Municipality of North Cowichan
Forestry Advisory Committee
AGENDA

Tuesday, June 30, 2020, 9:00 a.m.
Electronically

Pages

1. CALL TO ORDER

This meeting, though electronic, is open to the public and all representations to Council form part of the public record.

At this time, due to the COVID-19 Pandemic, public access to Council Chambers is not permitted, however, this meeting may be viewed on the District's lived stream webcast at www.northcowichan.ca/agendas.

1.1 Open Meeting Transparency Resolution

Purpose: To comply with subsection 7(6) of Ministerial Order No. M192 by adopting a resolution that provides the rationale as to why a physical space is not being provided for the public to observe the meeting and describe the measures taken to ensure openness, transparency, accessibility and accountability for this meeting.

Recommendation:
That pursuant to Ministerial Order No. M192 and the procedures established by the Municipality of North Cowichan to protect the health and safety of the public and municipal staff while they perform work within the Municipal Hall, the attendance of the public at today's Forestry Advisory Committee meeting cannot be accommodated because of the limitations placed on mass gatherings by the Provincial Health Officer; our inability to provide for adequate physical distancing between members of Council, staff, and the public or to create separate entrance and exits with one-way walkways for the public in Council Chambers; and further that to ensure openness, transparency, accessibility and accountability for this meeting, the Municipality of North Cowichan:

- is livestreaming the meeting to enable the public to hear and see the proceedings;
- has provided notice of today's meeting; and
- has made the meeting agenda, as well as all other relevant documents, available on the municipal website prior to the meeting.

2. APPROVAL OF AGENDA

Recommendation:
That the Committee approve the agenda as circulated [or as amended].

3. ADOPTION OF MINUTES 3 - 9

Recommendation:
That the Committee adopt the minutes of the meeting held June 17, 2019.

4. BUSINESS

4.1 UBC Partnership Group Presentation 10 - 89

Purpose: To receive a presentation from the UBC Partnership Group to provide an overview and update on the Strategic Forest Planning Review and Technical Analysis for the Municipal Forest Reserve.

Recommendation:
That the Forestry Advisory Committee receive the UBC Partnerships overview and presentation for information.

4.2 2019 Annual Forestry Report 90 - 107

Purpose: To review the 2019 Annual Forestry Report prepared by the Municipal Forester.

Recommendation:
That the Forestry Advisory Committee accepts the 2019 Annual Forestry Report as prepared by the Municipal Forester.

4.3 Forester's Regular Report 108 - 125

Purpose: To provide the Forestry Advisory Committee (FAC) members with an update on active items from past meetings and current forestry related matters.

Recommendation:
That the Forestry Advisory Committee receive the Municipal Forester's report for information.

4.4 Setting Regular Bi-Monthly Meetings 126 - 129

Purpose: Discussion regarding the setting of regular meeting dates, times and location for future FAC meetings.

Recommendation:
That the Committee recommends to Council that the Forestry Advisory Committee Terms of Reference be amended to remove the requirement to meet bi-monthly.

5. NEW BUSINESS

6. ADJOURNMENT

Municipality of North Cowichan
Forestry Advisory Committee
MINUTES

June 17, 2019, 9:00 a.m.
Municipal Hall - Council Chambers

Members Present	Councillor Rob Douglas, Chair Cameron Campbell Mark Carter Mechelle Crocker Cedar Elliott Eric Jeklin Jane Kaiser Dave Lindsay Dave Polster
Members Absent	Alan Chatterton
Staff Present	Ted Swabey, Chief Administrative Officer (CAO) Ernie Mansueti, General Manager, Community Services Shaun Mason, Municipal Forester Alyssa Meiner, Information Management Officer Matt O'Halloran, Deputy Corporate Officer Natasha Horsman, Manager, Communications and Public Engagement

1. CALL TO ORDER

There being a quorum present, the Chair called the June 17, 2019 meeting to order at 9:00 a.m.

2. APPROVAL OF AGENDA

It was moved and seconded:
That the Committee approve the June 17, 2019 Forestry Advisory Committee agenda as circulated.

CARRIED

3. ADOPTION OF MINUTES

It was moved and seconded:
That the Committee adopt the minutes of the Forestry Advisory Committee meeting held April 8, 2019.

CARRIED

4. BUSINESS

4.1 Harvest Plan Review- Blow Down on Mount Richards, Osborne Bay Road, Mount Sicker and Mount Prevost

The Committee received an overview of the proposed blow down harvest plans from the Municipal Forester and discussed the following areas:

1. **Mount Richards** - one sensitive ecosystem identified adjacent to one of the proposed harvest areas, no fisheries or watershed issues, one constructed trail. The Committee asked questions or the Municipal Forester regarding:
   - replanting plans – the area is rocky with a south dry facing south slope and the replanting is largely Douglas fir and pine but the Municipal Forester could explore planting pioneering species;
   - notification of neighbours – start with immediately adjacent owners as they are most directly affected, and can also notify additional neighbouring properties if the proposed harvesting is approved by Council. Once approved, the proposed harvest areas will be clearly identified and flagged in the field;
   - sensitive ecosystem mapping – has been done by Madrone with updated information, and the sensitive ecosystem will be avoided. The identified area will be clearly reviewed as part of the harvest pre-work by the successful contractor should the harvesting be approved by Council; and
   - reasons for blow down – dry areas, orientation, root rot scattered throughout.

2. **Mount Richards – Babine Rd** – a lot of root rot in the area, no fisheries, soil issues or sensitive areas. The trail will need to be identified and flagged to prevent public from entering the area. The adjacent property owner is concerned with blow down and risk of further windfall blow down. There is 30m new road that will need to be built which will be de-built after harvesting completion.

   The Committee discussed whether 30m of road is warranted to remove blow down and heard this area is identified as a "bubble" as root rot (dangerous trees) would also be removed. The Committee heard the adjacent resident is worried about the danger of blow down, that it is a concern for safety of those on the trail, and the extensive root rot contributed to the blow down.

   The Committee considered that trails and ecosystems would be nothing if a fire happens and the need to get on with removing fire hazards.

   Member Polster suggested planting Maple trees to increase the pH of the site and change the ecology to reduce root rot.

3. **Osborne Bay Road** – Municipally-owned lands outside the forest reserve. Concern from a neighbour who has requested blow down and timber be removed. No sensitive ecosystems identified. Two options are presented in the Municipal Forester's report: option 1 includes 500m^3 blow down only, while option 2 includes blow down and also timber behind the neighbour's property as requested by the adjacent landowner.

Member Campbell questioned whether option 1 was consistent with Council's decision not to award new contracts beyond blow down, however, the Committee decided to proceed with option 2 as this was at the request of the adjacent land owner and that it had been previously planned and set up to do in the past but did not happen due to weather conditions.

4. **Mount Sicker** – no fisheries, no watershed issues, no sensitive ecosystems, no identified trails but would put up signage and adjacent landowners notified.

5. **Mount Prevost** – areas with sensitive soils that will be avoided by the contractor should the proposed harvest areas be approved by Council. The proposed harvest area is partially adjacent to the main parking area to access the Cairn. The Committee heard roads would be properly blocked off or flaggers in place to ensure safety during the work.

The Committee flagged the importance of considering safety and requests from neighbours to remove hazardous trees and potential liability if hazard trees are not addressed. The Committee also heard that this is the initial review stage for the blowdown areas. Should they be approved by Council, further field review of small patch areas will be conducted by staff and forestry engineers to determine if salvage is the best way to mitigate fire hazard.

It was moved and seconded:
That the Committee recommend that Council direct staff to proceed with Option 2 for Osborne Bay Road, as presented in the Municipal Forester's June 17, 2019 report.

CARRIED

It was moved and seconded:
That the Forestry Advisory Committee endorse the proposed harvest plans as presented by the Municipal Forester, including Option 2 for Osborne Bay Road;

And That the Committee recommend that Council direct staff to proceed with tendering contracts to complete the blow down harvest work as outlined in the Municipal Forester's June 17, 2019 report.

CARRIED

4.2 Harvest Plan Summary - Mount Tzouhalem Harvest Summary Update

The Committee received an update from the Municipal Forester on the Environmental Consultant's assessment and recommendations for the area of the approved Mount Tzouhalem harvest summary containing an identified sensitive ecosystem, in this case a riparian area (wetland swamp). The Environmental Consultant's assessment provided recommendations that have now been included in the tender for work to this area.

The Committee heard this is a ground-based system (seasonal wet area), machines would stay out of the riparian area, with trees lifted over the area. The Committee suggested that timing of this work be considered to minimize impact on recreational users, with work beginning when possible to complete without interruption, and to consider righting stumps to mitigate any disturbance.

It was moved and seconded:
That the Committee receive the Municipal Forester's June 17, 2019 report for information.

CARRIED

4.3 Maple Mountain Blow Down Harvest in Riparian Area

The Committee received an update from the Municipal Forester on the Environmental Consultant's assessment and recommendations for the area of the approved Maple Mountain harvest summary containing a riparian area. The Environmental Consultant provided recommendations that will be included as an addendum in the contracted awarded for work to this area. Overlap with riparian area off the main road will incorporate righting of stumps adjacent to the creek side.

It was moved and seconded:
That the Committee receive the Municipal Forester's June 17, 2019 report for information.

CARRIED

4.4 Annual Forestry Report

The Committee heard from the Municipal Forester that the annual report has been provided to the Committee and Council for review since 1987 and describes annual Municipal Forest Reserve (MFR) metrics and activities consistent with the MFR management model currently under review. Highlights include harvesting summary (25.1 ha), gross log sales ($1,363,680), net revenue ($977,148) and new profit of $261,079 taking into account the $122,314 paid by North Cowichan for the 5.9 ha wildfire on Maple Mountain in August 2018. In 2018 North Cowichan planted over 34,000 trees (at a cost of $1.20 per tree), provided scholarship and bursaries, firewood donations, and tours of the MFR and seedling nursery.

The Committee heard the Integrated Resource Management is a much smaller budget item in 2019.

It was moved and seconded:
That the Committee receive the Municipal Forester's 2018 Annual Report for information.

CARRIED

The Committee took a short recess at 10:10 am and resumed at 10:15 a.m.

4.5 DELEGATION: UBC/Conservation partnership group – draft proposal for collaboration with North Cowichan in an operational review of the Municipal Forest Reserve

The Committee heard from the General Manager of Community Services who welcomed Dr. Arcese, Dr. Seely, and Dr. Griess from UBC (collectively the "UBC Delegation") on behalf of the Committee.

The Committee received a presentation from the UBC Delegation "Forests to Sustain Economies and People" which included information on the Coastal Douglas-fir Forests of

the Georgia Basin, and some high level options for North Cowichan to consider in an operational review of the MFR.

These options included:

- Broader consultation process with community (baseline survey of perceptions and knowledge, local working group of experts and non-experts, community learning workshops on specific themes and alternative scenarios, exploring opportunities for co-management or volunteer stewardship/monitoring);
- Planning that includes modelling or visioning of future conditions (i.e. fire risk management, climate vulnerabilities, visual impacts of harvesting, revenues, etc.) and highest and best uses through zoning and management plan;
- Consider restoring local watersheds and maintaining water quality; and
- Consider alternatives to current revenue model (carbon storage and sequestration) i.e. Algonquin Provincial Park (Ontario) model – feeds 7 mills through small patch cutting and value biodiversity.

Goals for the UBC Delegation included:

- Learning about North Cowichan's future goals for the management of MFR lands;
- Offering assistance in developing management plans most likely to maximize the value of forests to the community;
- Exploring scenarios capable of maintaining aesthetic, amenity and biodiversity values of MFR lands while generating annual revenue for the community; and
- Working on strategic level (long term) sustainable forest management planning.

The UBC Delegation proposes using landscape level planning tools (model) to aid decision making and accommodate interests of multiple stakeholders (recreationalists, water, foresters). A model, using database layers (i.e. forest attributes, water, habitat) would help with understanding and future projections. A similar model was developed for the Williams Lake area. The model assumes a periodic harvest value and allow for visualization of impacts over time.

Outputs from a model include harvest volumes, area managed using partial cutting approaches, assortments (log sizes and quality), area of a specific desired habitat over time, area of a specific desired forest type over time, area managed for carbon, roads, and associated economies. The Committee heard that knowing what the forest looks like allows for informed discussion with stakeholders impacted by forestry activities and uses of land that may not be currently considered (i.e. roads for recreational opportunities like mountain-biking, hiking, dirt-biking, access for fishing).

The Committee also heard about opportunities of developing a forest carbon project in the MFR (with Dr. Seely and 3GreenTree Consulting). Basics of carbon storage in forest ecosystems include trees storing carbon as biomass and stored as organic matter in soil. One m^3 of harvest is roughly equal to a loss of one ton of CO2 to the atmosphere, and this is used to determine value of carbon offsets.

A forest carbon project is the "deliberate management of a forest land base to enhance and protect carbon stocks" and typically requires a 30 year commitment to the process.

This may include harvesting. Carbon offsets are calculated by comparing project to baseline. The project must be carefully quantified and verified (i.e. would not have happened unless deliberately managed for carbon). There are often benefits for other ecosystem services (monetize and generate revenue from forest and ecosystem services).

The Committee heard there are initial costs to developing the project development document, which must be review by 3rd party auditors and submitted for validation under the standard. Carbon offsets are purchased by progressive corporate and non-profit companies. The value of carbon offsets range from $10-40 per ton with the lower value generating less revenue than harvesting but the higher price potentially generating more.

The Committee asked questions of the UBC Delegation and heard an older forest stock enhances carbon management and there is a time after harvest that results in loss for several decades. The Committee questioned the expense of getting the project going and heard this is approximately $65,000 to prepare a project development document, plus an additional cost to have this verified by auditors. The Committee also questioned the ethical aspect of selling carbon offsets to companies to offset their own GHG emissions and heard there is value to water, biodiversity, and carbon is one way to monetize ecosystem services.

The Committee asked about the need for "additionally" and heard this does not include regulatory requirements. A different approach must be used to enhance carbon storage on the landscape than would have been used with the baseline scenario.

The CAO asked about timelines in light of public frustration the process is taking so long. The Committee heard that the first phase could be done relatively quickly at a cost of $10,000 - $15,000, but this is a slower process when dealing with the University and Post-Graduate Students, and the CRD could be contacted for further information on timelines they used.

The Committee heard that Council will likely be considering the forestry engagement process at a July 8th Special meeting, and this would potentially inform the scenarios that would feed into that engagement process.

The Committee thanked the UBC Delegation for their presentation.

The Committee then heard from the CAO that the UBC proposal is extremely high level and he would suggest inviting the UBC Delegation to do a seminar with Council and that more clarity and information is required to determine how best to engage the community and proceed.

It was moved and seconded:
That the Committee recommend that the staff report on potential implications associated with the UBC/Conservation partnership group proposal include input provided by the Forestry Advisory Committee at the June 17, 2019 meeting.

CARRIED

4.6 BC Wildfire Service Field Tour

The Committee heard from the Municipal Forester regarding a tour of the Stoney Hill and Maple Mountain blow down. The tour agreed blow down was a fire risk, and highlighted strategies to reduce the fire risk.

It was moved and seconded:
That the Forestry Advisory Committee receive the Municipal Forester's June 17, 2019 report for information.

CARRIED

4.7 Forester Report

The Committee heard from the Municipal Forester that staff have started assessments that will be used to help build layers for scenarios as discussed by the UBC delegation. The Timber Supply Analysis is ongoing with the Forest Inventory firm on evaluating the current Provincial VRI data. The initial result is that the data is well delineated with a few suggestions to improve the data which is anticipated to be completed early July.

The Committee also heard that the visual impact assessment photography has been taken from the assessed viewpoints and the contractor is working on assembling the photos, reviewing field notes and working on the landscape unit information. A draft sensitive ecosystem assessment for Stoney Hill draft is being reviewed by staff, work has begun on Mount Prevost, blow down Salvage is ongoing on Maple Mountain with staff monitoring the fire hazard rating daily, and Council and the Committee received a tour of the MFR.

4.8 Terms of Reference Review

The Committee Chair highlighted his concerns with how broad the Committee Terms of Reference are for a technical committee, perhaps placing too much responsibility on the Committee. The Committee heard that they have an important role to play and a review of the Terms of Reference may be appropriate with more time to discuss.

It was moved and seconded:
That the Committee postpone discussion of the Committee Terms of Reference until the next Committee meeting.

CARRIED

5. NEW BUSINESS

None.

6. ADJOURNMENT

It was moved and seconded:
That the June 17, 2019 Forestry Advisory Committee meeting be adjourned at 11:43 a.m.

CARRIED

_____ _____

Signed by Chair Certified by Recording Secretary

UBC Strategic Forest Planning Review and Technical Analysis:
North Cowichan Municipal Forest Reserve

Drs. Brad Seely & Clive Welham
3GreenTree Ecosystem Services Ltd.
& Faculty of Forestry, UBC

Dr. Peter Arcese, Prof./FRBC Chair
Forest & Conservation Sciences, UBC

Dr. Stephen Sheppard, Prof.
Dr. Verena Griess, Asst. Prof.
Forest Resources Management, UBC

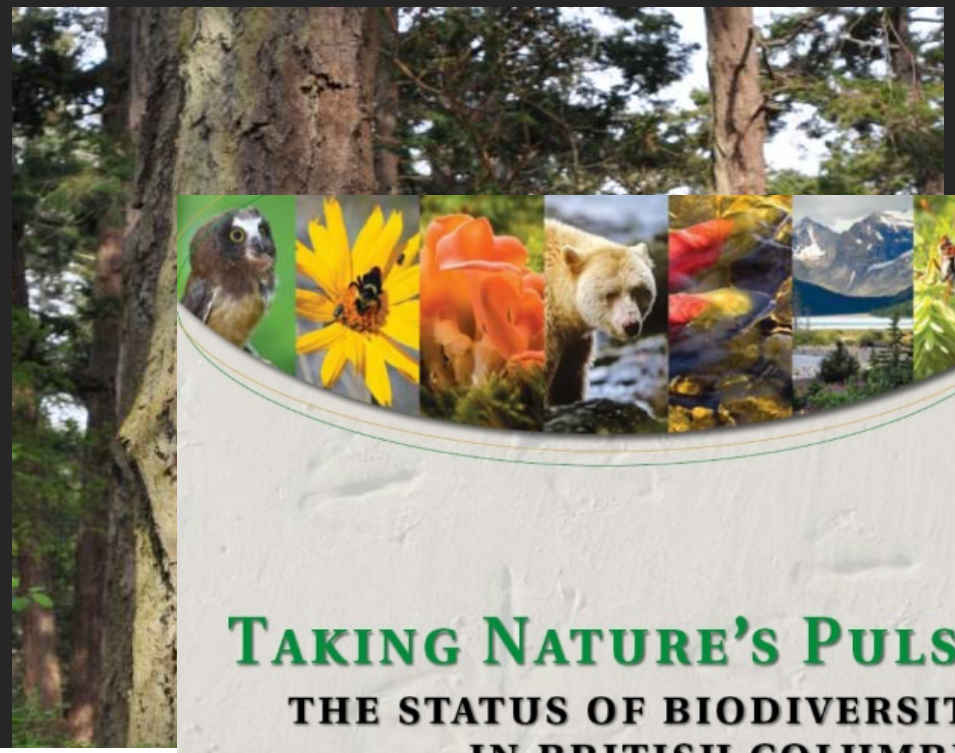
Goals & Objectives

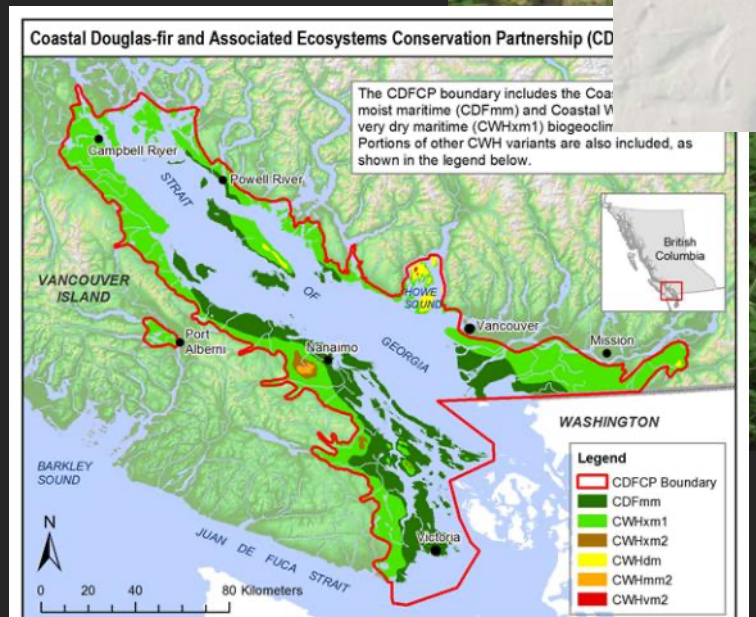
1. Review past management activities & regional context
2. Develop spatial data resources
3. Understanding management goals and evaluating outcomes
4. Multi-objective scenario analysis
5. Assess feasibility of developing a C project
6. Support for development of forest management plans

