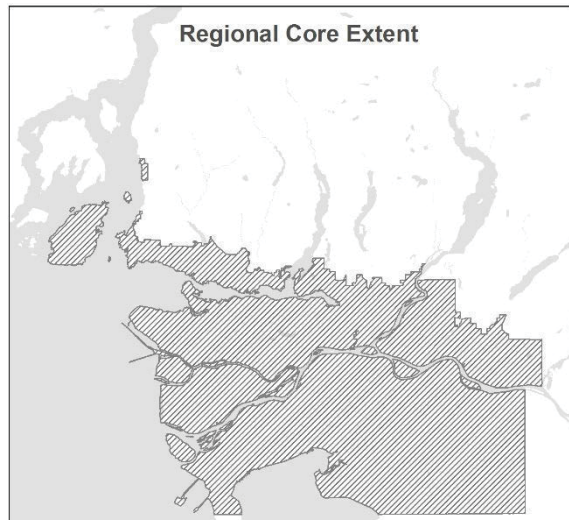
Ecosystem Quality:

% Ecosystems rated 'Higher Quality' in the region	84.7%
Change in % of Ecosystems rated 'Higher Quality' in the region	-0.28%

Ecosystem Loss:

- 1,640 ha of Sensitive or Modified Ecosystems were lost in the region
- Sensitive or Modified Ecosystems that experienced the most loss in the region:
 - -1.9% of Mature Forest (-518 ha)
 - -2.1% of Young Forest (-459 ha)
 - -20% of Old Field (-426 ha)
- Top 3 causes of loss in the region were logging, clearing and mowing, and agriculture

Sensitive Ecosystem Inventory – Regional Core Profile



Proportion of the regional core that is a Sensitive Ecosystem (SE) or Modified Ecosystem (ME)

Ecosystem Profile:

Top 3 Sensitive or Modified Ecosystems in the regional core by area	
Mature Forest	9,614 ha
Riparian	7,902 ha
Wetland	6,780 ha

Ecosystem Quality:

% Ecosystems rated 'Higher Quality' in the regional core	39.1%
Change in % of Ecosystems rated 'Higher Quality' in the regional core	-0.7%

Ecosystem Loss:

- 1,189 ha of Sensitive or Modified Ecosystems were lost in the regional core
- Sensitive or Modified Ecosystems that experienced the most loss in the regional core:
 - -20% of Old Field (-426 ha)
 - -3.1% of Mature Forest (-303 ha)
 - -4.7% of Young Forest (-261 ha)
- Top 3 causes of loss in the regional core were clearing and mowing, agriculture, and residential development