Regional Context:

Coastal Douglas-fir Forests of the Georgia Basin

- 49% Converted to Human Use
- < 3% Pre-settlement Forest Intact
- > 80% Privately-owned
- >153 Species At Risk
- Most Imperiled Ecosystem in BC





CDFCP

COASTAL DOUGLAS-FIR & ASSOCIATED ECOSYSTEMS CONSERVATION PARTNERSHIP

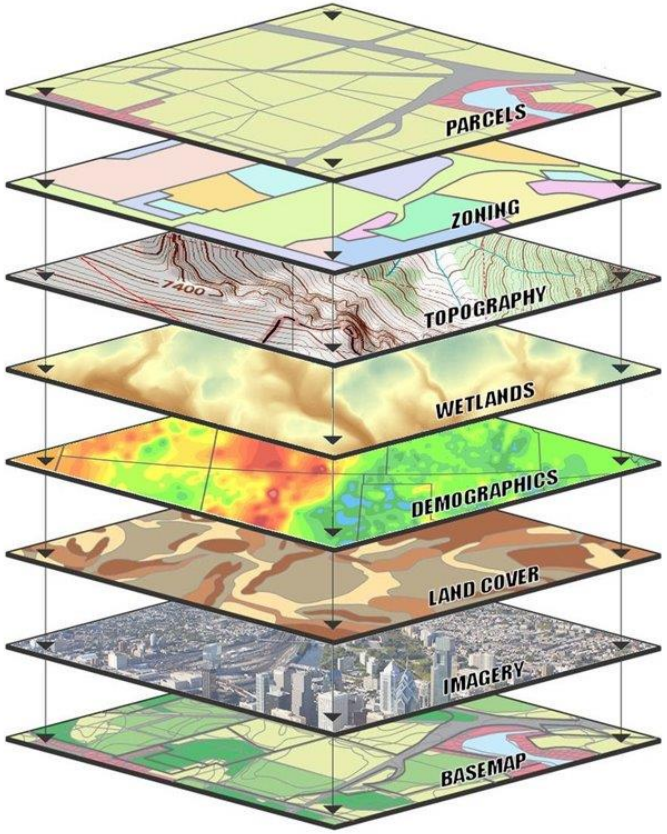
Evaluation and Development of Spatial Data Resources

Mapping Key Forest Resources

- Ownership boundary layers
- Forest vegetation mapping (stratified by tree species & stand age)
- Past management (harvest blocks)

- Streams and water bodies
- Important watersheds
- Sensitive ecosystems and habitats

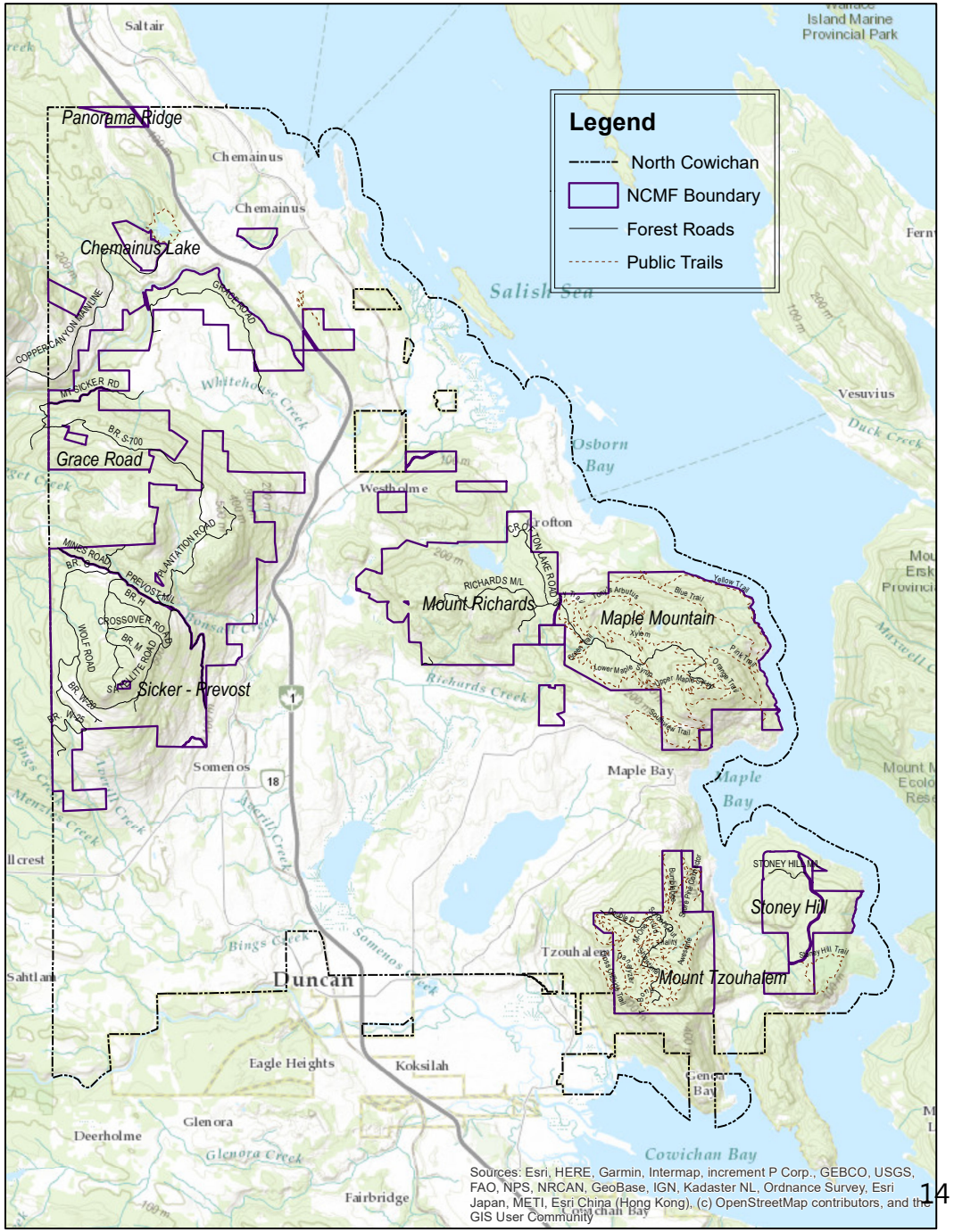
- Visually sensitive areas
- Roads and trails
- Protected and Culturally important areas



Evaluation and Development of Spatial Data Resources

Location of North Cowichan Municipal Forest Reserve

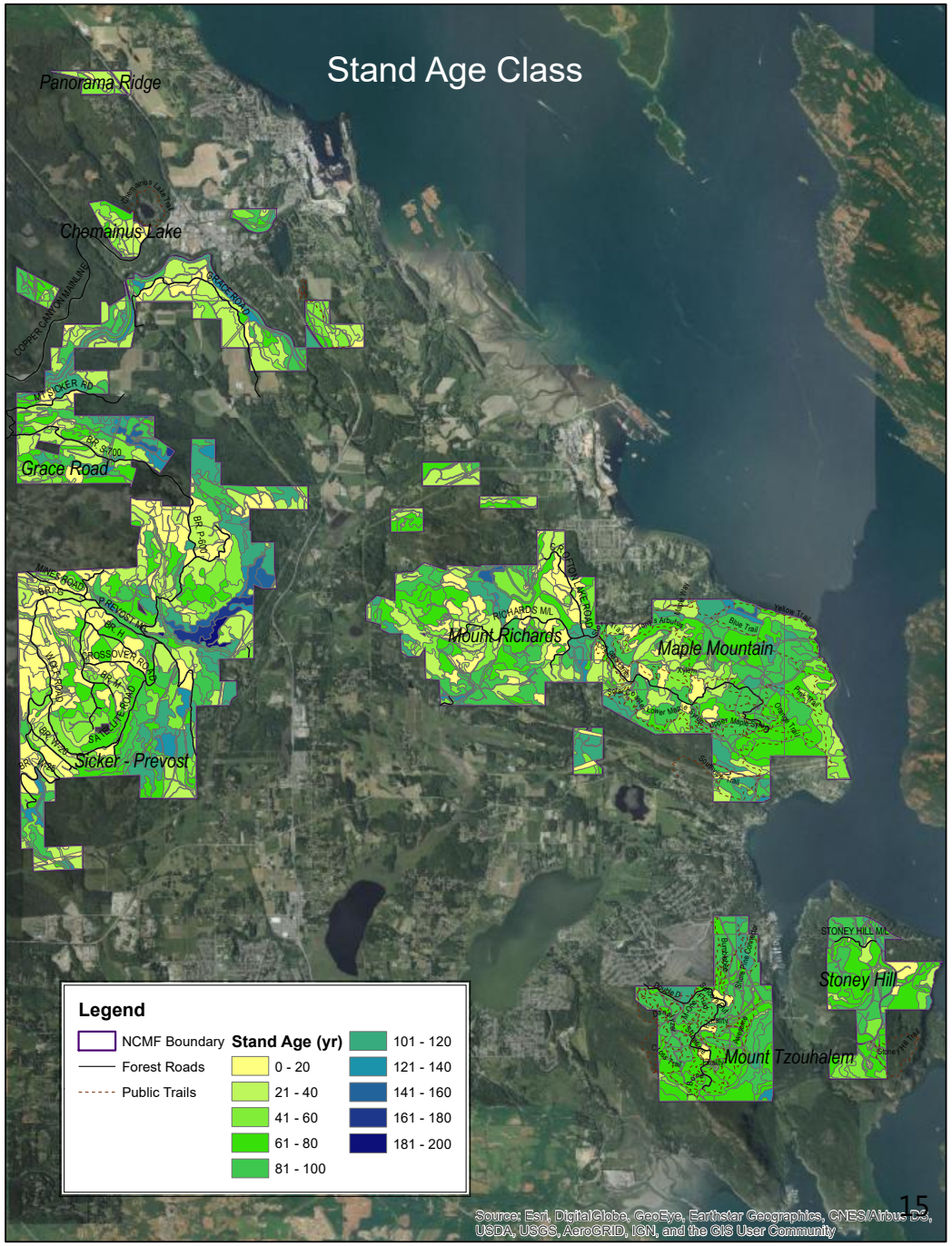
- Consists of 6 main holdings around local mountains
- ~ 5,470 ha
- Multi-objective management
- Annual logging allowance of 20,000 m^3 per year



Evaluation and Development of Spatial Data Resources

Forest Vegetation Mapping

- Stand Age Class
- Age correlated with many stand features
  - Harvestable volume
  - Stand structure
  - Biomass and Carbon
  - Biodiversity

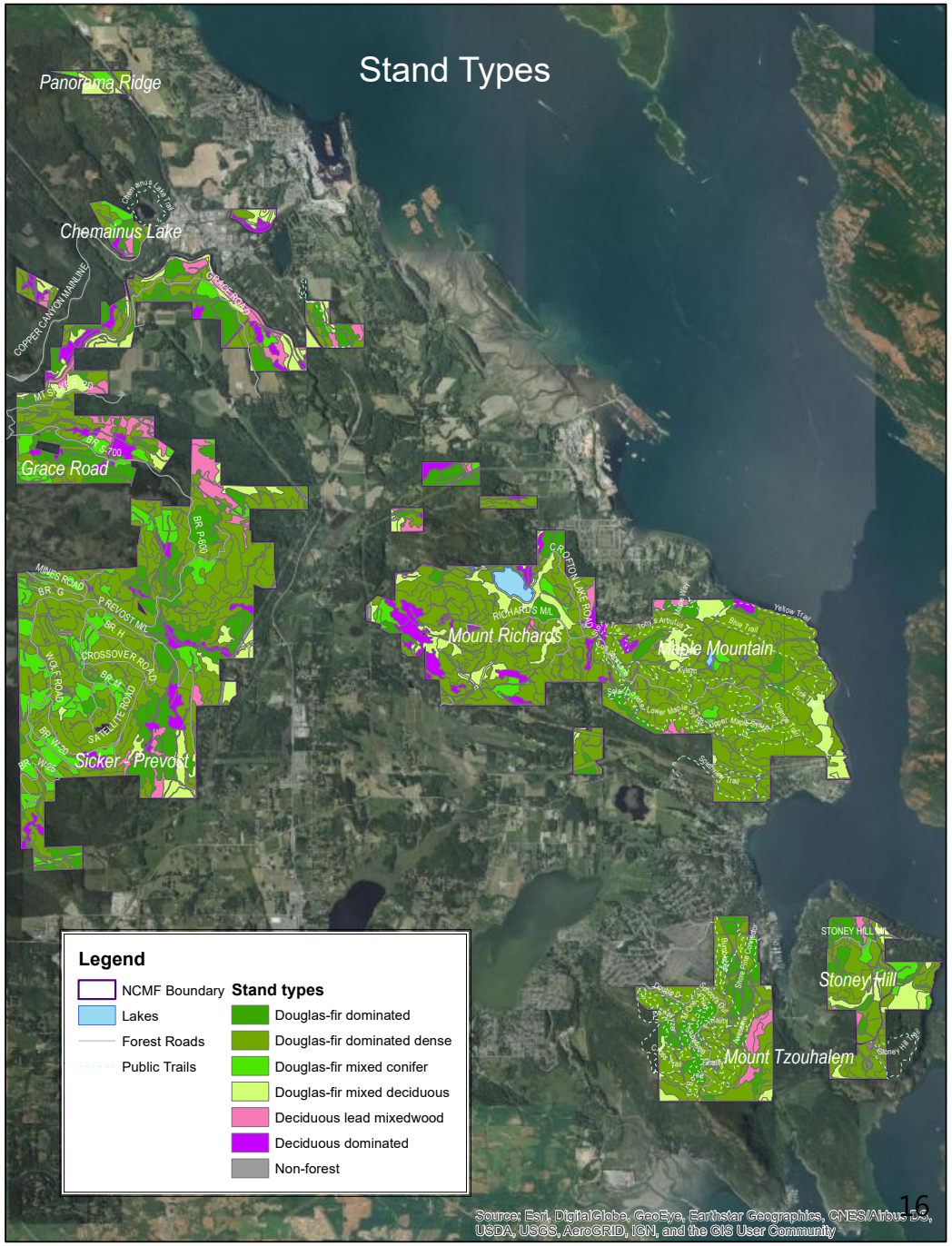


Evaluation and Development of Spatial Data Resources

Forest Vegetation Mapping

- Stand Age Class
- Age correlated with many stand features
  - Harvestable volume
  - Stand structure
  - Biomass and Carbon
  - Biodiversity

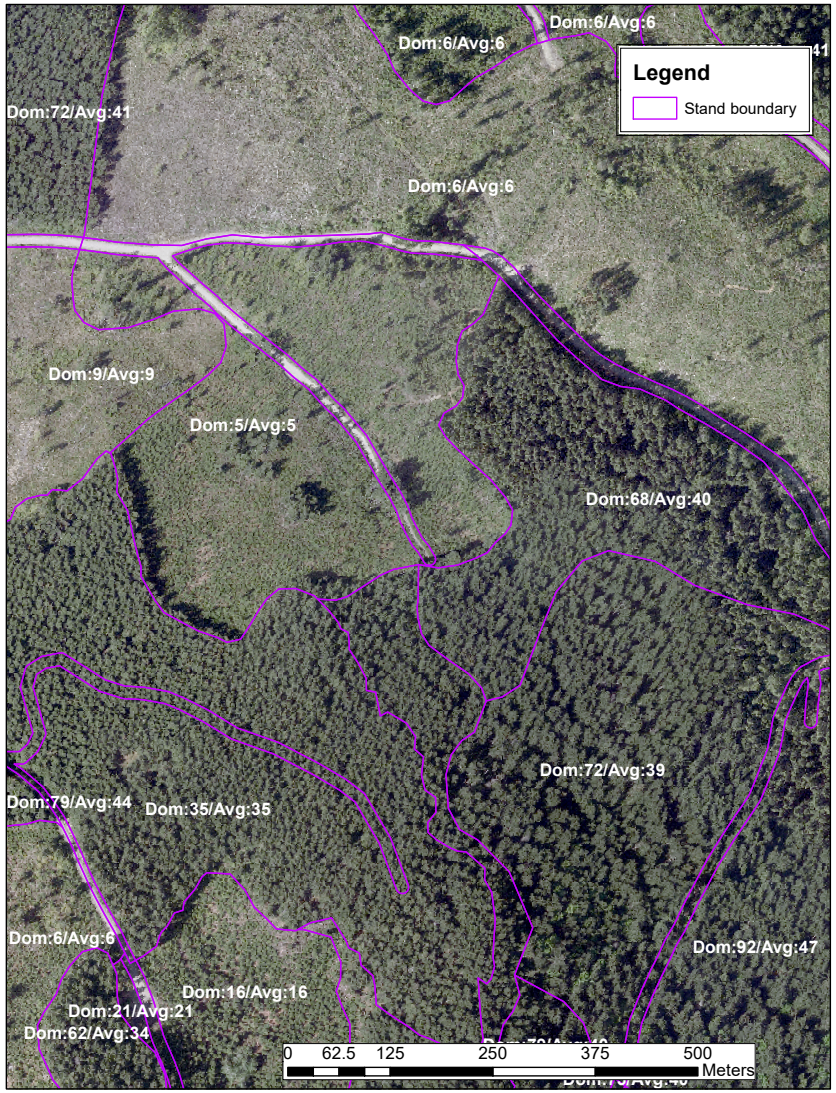
- Stand Types (species groups)

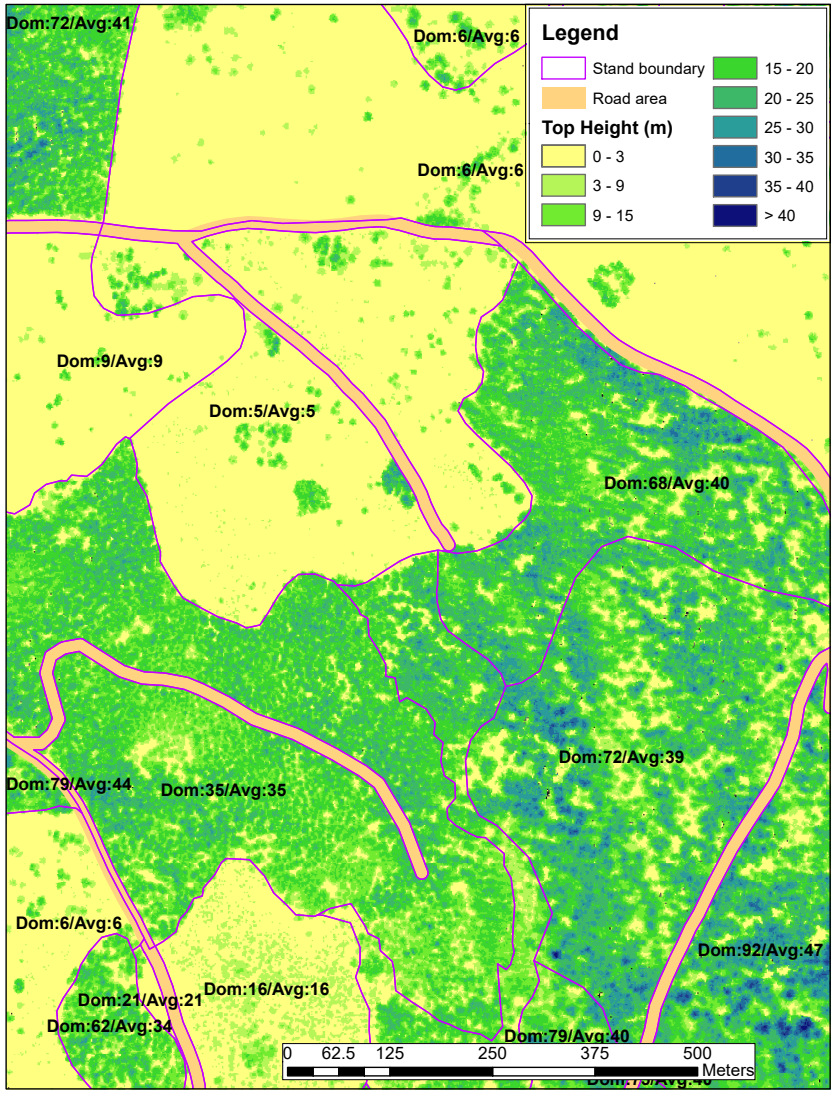


Evaluation and Development of Spatial Data Resources

Forest Vegetation Mapping

- Methods for verifying forest cover and estimating age
  - High resolution orthophotos
  - Laser-measured canopy height
  - Tree height is a good predictor of age





Understanding Management Goals & Evaluating Outcomes

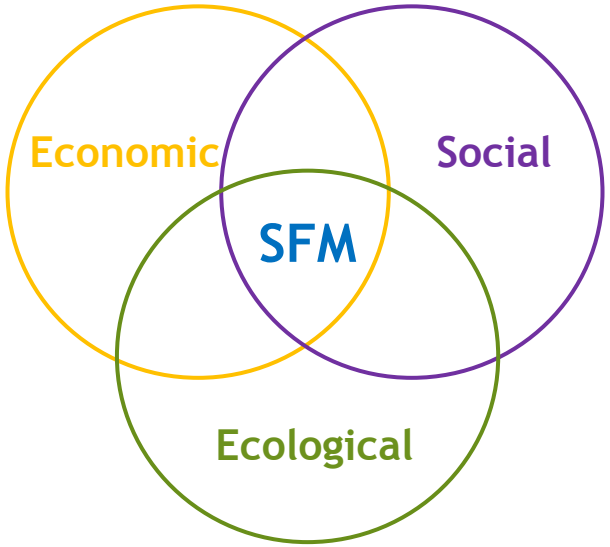
Criteria and Indicators

- Criteria used to define specific services and values associated with forest resource
- Indicators used to evaluate degree to which specific criteria have been achieved

Public Engagement

- Foster a deeper understanding of local forests
- Which criteria area most important?
- How should criteria be weighted?
- What kinds of management options should be examined?

Sustainable Forest Management (SFM)



Understanding Management Goals & Evaluating Outcomes

Draft Set of Criteria and Indicators: Ecological

Criterion	Indicator
1.1 Sensitive Ecosystems	1.1.1 Area of sensitive ecosystems (SEI) impacted by harvest (ha or %) 1.1.2 Condition of woodland ecosystems (degree of tree encroachment) 1.1.3 Degree of disturbance in riparian areas (%)
1.2 Protection/Enhancement of Mature & Old Forest	1.2.1 Area with mature and old forest features (ha or %)
1.3 Bird habitat conservation	1.3.1 Quantification of bird habitat by species or groups (ha)
1.4 Ecosystem Carbon Storage / Emissions	1.4.1 Total ecosystem C storage within the Municipal Forest (MT C) 1.4.2 Quantification of net CO2 emissions (reductions) associated with forest management (t CO2e)
1.5 Water Quality	1.5.1 Total disturbed area in key watersheds (ha or %)
1.6 Regional Habitat Connectivity	1.6.1 Least cost pathway analysis for different habitat types incorporating adjacent conservation areas

Understanding Management Goals & Evaluating Outcomes

Draft Set of Criteria and Indicators: Economic

Criterion	Indicator
2.1 Timber Revenue	2.1.1 Total annual harvested volume (m3) 2.1.2 Estimated annual revenue per area harvested based on species and piece size ($/ha) 2.1.3 Estimated net revenue after accounting for expenses ($)
2.2 Timber Employment	2.2.1 Total annual employment hours associated with harvesting, sliviculture and processing (hr)
2.3 Carbon Revenue	2.3.1 Estimated annual revenue from C offset sales ($)
2.4 Carbon Employment	2.4.1 Total annual employment hours associated with project mgmt (hr)
2.5 Recreation Revenue	2.5.1 Estimated annual revenue from recreation ($)
2.6 Recreation Employment	2.6.1 Total annual employment hours associated with recreation activities (hr)

Understanding Management Goals & Evaluating Outcomes

Draft Set of Criteria and Indicators: Social

Criterion	Indicator
3.1 Visual Quality	3.1.1 Degree to which visual quality objectives are met (%)
3.2 Recreation Opportunity	3.2.1 Area in each of the ROS Classes (ha)
3.3. Trail Access	3.3.1 Km of maintained trails
3.4 Fire Risk	3.4.1 Area with different fire risk rankings (%)
3.5 Culturally Sensitive Areas	3.5.1 Degree to which culturally sensitive areas impacted by harvest (ha or %)
3.6 Other?	

Multi-objective Scenario Analysis

Modelling Tools

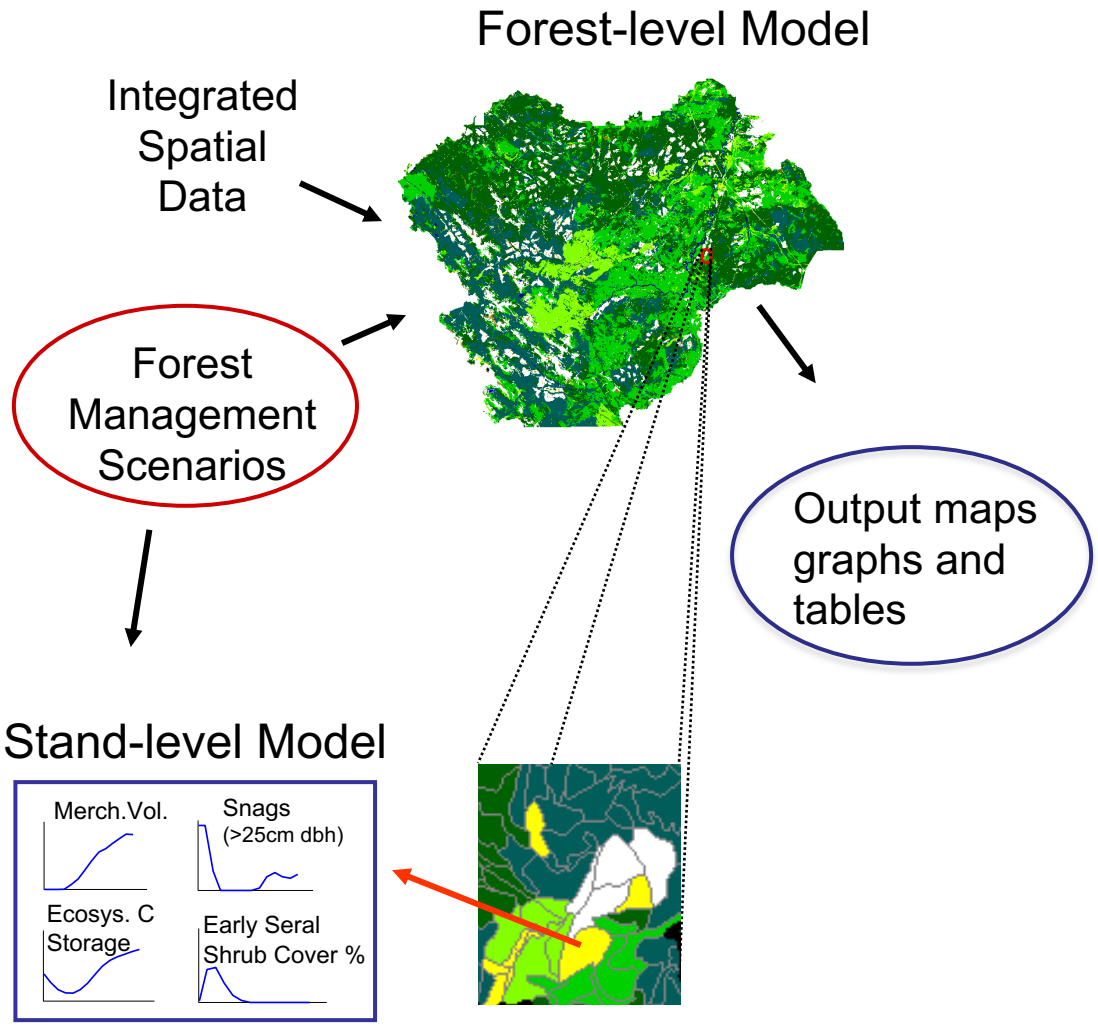
- Spatially explicit forest-level model
- Stand-level model

Scenarios

- Historical harvesting rates
- Reduced harvesting (C project)
- Others to be determined

Output

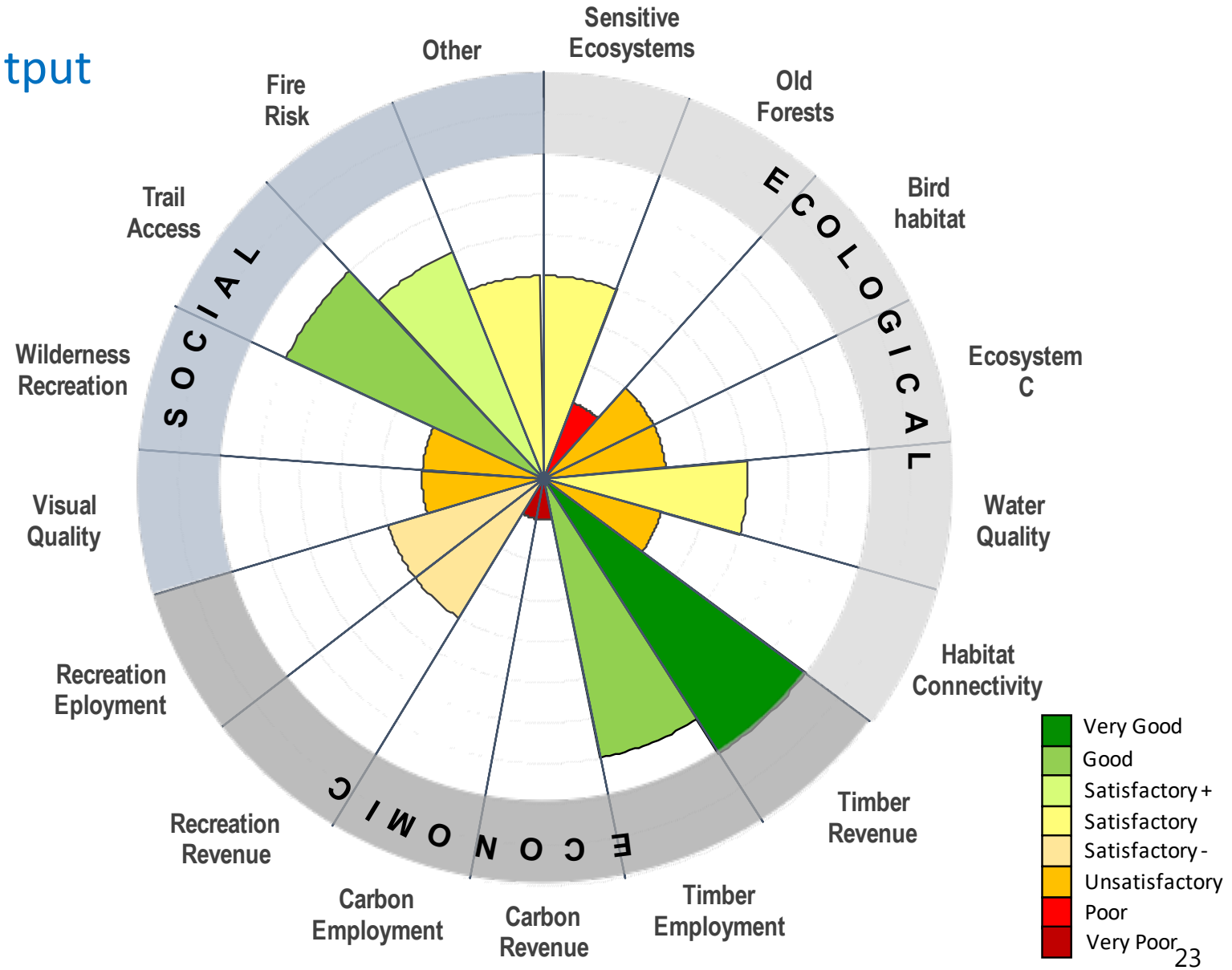
- Wide variety of descriptive variables at the stand and landscape level



Multi-objective Scenario Analysis

Example of Summarized Model Output

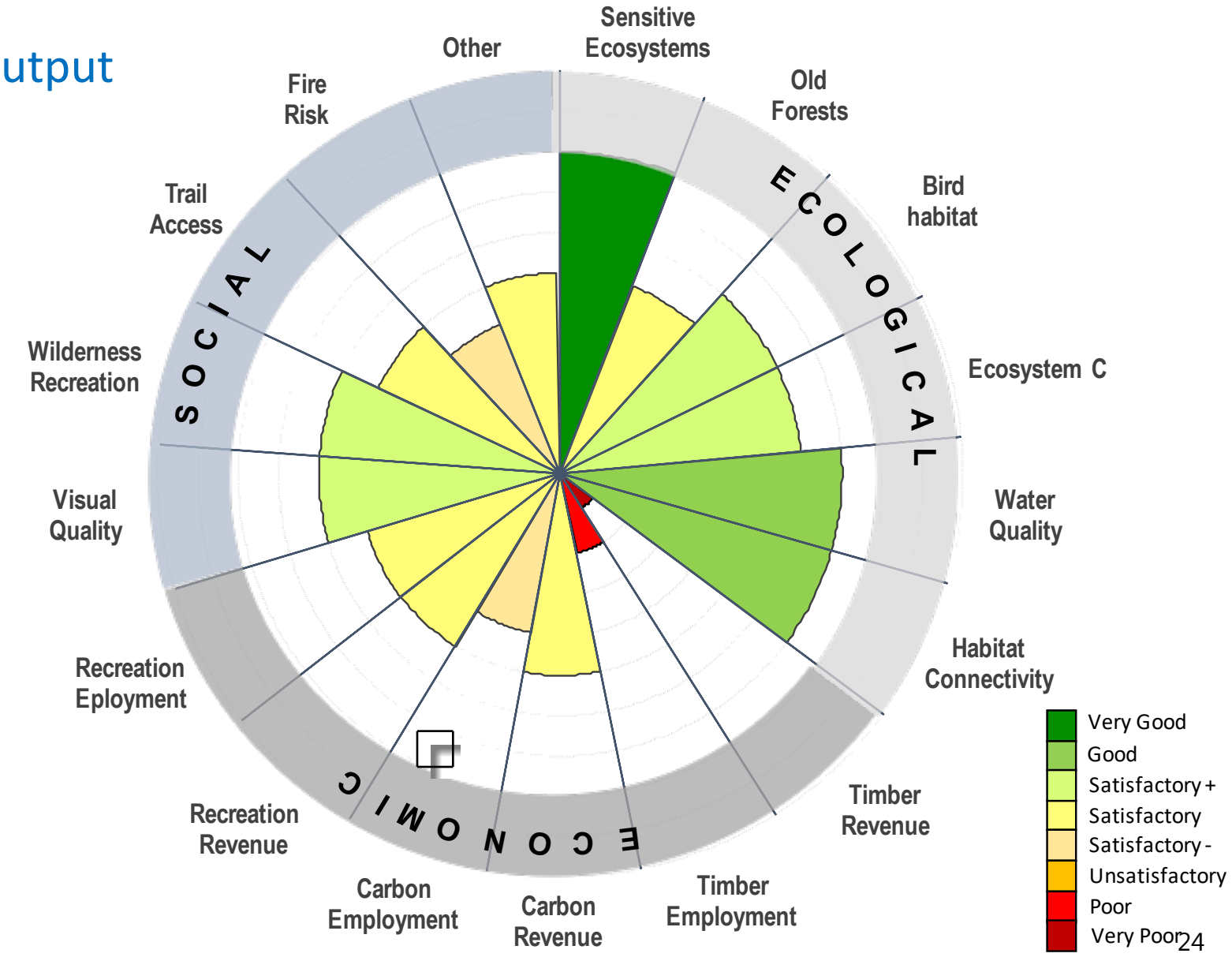
Hypothetical scenario with a focus on Maximizing Harvesting



Multi-objective Scenario Analysis

Example of Summarized Model Output

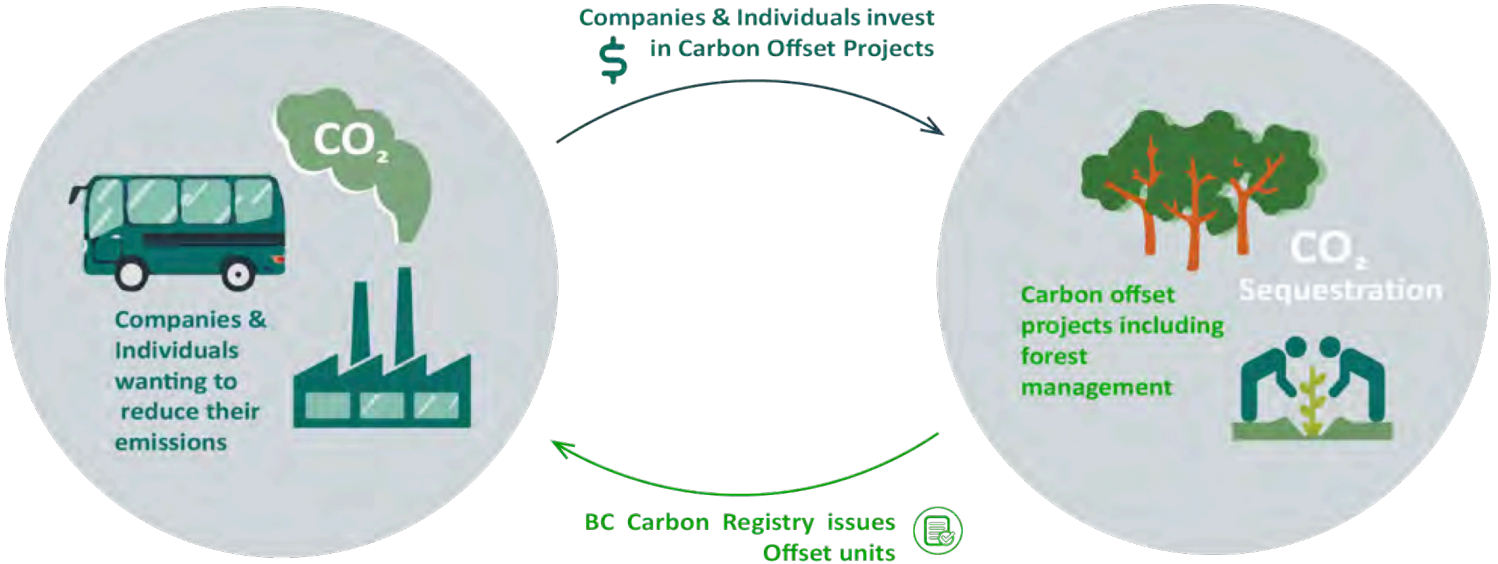
Hypothetical scenario with a focus on Maximizing Conservation



Assess feasibility of developing a C Project on the NCMF

What is a Forest Carbon Project?

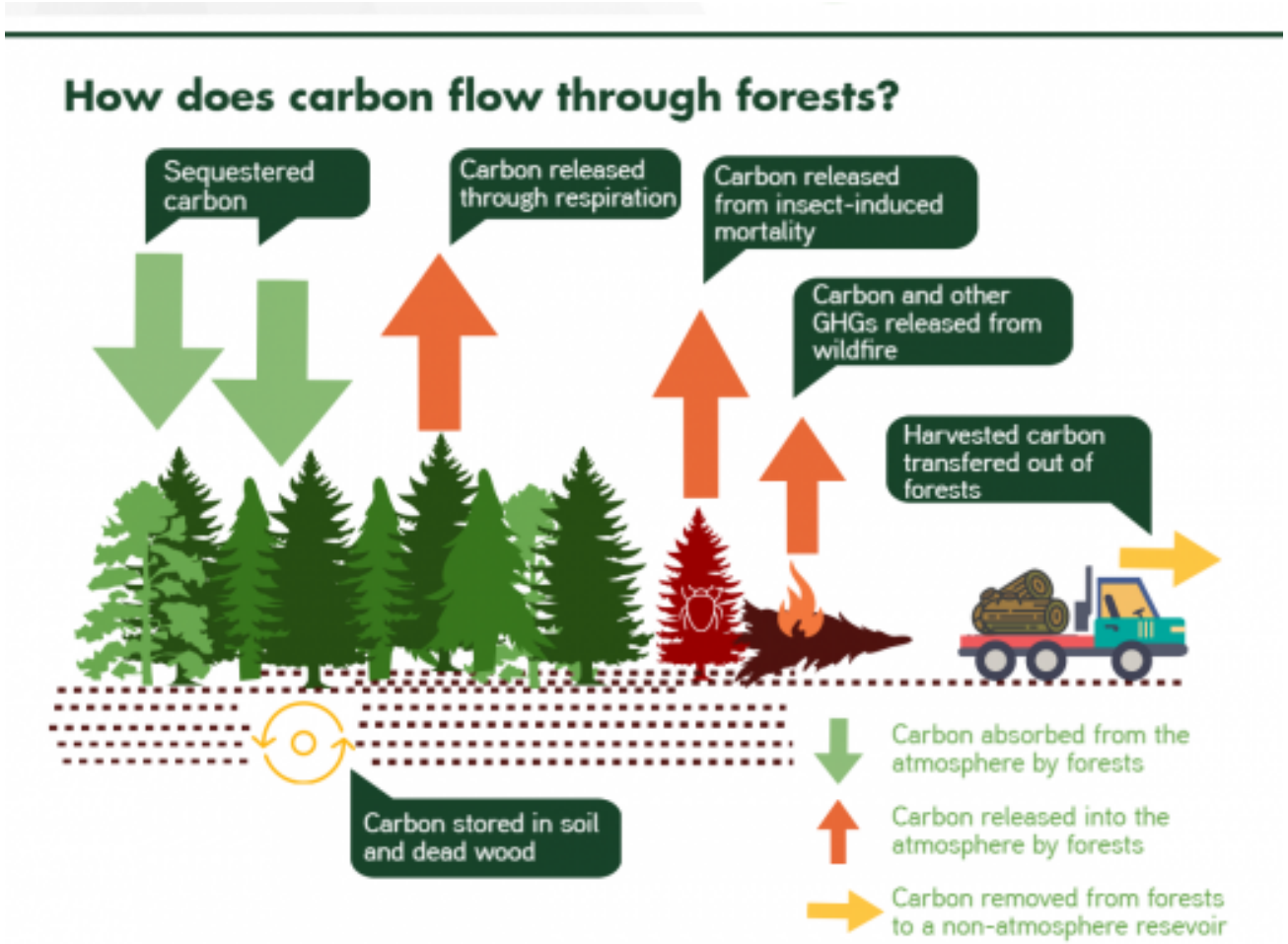
- **Deliberate** management of a forest land base to enhance and protect carbon stocks
- Must be carefully quantified & verified
- Verified offsets sold to buyers
- Often has broad benefits for ecosystem services



Assess feasibility of developing a C Project on the NCMF

Pilot Study

- Review spatial inventory data
- Evaluate key components & timelines
- Estimate costs and revenues
- Explore options for funding & identify potential buyers
- Prepare report



< Image credit: Pacific Institute for Climate Solutions >

Suport for Development of Forest Management Plans

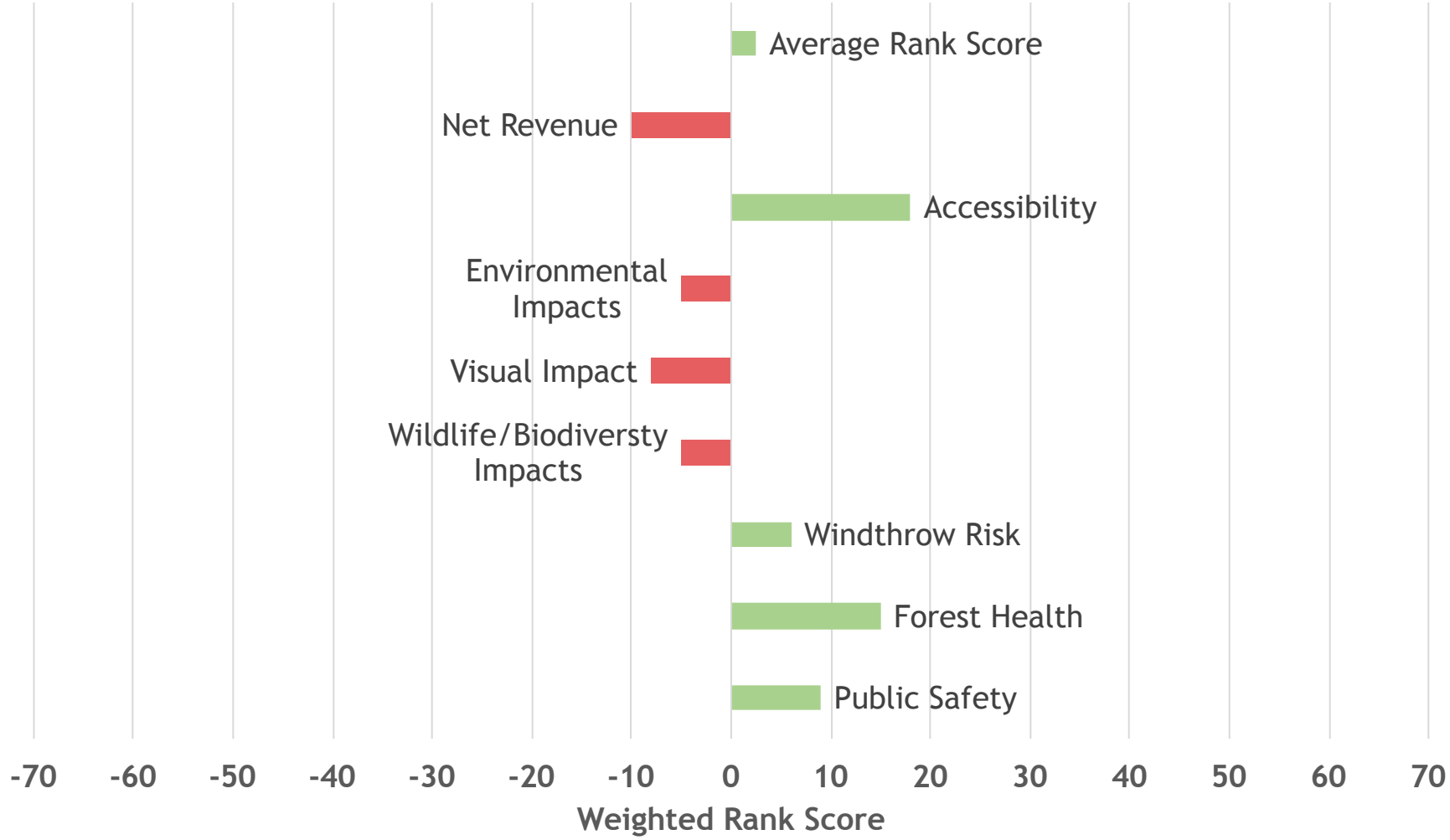
Project Outputs

- Carbon project feasibility report
- Scenario Analysis Reports
- Development of Decision-Support Tools
  - e.g. assessing merits of windthrow salavage operations
  - Preparation of forest planning tools
- Support for the establishment of potential demonstration projects
  - Windthrow salvage (and leave areas)
  - Woodlands restoration
  - Firesmart fuel reduction treatments

Suport for Development of Forest Management Plans

Windthrow Salvage DST example

- Consequence assessment
- Rank calculation
- Weighting
- Positive values favour logging



3GreenTree was engaged to undertake a feasibility analysis of the Municipal Forest Reserve as the basis for a carbon project.

Objectives were to determine:

1. Would it meet the requirements of one or more, internationally recognized standards;
2. Risks to project development or operations; and
3. Estimate the carbon credits and financial returns under different potential management scenarios.

The essence of a carbon credit project:

Carbon credits = A: Emissions of CO_2e in the baseline case
- B: Emissions of CO_2e in the project case

- Carbon credits are generated when B is less than A; the amount of credits is the difference between A and B

- One carbon credit equals one metric ton of carbon dioxide equivalent (CO_2e)

- **Baseline** case: a narrative of the annual emissions that would likely have occurred, now and in the future, if the carbon project had not been undertaken. Often referred to as the counterfactual argument.

- In the case of North Cowichan, the baseline case is an assumption that harvesting would be maintained at historical levels.

- **Project** case: a narrative of the annual emissions that would actually occur, now and in the future, as the alternative to the baseline.

- In the case of North Cowichan, the project case is a reduction in harvesting (how much?)

Key questions

1. How many carbon credits could a project generate?

2. How much revenue might be realized from carbon credits, as compared to traditional sources (i.e., harvesting)?

How many carbon credits could a project generate …

Depends on how much GHG emissions in the baseline (from harvesting) can be reduced by implementing the project activities (a reduction in harvesting)

How the carbon credit analysis was structured …

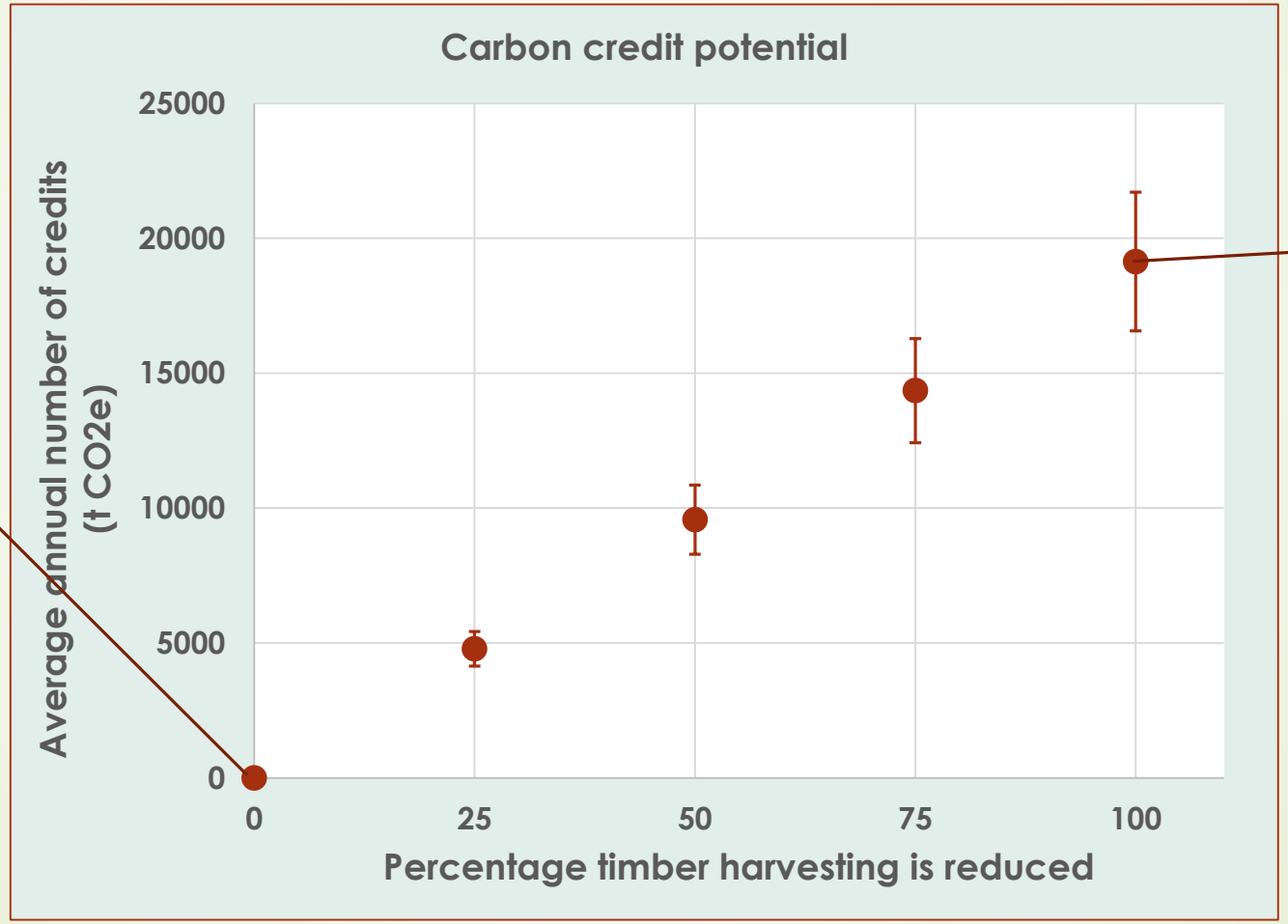
Baseline:

- Annual timber harvest volumes were derived for the MFR from previous forestry reports.
- These volumes were used to derive a schedule to simulate annual timber harvesting over the next 30 years. This is termed 'Business-as-usual' (BAU).
- Anticipated annual emissions from BAU were calculated.

Project alternative:

- The BAU harvesting schedule was reduced by a fixed amount: 75% of BAU, 50% of BAU, etc., down to 0% (no harvesting).
- Anticipated annual emissions were calculated over 30 years, for each incremental reduction.

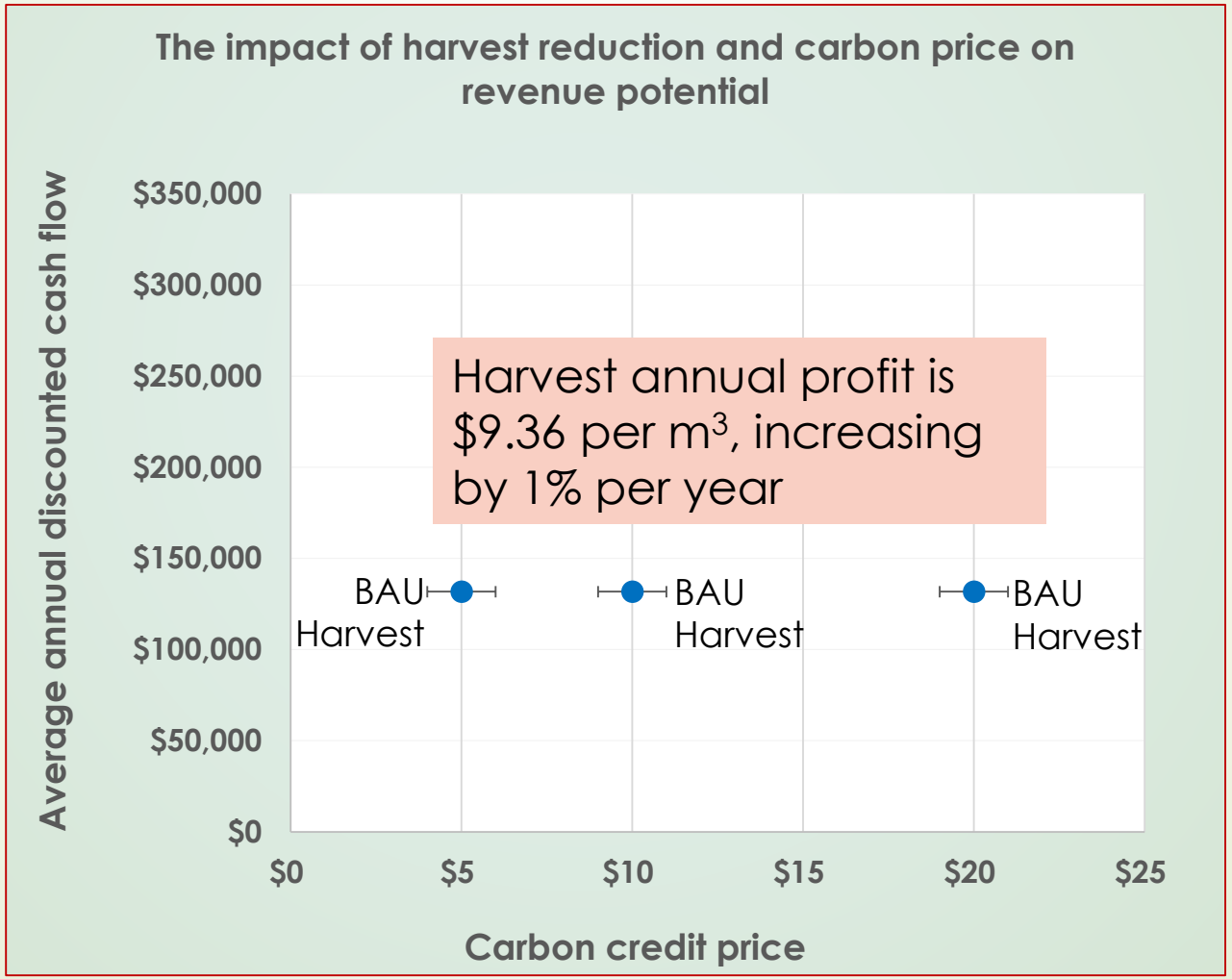
Q. 1. How many carbon credits could a project generate annually over the next 30 years …



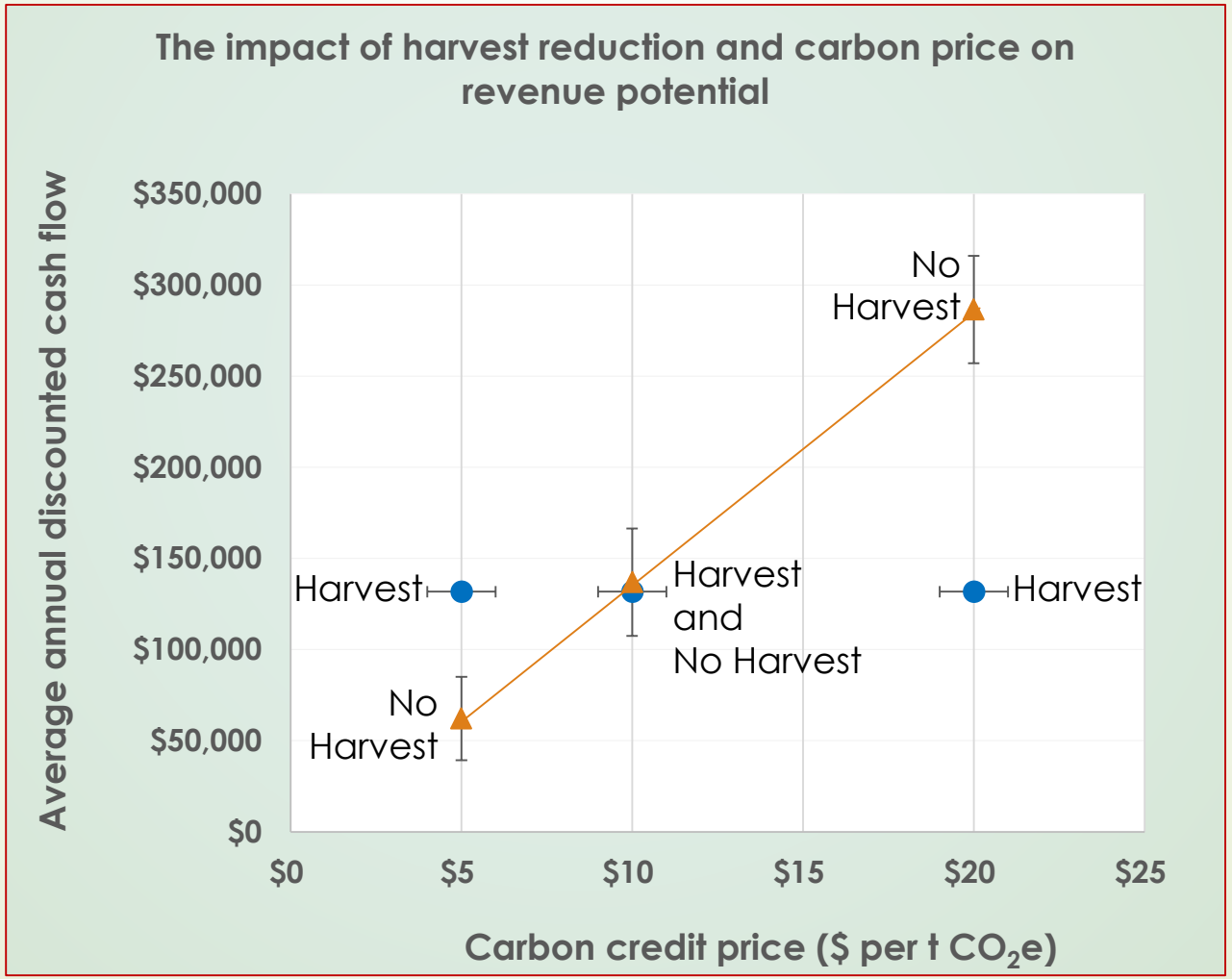
BAU harvesting generates no credits

No harvesting generates maximum credits

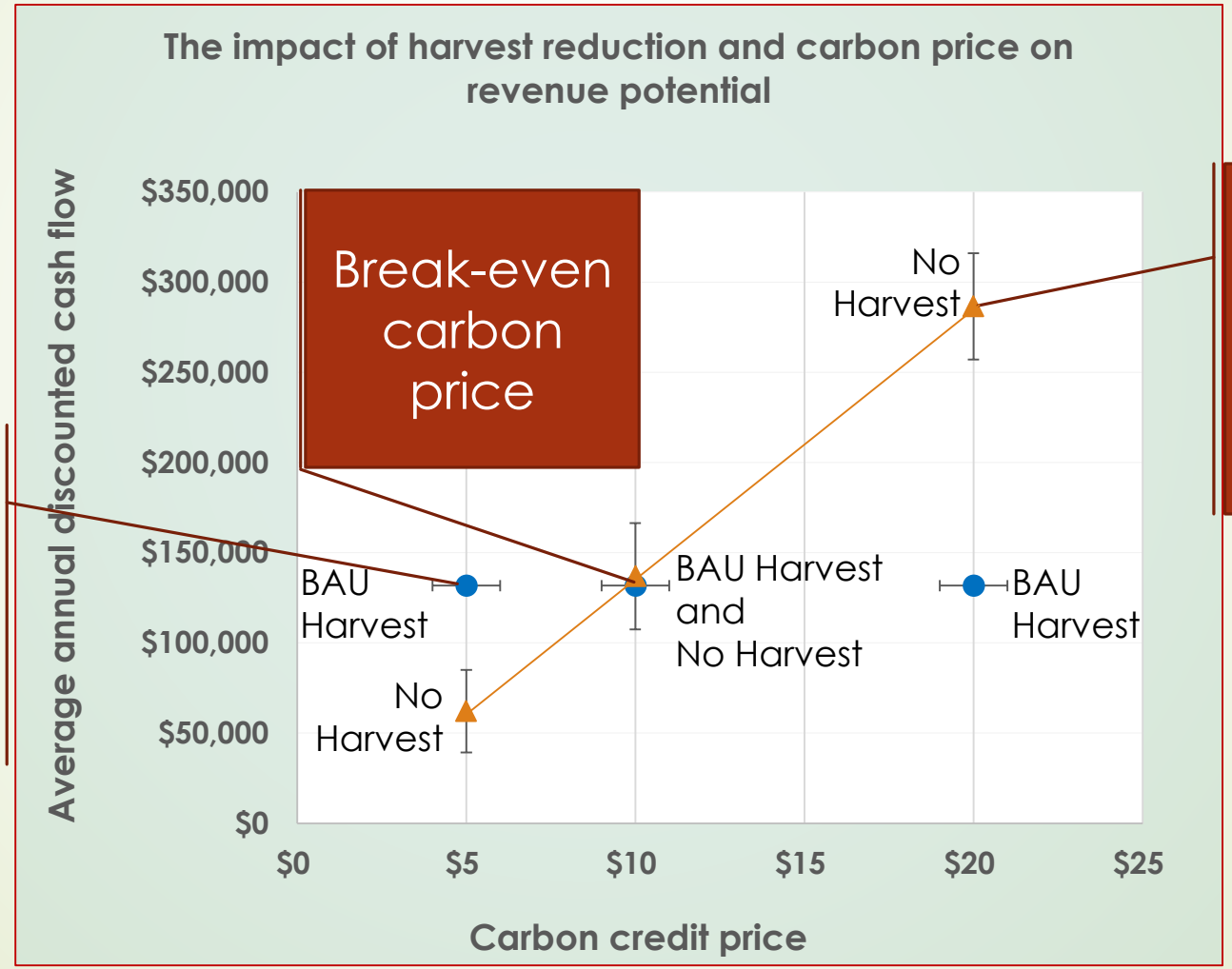
Q.2. How much revenue could a carbon project generate annually over the next 30 years …



How much revenue could a carbon project generate annually over the next 30 years …



How much revenue could a carbon project generate annually over the next 30 years …

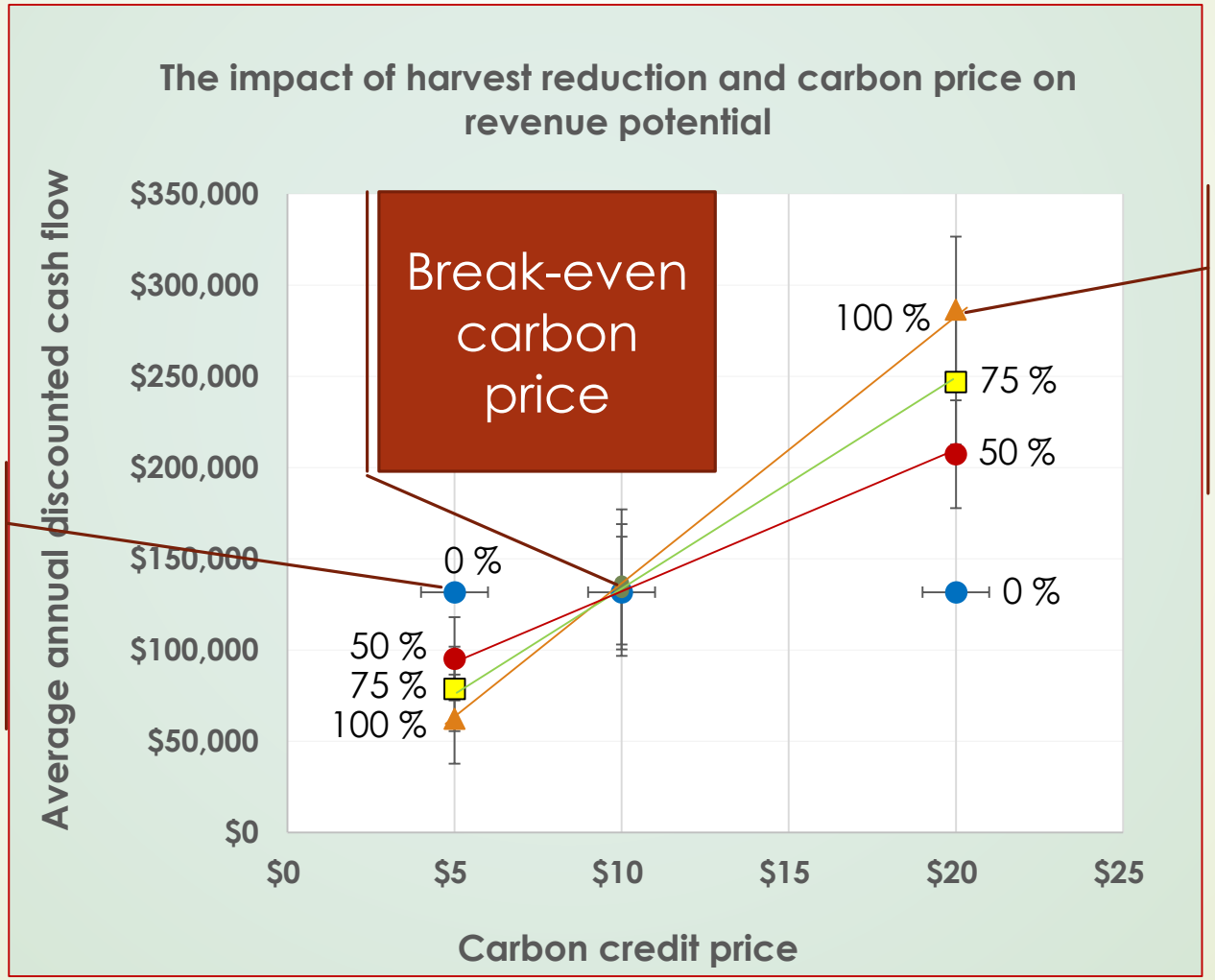


Break-even carbon price

BAU harvesting generates more revenue than carbon credits

No harvesting generates more revenue than BAU harvesting

How much revenue could a carbon project generate annually over the next 30 years …

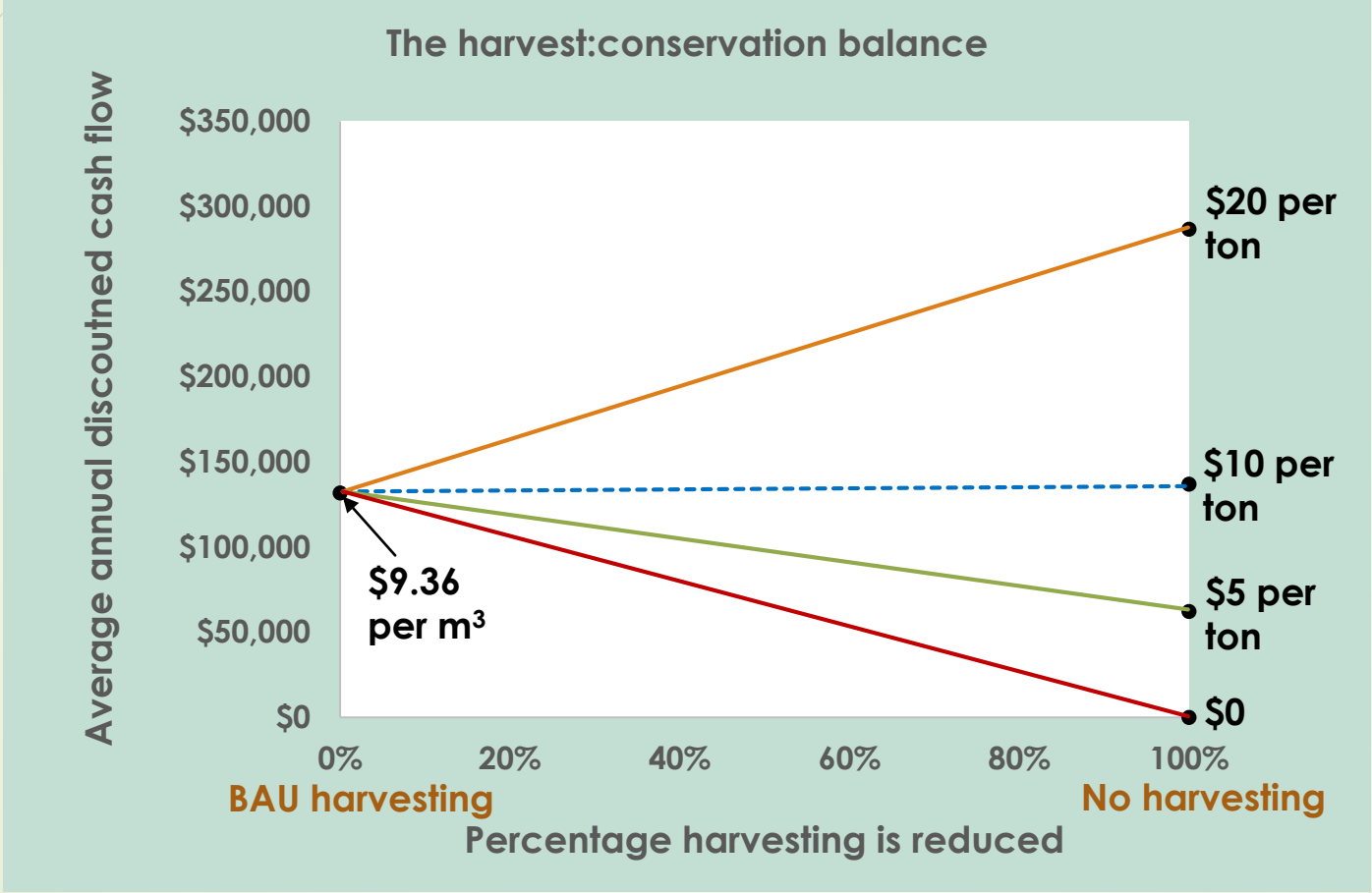


Break-even carbon price

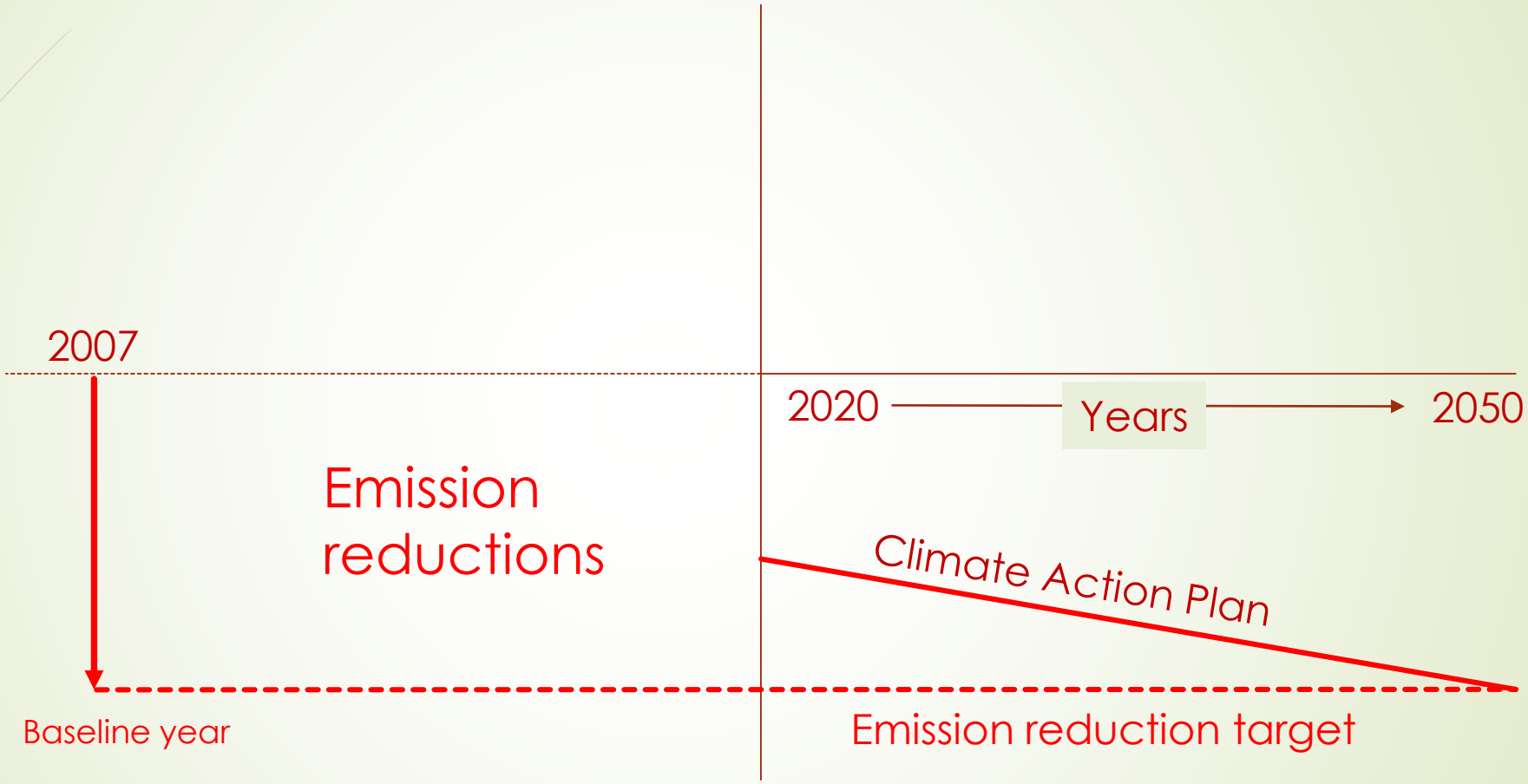
BAU harvesting generates the most revenue

No harvesting generates the most revenue

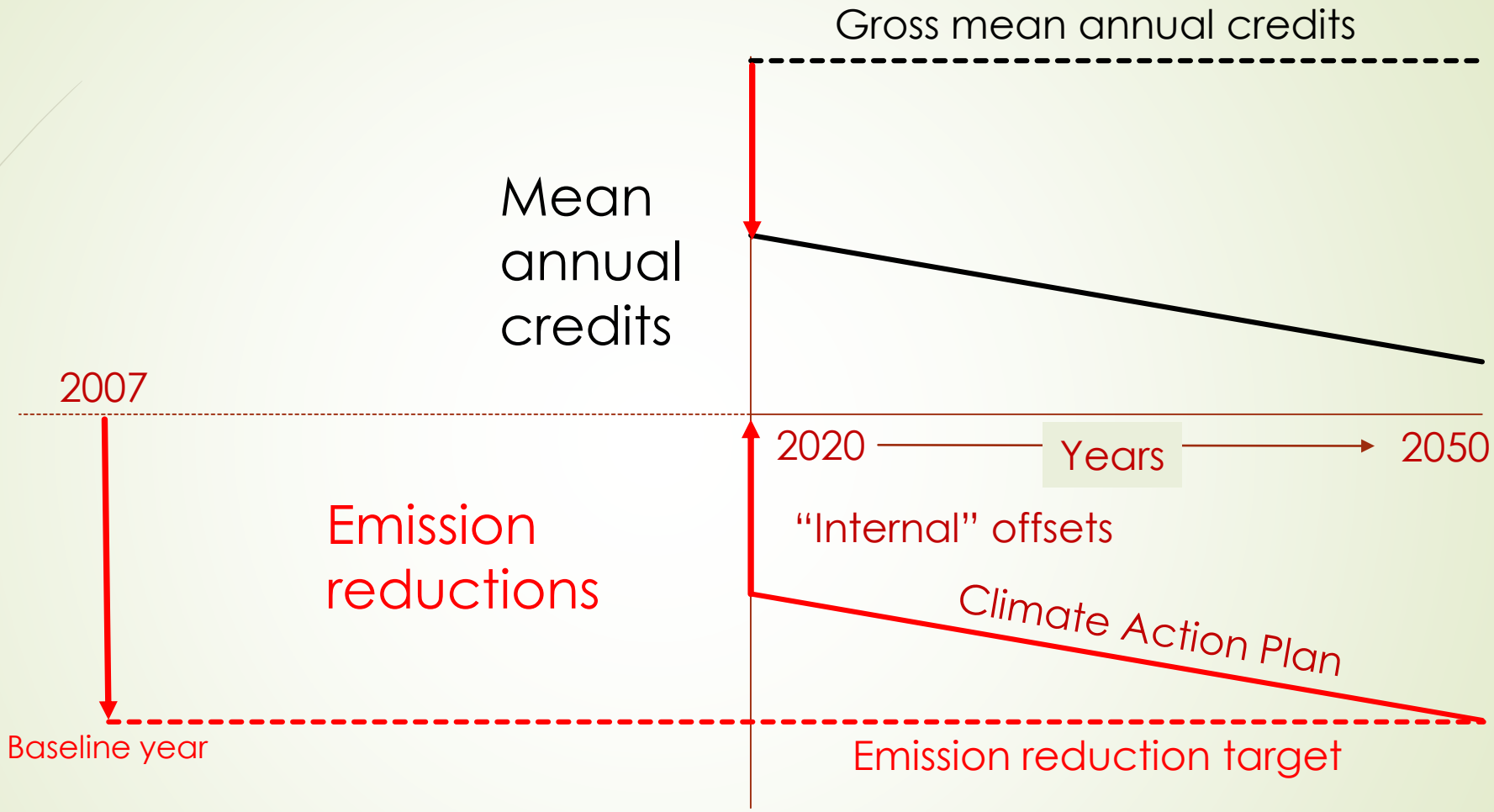
Balancing harvesting and conservation – pricing considerations



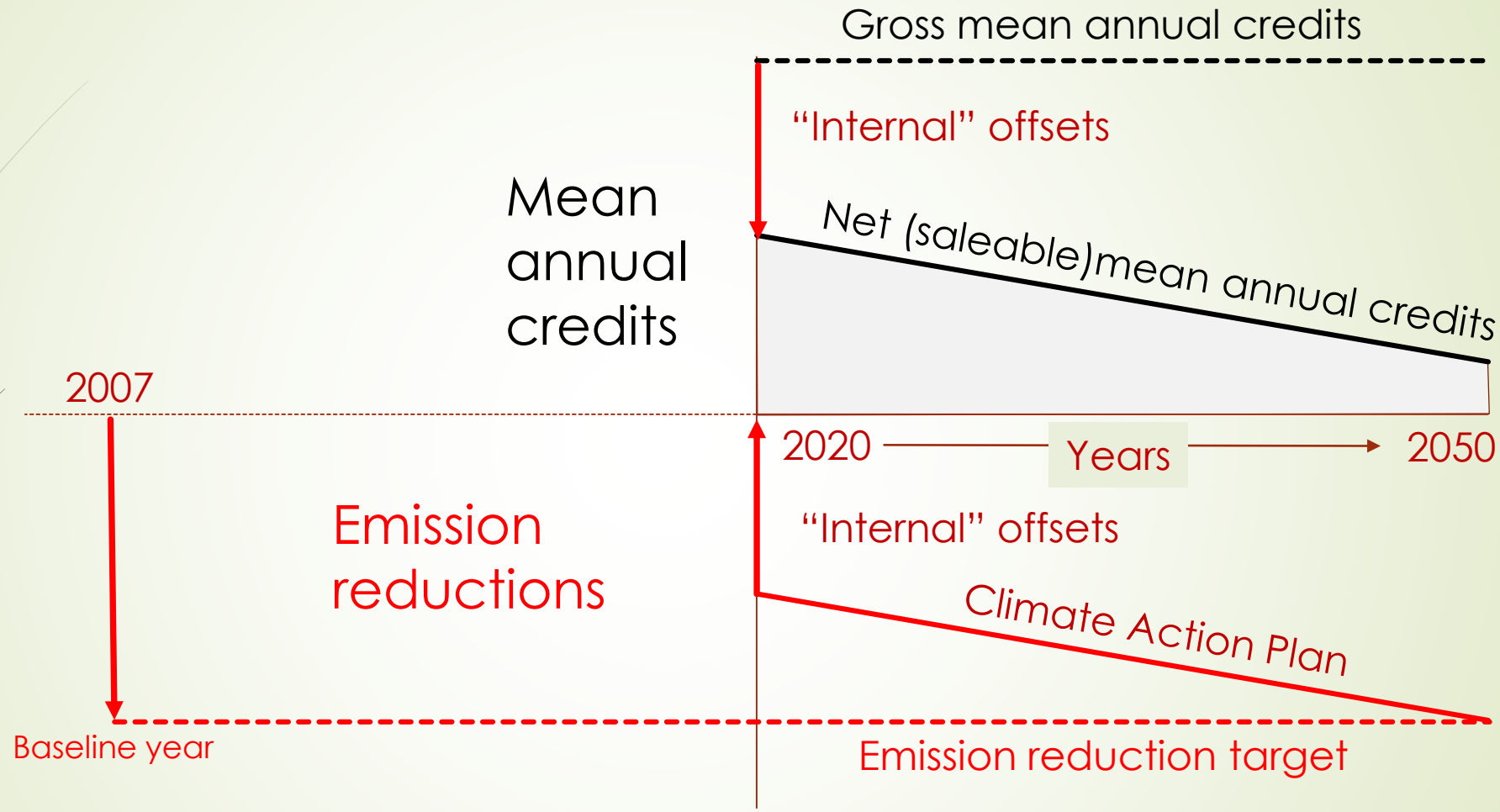
Using carbon credits to achieve carbon neutrality goals



Using carbon credits to achieve carbon neutrality goals



Using carbon credits to achieve carbon neutrality goals



When used internally, the value of offsets is equal to the cost of purchasing offsets from other sources in order to achieve carbon neutrality

In summary…

1. How many carbon credits could a project generate?

- As many as 20,000 t CO_2e, if harvesting stops completely

2. How much revenue might be realized from carbon credits, as compared to traditional sources (i.e., harvesting)?

- At $10 per t CO_2e, they are equivalent
- < $10 per t CO_2e favors logging, > $10 per t CO_2e favors carbon

In summary…

3. Logging and carbon are not mutually exclusive

- A ‘blended’ approach is an option

4. Credits can be allocated for more than one purpose

- As a revenue source
- To support community carbon neutral initiatives

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604.761.4007

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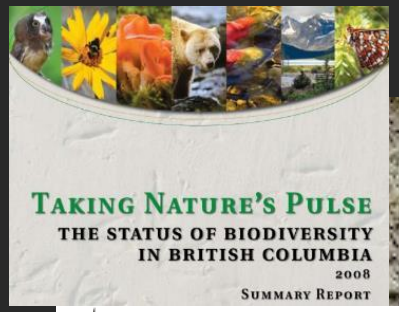
604.761.4007

Sustaining Economies, People and Native Species

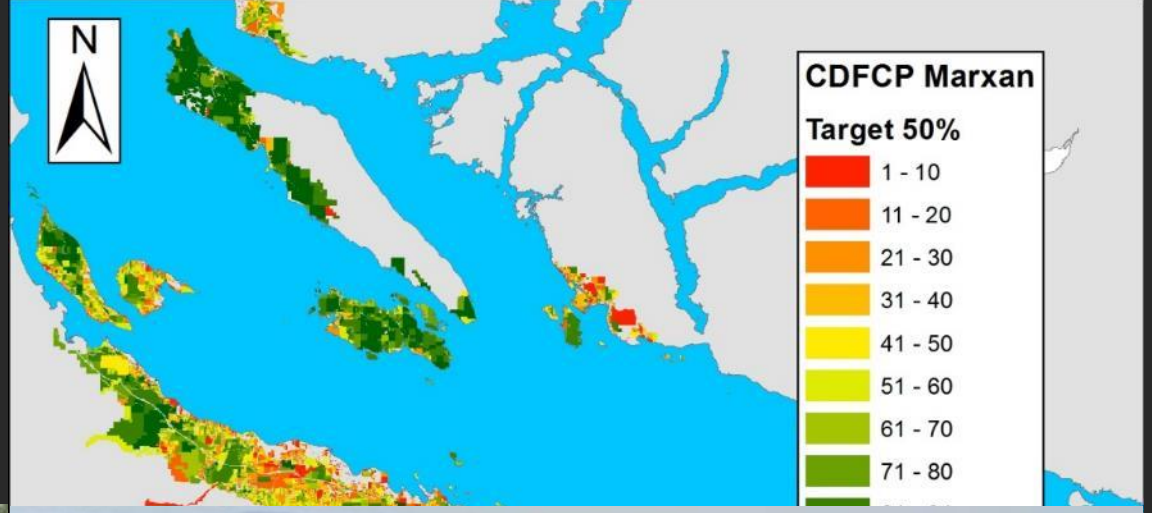
Peter Arcese, Forest Renewal Chair
Forest & Conservation Sciences
University of British Columbia

CDFCP
Coastal Douglas-fir & Associated Ecosystems Conservation Partnership

Conservation in the Georgia Basin



CDFCP
COASTAL DOUGLAS-FIR
& ASSOCIATED ECOSYSTEMS
CONSERVATION PARTNERSHIP



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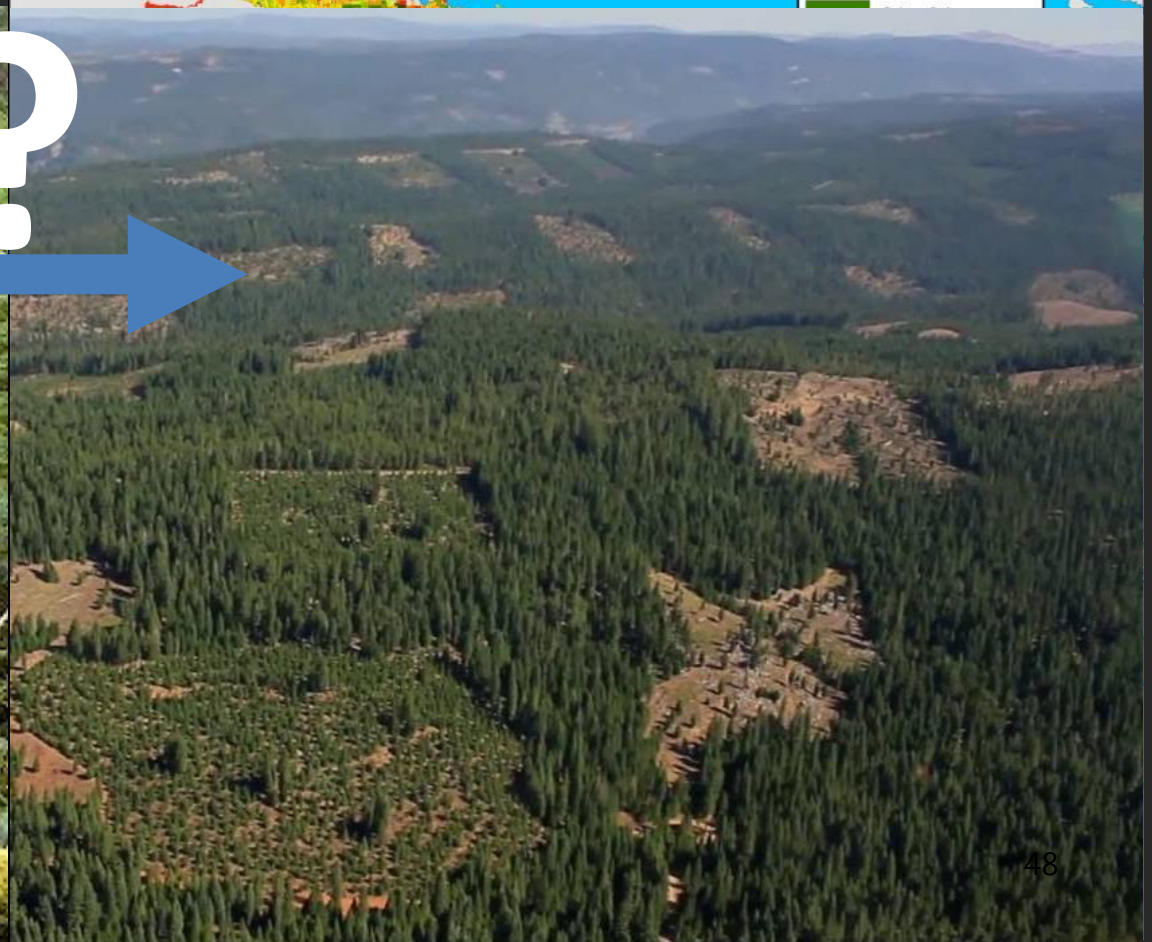
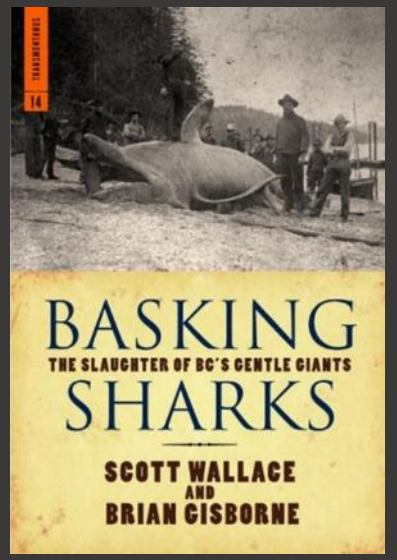


Biodiversity Declines Can Be Costly

400+ Basking Sharks Visiting Nanaimo Annually Declared ‘Pests’ in 1949

“…the smirk will be wiped off its ugly face by the fisheries department” *Victoria Times* 1955

Multi-million dollar Industry Forgone



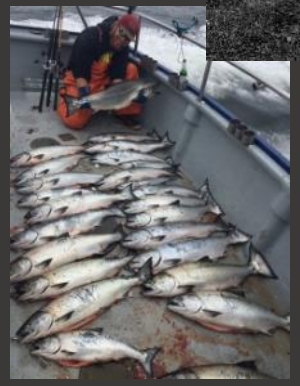
Popular Mechanics 1956

1955-69: *Comox Post* used a 3m Blade to Slice the Sharks in Half

Economic Trade-offs and Legacies

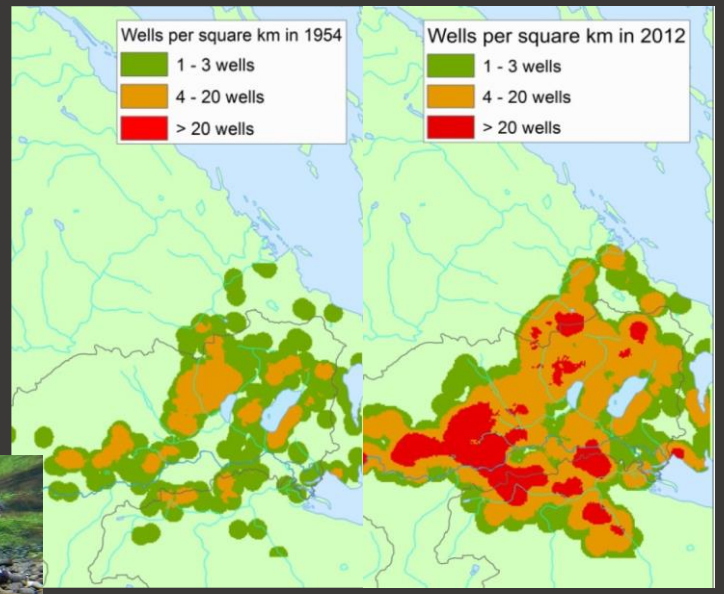


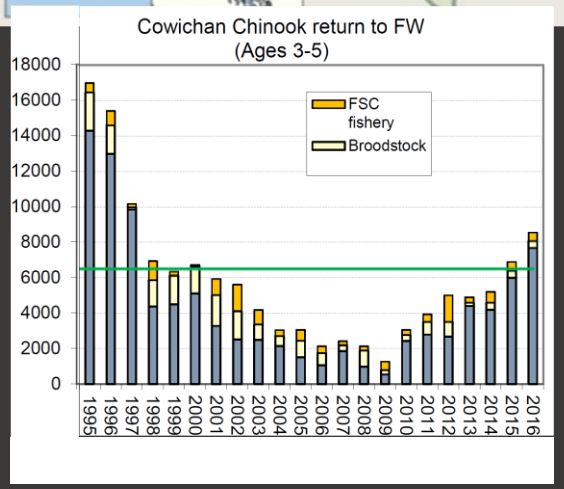





Water, Seasonal Flows and Salmon





Summer streamflow 50% lower in Doug-fir forest on 40 yr vs 100+ yr rotation

Segura et al. 2020
Journal of Hydrology
DOI: 10.1016/j.jhydrol.2020.124749

Bonsal Creek Produced 7000 Coho Spawners in 1975

Synergies: Restoration of Culturally-Modified Habitat

- 400 bulbs/hr
- 1.0 – 2.3 million/1000 people

Harvest Can Advance Restoration of:

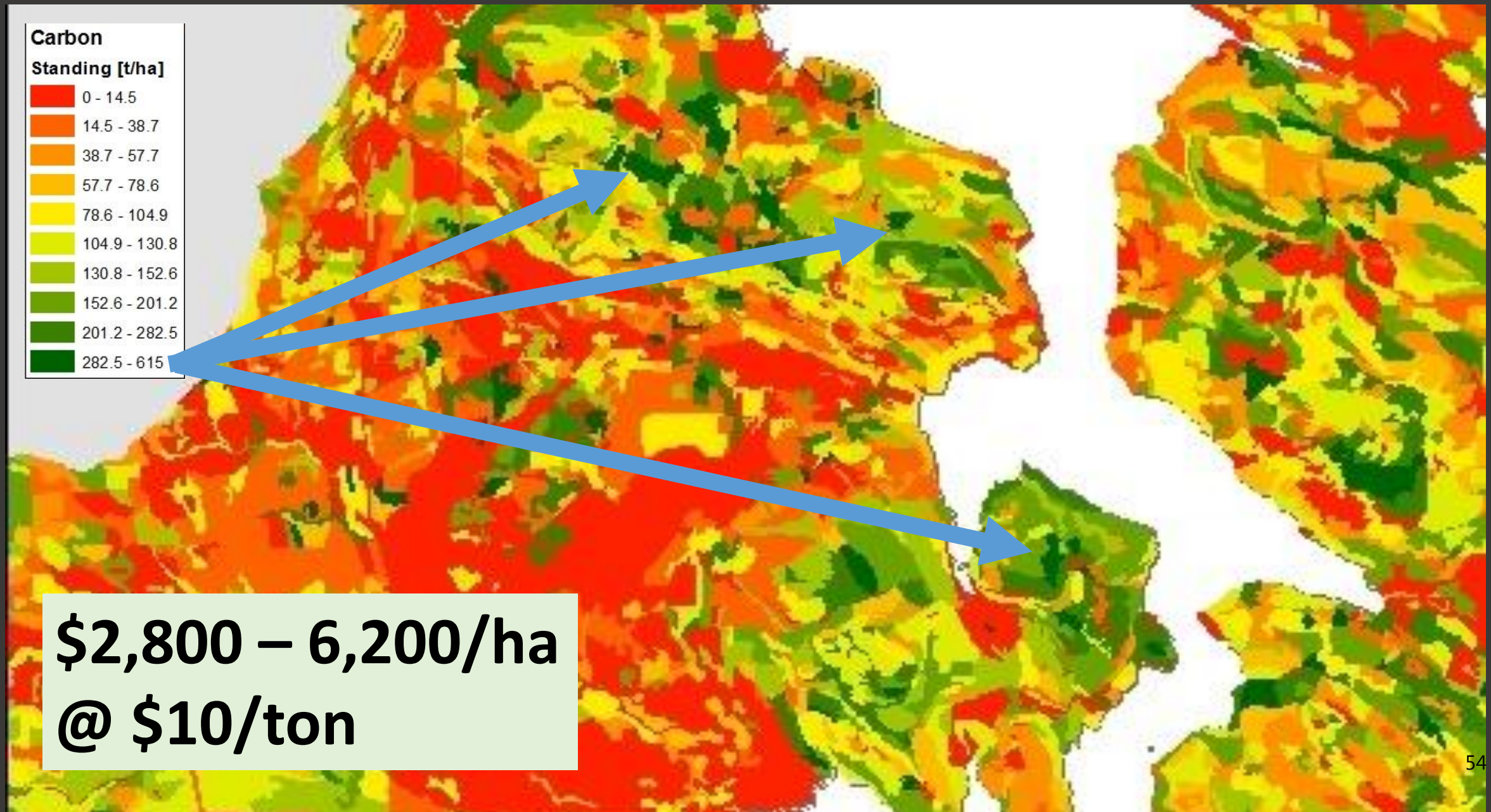
- Forest and Savanna
- Culturally-modified Landscapes that Support SARA-listed Species, and
- Economy Activity

Synergies: Interface Fire and Habitat

Most Fires are Caused by Humans

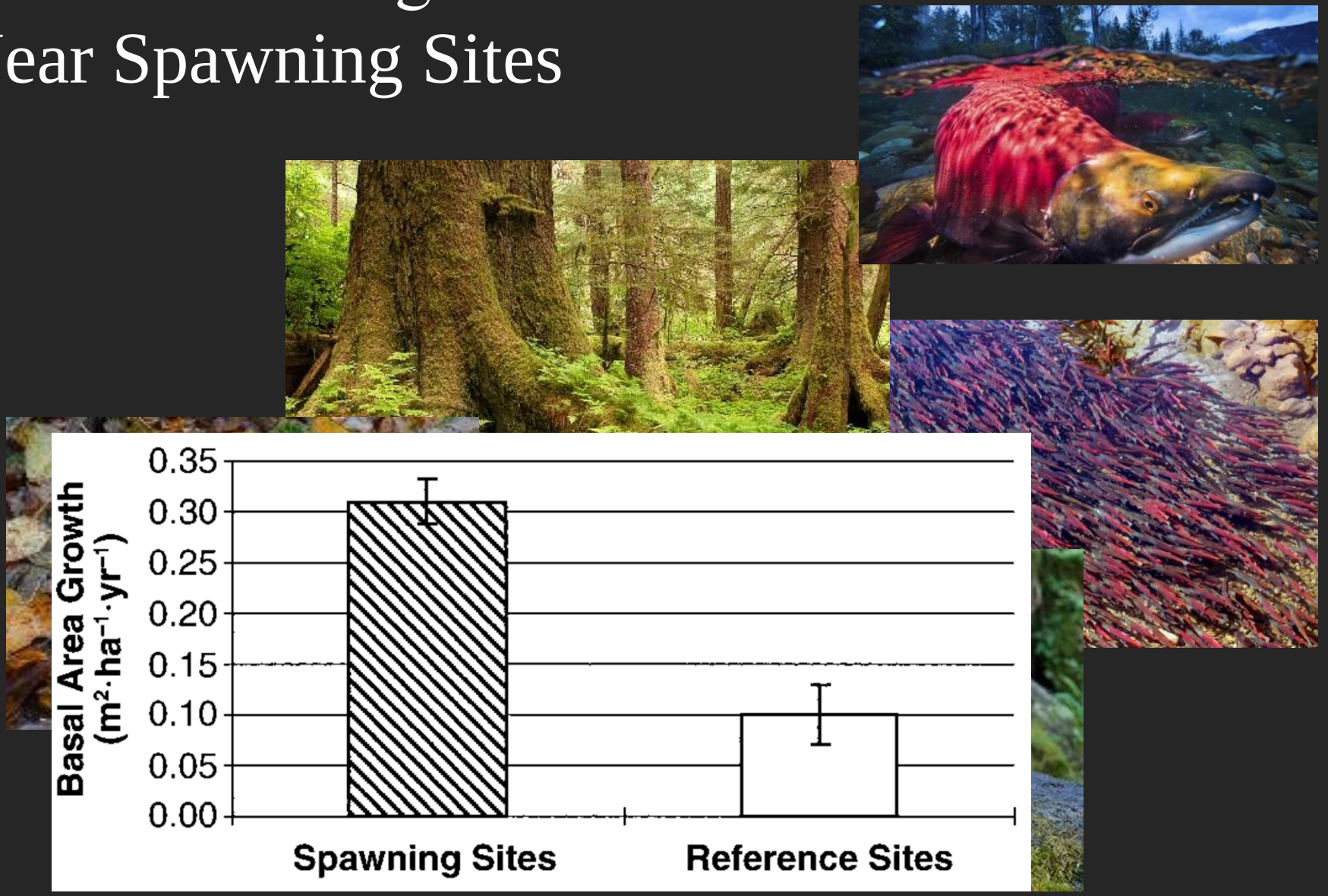
Harvest Can Reduce Fire Severity & Risk, Enhance Habitat Quality, and Protect Carbon and Infrastructure

Synergies: Carbon Storage and Sequestration



$2,800 – 6,200/ha
@ $10/ton

Foliar δN15 Higher in Conifers Near Spawning Sites



Helfield & Naiman 2001 Ecology

Co-benefits of Forest Restoration

Aquatic Primary Productivity — Schindler et al. 2005

↓

Invertebrate Density — Hocking et al. 2009

↓

Fish Growth Rate — Schurell et al. 2007

↓

Songbird Density — Fields & Reynolds 2011

↓

Trophic Complexity — Williams et al. 2011

↓

Tourism / Education — Dairmont et al. 2010

↓

Commercial Harvest — Harding & Reynolds 2014

Understanding Goals & Evaluating Outcomes

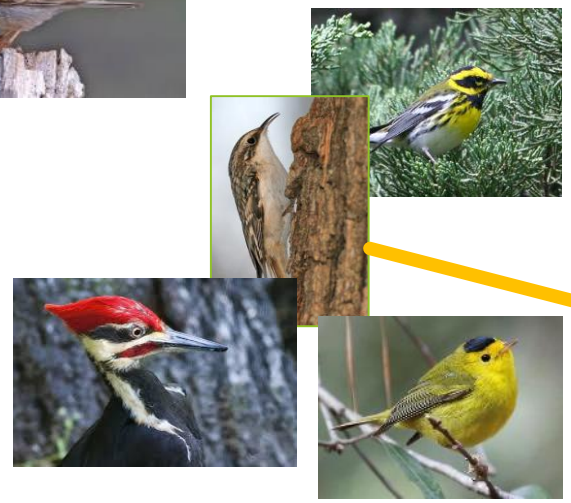
Draft Criteria and Indicators: Ecological

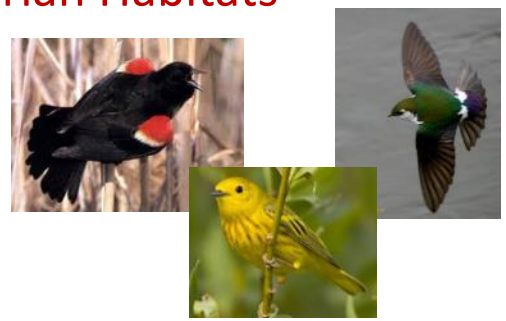
Criterion	Indicator
1.1 Sensitive Ecosystems	1.1.1 Area of sensitive ecosystems (SEI) impacted by harvest (ha or %) 1.1.2 Condition of woodland ecosystems (degree of tree encroachment) 1.1.3 Degree of disturbance in riparian areas (%)
1.2 Protection/Enhancement of Mature & Old Forest	1.2.1 Area with mature and old forest features (ha or %)
1.3 Bird habitat conservation	1.3.1 Quantification of bird habitat by species or groups (ha)
1.4 Ecosystem Carbon Storage / Emissions	1.4.1 Total ecosystem C storage within the Municpal Forest (MT C) 1.4.2 Quantification of net CO2 emssions (reductions) associated with forest management (t CO2e)
1.5 Water Quality	1.5.1 Total disturbed area in key watersheds (ha or %)
1.6 Regional Habitat Connectivity	1.6.1 Least cost pathway analysis for different habitat types incorporating adjacent conervation areas

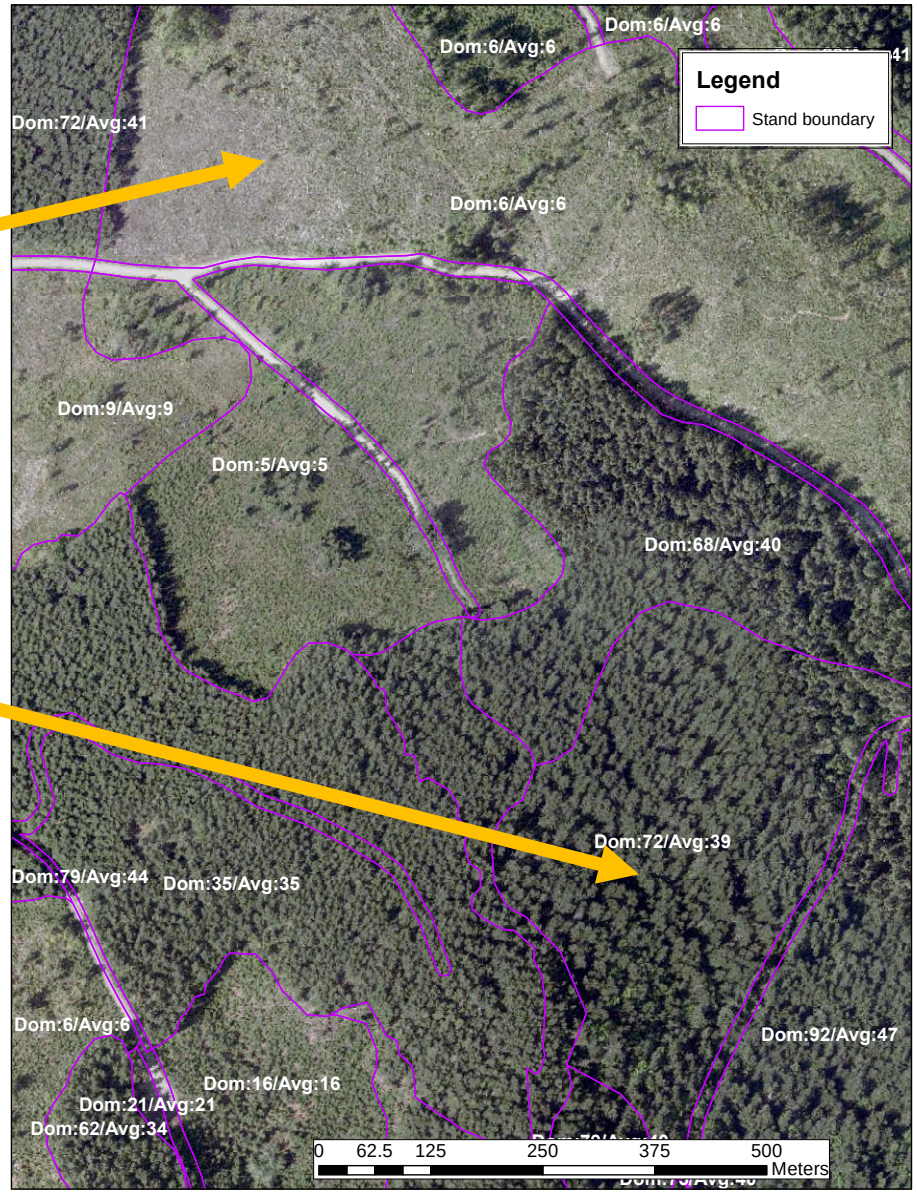
Evaluation Spatial Data on Habitat Conditions

Forest Vegetation Mapping

- Bio-Indicators of Forest Type and Age
  - Sparsely Vegetated
  - Dense, Young Forest
  - Old Growth/Mature Forest with Gaps
  - Riparian Habitats



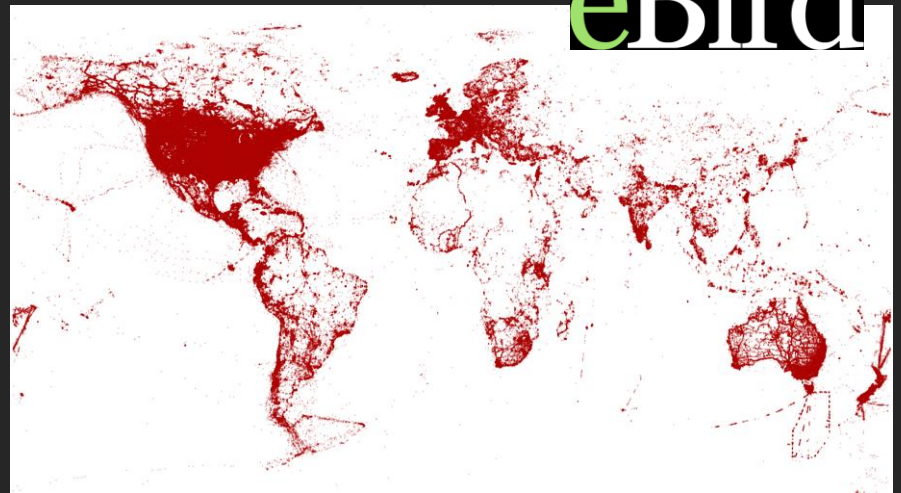


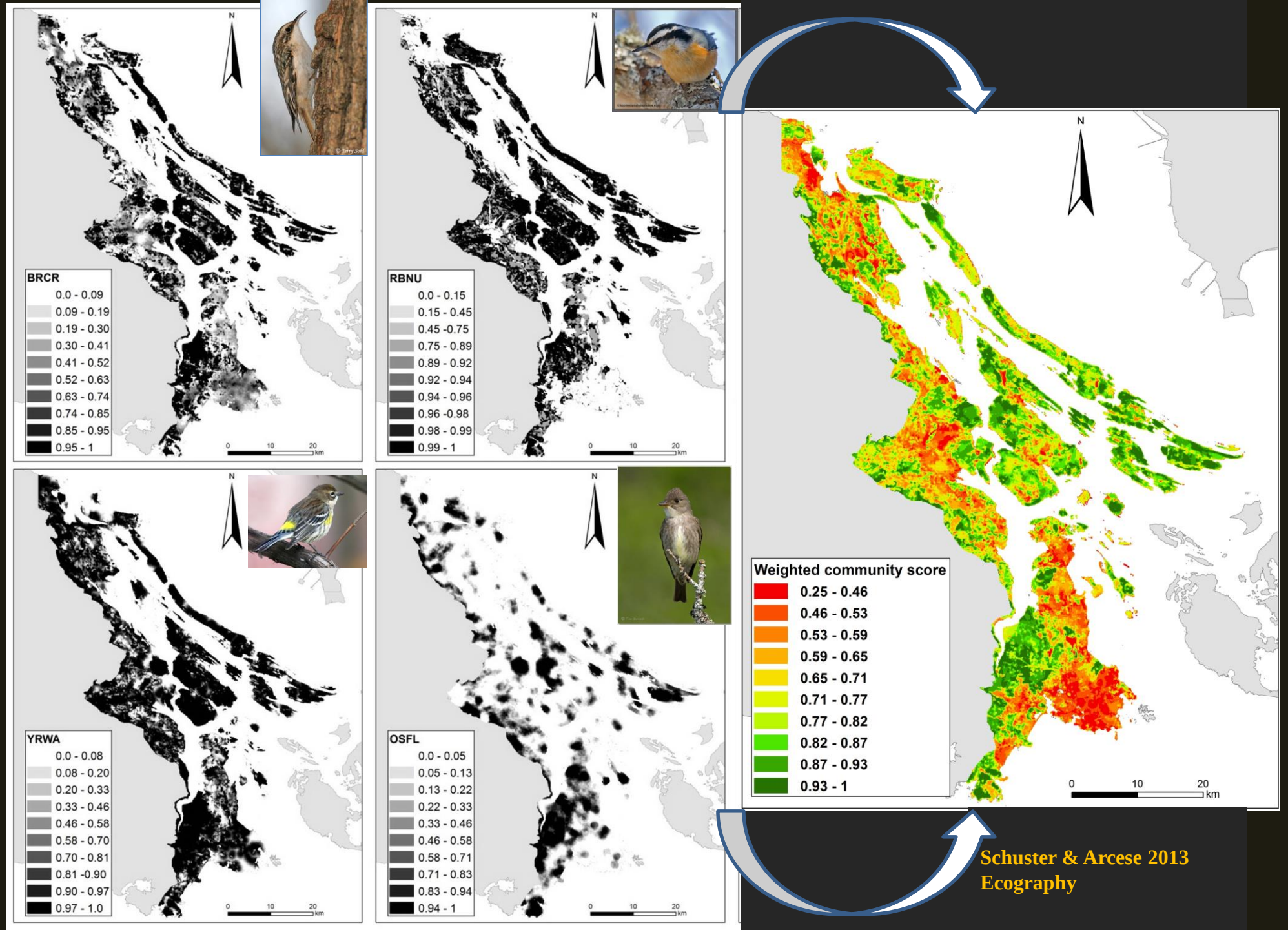


Mapping Ecosystems Using the Occurrence of Indicator Species

- 93,000 eBird Detections of Presence/Absence
- 27 Landscape Variables to Map Species Occurence

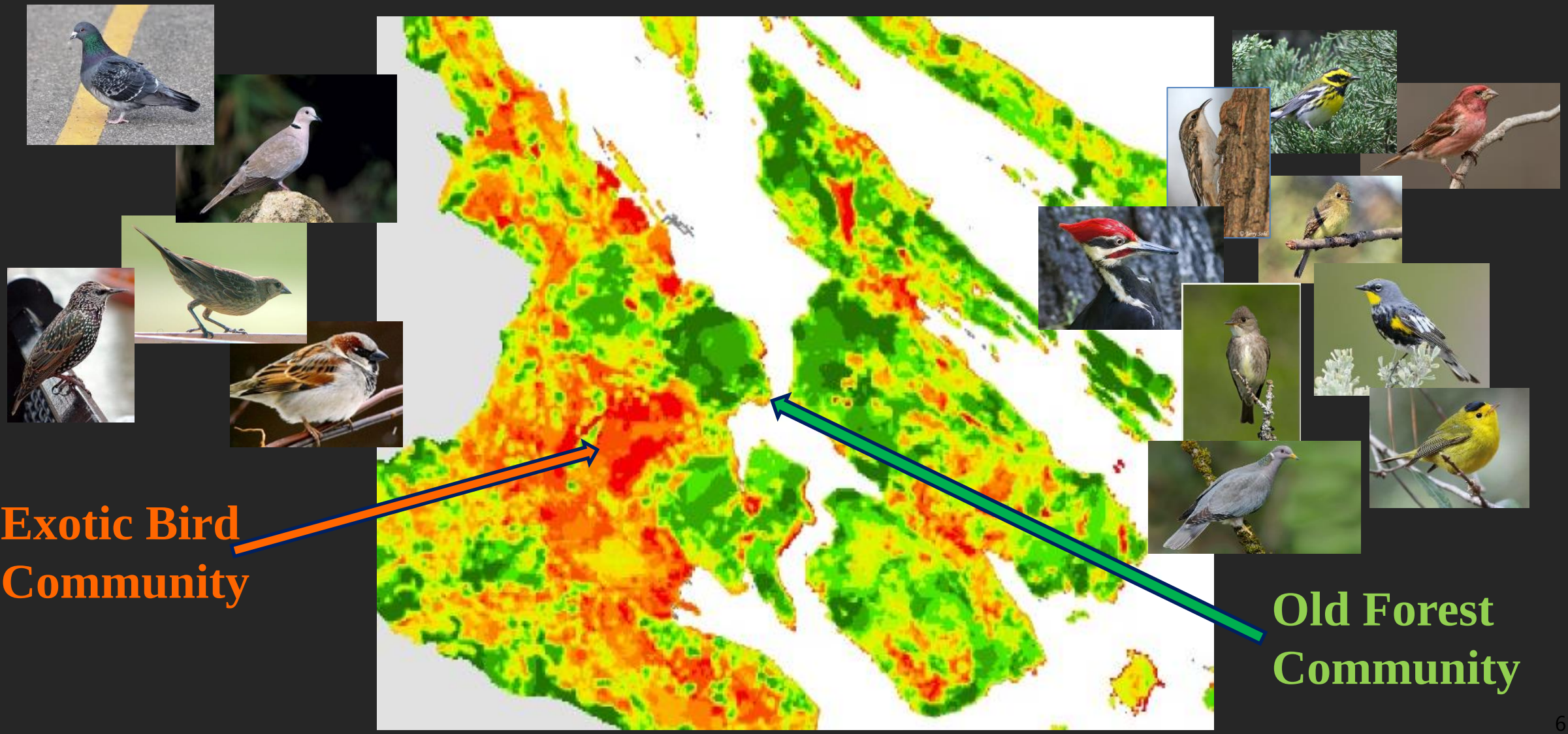
- 74 Species, 34 Families
- Assembled by Expert Elicitation on ‘Habitat Reliance’





Schuster & Arcese 2013
Ecography

Indicators of Landscape Condition



Take-away Messages

Trade-offs and Synergies are Ubiquitous in the Management of Public Lands and Resources

‘Focal Species Mapping’ Informs Us About Landscape Condition and the Long-term Consequences of Management

‘Co-benefits’ of Habitat Restoration Can Enhance the Price of Carbon Off-sets, Economic Activity, and the Direct and Indirect Benefits of Recreation/Tourism

5/29/2020

Municipality of North Cowichan (MNC)
Carbon Project Feasibility Assessment

3GreenTree Ecosystem Services Ltd.

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The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested, and that such information is accurate. Information obtained by 3GT has not been independently verified, unless otherwise stated in the Report.

The methodology adopted and the sources of information used by 3GT in providing its services are outlined in this Report. The scope of this Report and the services are accordingly factually limited by these circumstances.

Where assessments of works, financial returns, benefits, or costs identified in this Report are made, such assessments are based upon the information available at the time and where appropriate are subject to further investigations or information which may become available.

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List of Acronyms

3GT:	3GreenTree Ecosystem Services Ltd.
ASL:	Activity shifting leakage
AFOLU:	Agriculture, Forestry and Other Land Use
BAU:	Business-as-usual
BCFCOP:	British Columbia Forest Carbon Offset Protocol
CAR:	California Action Reserve
CCB:	Climate, Community and Biodiversity
CH_4:	Methane
CO_2e:	Carbon dioxide equivalent
CORSIA:	Carbon Offsetting and Reduction Scheme for International Aviation
DCF:	Discounted Cash Flow
EM:	Ecosystem Marketplace
ERA:	Extended Rotation Age / Cutting Cycle
FAC:	Forest Advisory Committee
FMP:	forest management plan
GHG:	Greenhouse Gas
ICAO:	International Civil Aviation Organization
IFM:	Improved Forest Management
LiDAR:	Light Detection and Ranging
LtHP:	Low-Productive to High-Productive Forest
LtPF:	Logged to Protected Forest
MFR:	Municipal Forest Reserve
ML:	Market leakage
MNC:	Municipality of North Cowichan
NBS:	Nature-Based Solutions
N_2O:	Nitrous oxide
NPV:	Net Present Value
PDD:	Project Design Document
REDD:	Reduced Emissions from Deforestation and Degradation
RIL:	Reduced Impact Logging
SSR:	Sources, sinks, and reservoirs
TV:	Terminal value
VCS:	Verified Carbon Standard
VRI:	Vegetation Resource Inventory

Section 1 - Introduction

Nature-based solutions

Nature-Based Solutions (NBS) are the ways natural systems can be managed to mitigate carbon emissions and minimize negative impacts on ecosystem services. Forest carbon projects are one example of an NBS. When structured appropriately, a forest ecosystem is management such that it generates carbon credits, which are greenhouse gas (GHG) mitigation outcomes that can be used to compensate for emissions created elsewhere[1].

Carbon credits are used by firms or individuals as a means for offsetting their activity-related emissions. One criticism is that rather than investing in decarbonizing or reducing GHG-intensive activities, instead they constitute a "license to pollute", which results in no net-benefit for the environment. There are, however, strong arguments for their use as a tool for NBS[2]:

- The private sector pays for carbon offsets, which allows capital to flow directly to priority areas for NBS that have been traditionally underfunded.
- There are now robust carbon offset frameworks that provide strong measuring, reporting and verification requirements to ensure projects result in genuine benefits.
- Carbon offsets can lower compliance costs for entities that must reduce their carbon footprint.
- Cost-effective mitigation options like offsets will help lower the overall costs of transitioning to a low-carbon economy.
- Carbon offsets broaden sources of revenue to the forest sector beyond timber extraction (conservation-based management, for example).

To ensure a carbon project delivers benefits to the atmosphere, emission reductions must be:

- Real: Conservative baselines are used as the counterfactual against which emission reductions are evaluated to ensure project benefits are not exaggerated.
- Permanent: Risks of unplanned reversals of the GHG benefits are mitigated or reduced.
- Additional: The emissions reductions would not have taken place without the carbon project.
- Verifiable: The emissions reductions can be demonstrated to have occurred.
- Avoid Leakage: These are no net increases in emissions by GHG sources that occur outside the project boundary, which are attributable to the project.

[1] The terms 'carbon credit' and 'carbon offset' are often used interchangeably. In practice, a carbon project generates credits. Credits have no inherent value, however, until they are used to reduce (offset) the impact of the same amount of GHG emissions elsewhere, hence the conflation of terms.

[2] After Monahan et al. 2020. NATURE-BASED SOLUTIONS: POLICY OPTIONS FOR CLIMATE AND BIODIVERSITY. Smart Prosperity Institute, University of Ottawa, Ottawa, ON. (institute.smartprosperity.ca).

As part of a broader mandate[3], 3GreenTree[4] was engaged by the Municipality of North Cowichan (MNC) to undertake a feasibility analysis of its current fee-simple forest property portfolio (the Municipal Forest Reserve) as the basis for a carbon project. The general intent is to use the sale of carbon credits to finance and support alternative methods of property management and reduce overall carbon emissions, preserve or enhance additional ecological services, and support socioeconomic and conservation objectives. The analysis does not include consideration of potential future property acquisitions by MNC, or provisions for incorporating private landowners into the project, within the municipal boundary[5].

The overall objectives of this feasibility assessment are to determine: 1. If an MNC forest carbon project would meet the requirements of one or more, internationally recognized standards; 2. If there are any significant risks to project development or operations; and 3. Estimate the carbon credits and financial returns under different potential management scenarios.

Section 2 – Methodology requirements

Choice of Carbon Standard

Carbon standards define a set of rules which lead to a certification that carbon credits arising from offset projects comply with environmental and/or social criteria. Each standard sets its own requirements and certification criteria.

A number of carbon standards would likely be applicable to a forest carbon project in the MNC. These include the Verified Carbon Standard (VCS), California Action Reserve (CAR), California Air Resources Board, the British Columbia Forest Carbon Offset Protocol (BCFCOP), and the American Carbon Registry. Each standard has its strengths and weaknesses[6], the details of which are beyond the scope of this document. In the opinion of 3GreenTree, however, the VCS represents the standard best aligned with the goals and objectives of the MNC (details below). It is regionally applicable, flexible in its approach and application, and includes robust procedures for risk assessment and mitigation.

---

[3] Evaluation of multi-objective forest management strategies and options for the North Cowichan Municipal Forest towards the development of interim and long-term sustainable forest management plans**.**

[4] 3GreenTree Ecosystem Services, Ltd. is a turn-key forest carbon project development company. It was the principal developer in several leading voluntary carbon projects in North America, including the 44,000 ha Darkwoods Forest Carbon Project in Nelson, British Columbia, and the 2,800 ha Afognak Forest Carbon Project near Kodiak, Alaska. The firm built one of the first forestry methodologies approved under the Verified Carbon Standard (VM0012).

[5] Should these circumstances prevail, the project would need to be defined as a 'Grouped project'. Grouped projects provide for the inclusion of new project activity instances (e.g., private lands) subsequent to the initial validation of the project (see Section 8 - Additional considerations).

[6] Kenneth R Richards & Grant E Huebner (2012) Evaluating protocols and standards for forest carbon-offset programs, Part A: additionality, baselines and permanence, Carbon Management, 3:4, 393-410, DOI: 10.4155/cmt.12.38; Part B: leakage assessment, wood products, validation and verification, Carbon Management, 3:4, 411-425, DOI: 10.4155/cmt.12.39

Project Eligibility

Under VCS, there are two forest carbon project categories, 'Improved Forest Management (IFM)' and 'Reduced Emissions from Deforestation and Degradation (REDD)'[7] , which fall under their Agriculture, Forestry and Other Land Use (AFOLU) subprogram. Eligible IFM activities are planned forest management practices that increase carbon sequestration and/or reduce GHG emissions on forest lands managed and maintained for wood products such as sawtimber, pulpwood and fuelwood. Eligible REDD activities are those that reduce net GHG emissions by reducing deforestation and/or degradation of forests. Deforestation is the direct, human-induced conversion of forest land to non-forest land. Degradation is the unplanned but permanent reduction of carbon stocks in a forest due to human activities such as animal grazing, fuelwood extraction, timber removal or other such activities, but which does not result in the conversion of forest to non-forest land (this would be classified as deforestation).

The key to determining which of IFM and REDD is the most applicable to the MNC is an understanding of how current and future land use activities impact carbon emissions. The basis for a carbon project is the Municipal Forest Reserve (MFR). An area of 5,344 ha, the lands were acquired from non-payment of taxes during the 1930's and 40s, and in 1946, were formally recognized by council. The MFR remained un-managed until the 1960s when a consulting forester was hired to create a Forest Management Plan. The outcome of this plan was to divide the MFR into ten woodlots that were harvested by local operators by "diameter limit cutting," which permitted the logging of trees greater than a set diameter. This practice continued until 1981 when local concerns over the future of the forests initiated the creation of a Forestry Advisory Committee (FAC). The FAC consisted of volunteers from the Municipality with experience in forest resources management. The FAC was asked by Council to recommend future management options and operational budgets for the MFR. In 1981, the FAC report entitled "Management of the Forester Reserves – An Investment in the Future" has served to guide management of the MFR to the present day.

The MFR is located to the north and east of Duncan, entirely within the District Municipal boundaries, in six major landholdings, Mt. Prevost, Mt. Sicker, Maple Mountain, Mt. Richards, Mt. Tzouhalem, and Stony Hill. Other smaller, isolated blocks are present, most notably in Copper Canyon. Most of the MFR lies within the Coastal Western Hemlock Dry Maritime biogeoclimatic sub-zone, but small eastern portions are classified as Coastal Douglas-fir Moist Maritime or are transitional (e.g. Stony Hill, Chemainus, Fuller Lake and parts of Maple Mountain). Vegetation is dominated by Douglas-fir, Garry oak, Western red cedar, Grand fir, and Red alder. There are also Bigleaf maple, Arbutus, and other minor species within the Reserve.

[7] Some standards (for example, CAR and BCFCOP) utilize a category of Avoided Conversion (AC) which pertains to deforestation only. See https://verra.org/wp-content/uploads/2018/03/AFOLU_Requirements_v3.6.pdf.

Multiple use is the philosophy underlying MFR management activities. Harvesting has been conducted from the beginning on a long-term sustained yield basis with a view to protecting water quality and fish habitat, conserving soil productivity, and to facilitate outdoor recreational activities. Beginning in the 1950's, harvesting activities on the MFR have been in accordance with a series of 5-year forest management plans (FMPs). These plans included silvicultural prescriptions that ensure successful stand regeneration post-harvest. A Forest Advisory Committee (FAC) was established in early 1960 to oversee the management of the MFR. Since that time, it is the FAC who developed the FMPs and ensured their successful implementation.

Aside from land-use change (converting forests to another use), the key distinction between IFM and forest degradation (as per REDD) is occurrence of planned versus unplanned activities on forest land that remains as forest land. Under IFM, forest removals are a planned activity, whereas the loss of carbon under REDD occurs inadvertently (unplanned) through poor management practices or illegal logging. Given the stated intent of activities on the MFR are sustained yield harvesting, conducted in accordance with explicit forest management plans, IFM represents the most suitable project category in terms of eligibility.

Various sanctioned forest management activities may be changed to increase carbon stocks and/or reduce emissions, but only a subset of these activities makes a measurable difference to the long-term increase in net GHG emissions compared to the baseline scenario. These activities, eligible under IFM, include:

1) Reduced Impact Logging (RIL)

Practices that reduce net GHG emissions by switching from conventional logging to RIL during timber harvesting.

2) Logged to Protected Forest (LtPF)

Practices that reduce net GHG emissions primarily by converting logged forests to protected forests. By eliminating harvesting for timber, biomass carbon stocks are protected and can increase as the forest re-grows and/or continues to grow. Limited harvesting of trees is also permitted, however.

3) Extended Rotation Age / Cutting Cycle (ERA)

Practices that reduce net GHG emissions of evenly aged managed forests by extending the rotation age or cutting cycle and increasing carbon stocks. Modified harvesting is the focus of ERA, rather than, for example, conservation.

4) Low-Productive to High-Productive Forest (LtHP)

Practices that increase carbon sequestration by converting low-productivity forests to high-productivity forests. This project activity is specific in its application and does not include conservation.

Of the four eligible activities, LtPF has the greatest flexibility and can include components of the other activities. Projects may include multiple activities where the methodology applied allows it or where projects apply more than one methodology. In the latter case, projects must comply with the respective project requirements of each included AFOLU category. This approach is not

recommended for the MFR due to the increased costs incurred by applying multiple methodologies. Typically, LtPF projects are based on: (a) Reduced logging activity overall, (b) Protecting currently logged or degraded forests from further logging, and (c) Protecting unlogged forests that would otherwise be logged. Hence, LtPF is likely best suited to the goals and objectives of MNC with respect to the future management of the MFR.

Carbon credits are generated from the specific activities undertaken to achieve a net reduction in GHG emissions (expressed as CO_2e)[8]. Each carbon standard provides one or more established methodologies that define the rules and regulations which must be followed in order to derive the credits.[9] VCS IFM LtPF activities have several methodologies that apply specifically to LtPF activities. Two methodologies, in particular, are VM0012 (Improved Forest Management in Temperate and Boreal Forests (LtPF), v1.2) and VM0034 (the British Columbia Forest Carbon Offset Methodology). Their relative merits in regard to a carbon project on the MRF will be discussed below.

Project boundary

Refers to the physical location(s) of the project boundaries that define the project area, and the GHG sources, sinks and reservoirs (or pools) relevant to the project and baseline scenarios. In the MNC, the project boundary will, as a minimum, be defined by those areas constituting the MFR. Under VCS rules, this would be considered a non-grouped project. There are several options by which the project boundary could be expanded in the future. One is that the MNC add private lands to the project portfolio through purchases or from donation. Another option is to allow private landowners to enroll in the project and thus participate directly in project activities. Either of these cases, if they occur, would require the project be defined as a grouped carbon project (which must be done prior to project validation). This option is discussed further in Section 8

For sources, sinks, and reservoirs (SSRs), all protocols require the inclusion of the most important SSRs. The BCFCOP requires the consideration of a more comprehensive set of SSR's, than VM0012, which could result in higher project costs. Associated GHGs that must be accounted for are also more comprehensive under FCOP (CO_2, CH_4, and N_2O) than VM0012 (CO_2, only).

Project Start Date

[8] Carbon dioxide equivalent" or "CO_2e" is a term for describing different greenhouse gases in a common unit. For any quantity and type of greenhouse gas, CO_2e signifies the amount of CO_2 which would have the equivalent global warming impact. In this analysis, CO_2 is the only GHG under consideration, and so CO_2 and CO_2e are equivalent and interchangeable.

[9] The rigor associated with a given methodology depends on whether credits are intended to be sold or used internally; requirements in the latter case tend to be less onerous.

To encourage project participation, the VCS standard contains provisions to incorporate climate emissions reductions that may have been initiated prior to final project development and approval. Hence, under VCS rules, the project start date can be retroactive to the date on which activities that lead to the generation of GHG emission reductions or removals are implemented. In the case of the MFR, these activities began formally in year 2020. Hence, the project start date will be January 1, 2020.

Ownership

VCS rules state that the project proponent demonstrate control over the entire project area with documentary evidence establishing project ownership. In terms of their fee simple properties, the MNC has clear rights and title to any carbon credits derived from a project developed on these lands, as per VCS requirements. Should the MNC pursue a grouped project, private landowners will be subject to meeting ownership requirements vis a vis any carbon credits generated.

Permanence and Project Length

For IFM projects under VCS, the project crediting period (project length) can be a minimum of 20 years to a maximum 100 years. Though not mandatory, there are benefits within the VCS program where projects can demonstrate that activities will maintain the carbon stocks on which GHG credits have been issued, beyond the crediting period. In the case of shorter crediting periods, the project may be renewed at most four times with a total crediting period not to exceed 100 years. Shorter crediting might be appealing to owners averse to encumbering their land for protracted periods but project renewal would also entail additional financial costs. For the MNC carbon project, the recommended project length for the MFR is 100 years.

The permanence of carbon credits issued to the project is assessed in VCS through a detailed risk assessment process conducted for a mandatory 100-year period, a time frame that encompasses all project crediting periods. Assessment includes risks associated with project management, longevity, ownership, financial viability, and natural disturbance. This process generates a score that determines the proportion of offsets deposited into a Buffer Pool.[10] A low risk project might be required to contribute 10-15% of emission reductions to the Buffer Pool, while a high-risk project might contribute as much as 60% of emission reductions. In the case of the BCFCOP methodology, there is an additional requirement. The BC Emission Offset Regulation requires that projects involving removals by controlled sinks and avoided emissions from reservoirs / pools prepare a risk mitigation and contingency plan for ensuring that the

[10] The VCS Buffer Pool is a group program that provides all-cause insurance to cover carbon emission reversals related to any project in the VCS portfolio. The buffer pool serves to protect the integrity of the emission reductions acquired by carbon offset buyers from a VCS project.

atmospheric effect of removals and avoided emissions endures for at least 100 years after the last offset was claimed[11].

Based on 3GreenTree's experience with the application of the risk tool, our expectation is that the MNC project will have a low risk rating.

Additionality

Additionality refers to whether claimed emission reductions are in excess of what would have happened had the project not been undertaken, as described and quantified in the baseline (see Section 3). All carbon methodologies provide methods to assess additionality. VCS has three basic criteria. 1. Regulatory surplus: Project activities cannot be required by law, statute, or any regulatory framework. Landowners, for example, are legally required to maintain stream buffers, making these carbon stocks ineligible. 2. Implementation barriers: The project must face one or more distinct barrier(s) compared with any alternatives (i.e., the potential baselines) to the proposed activities. These barriers might be financial, technological, or institutional. Additionality requires that project activities must play a role in overcoming these barriers. 3. Common practice: Activities must go beyond what might be considered common practice to be additional.

Key elements most relevant to MNC forest carbon project would be the forest protection requirements and restrictions mandated under the Forest and Range Practices Act (FRPA), the forest management plans and activities applied to the MFR, and financial returns from forest management activities. Should MNC wish to pursue a grouped project by allowing private landowner participation, the Private Managed Forest Land Act would determine the minimum standards and practices against which these lands will be assessed for additionality within the project. Finally, in terms of any subsequent property acquisitions (purchased or deeded) by MNC, those made for conservation purposes on land that would have been utilized for other purposes, are considered additional by default because there is no compelling business case to conserve forests beyond carbon income. Acquisitions that add to the harvestable timber supply would be subject to the same criteria for additionality as current MNC timberland.

Leakage

One of the more challenging aspects of carbon projects. Leakage relates to the risk that project implementation will directly or indirectly increase carbon emissions elsewhere (but within the host country). VCS recognizes two types for forestry-based projects, activity-shifting and market leakage.

[11] Under the BCFCOP then, if a project's last issuance is at year 75 of an 80-year crediting period, for example, the mitigation and contingency plan must be operational for another 100 years thereafter, or 175 years after the project start date.

Activity shifting leakage (ASL) occurs when there is an increase in GHG emissions by the project proponent from areas outside the project boundary in response to restrictions imposed by the carbon project itself. For instance, a project that requires a reduction in harvest level of a forested property to conserve carbon stocks and the developer simply increases the harvest level on another owned property to make up the shortfall.

Market leakage (ML) occurs when there is an increase in GHG emissions from areas outside the project boundary as a result of the project significantly reducing the production of a commodity, causing a change in the supply and market demand equilibrium, which favors a shift of production elsewhere. For example, if sufficient volume of timber is removed from the supply chain as per the requirements of a carbon project, prices may rise in response to a reduced supply which incentivizes more harvesting overall in the region.

Both the VM0012 and BCFCOP methodologies provide guidelines for calculating leakage and assessing the resulting carbon credit discount. ASL is not a concern on the MFR but may be of some concern if private landowners are included as part of a grouped project. ML should be a minor issue because the harvested annual volumes from the MFR are relatively low. Both methodologies provide an option of using default discount factors or undertaking a series of calculations. The maximum default factors are in excess of 65%, which means that most of the benefits from a harvest reduction would be lost due to the leakage penalty. This provides a strong incentive for proponents to calculate their own leakage discount, which is likely to be much lower.

Section 3 - The Baseline Scenario

The baseline is a counterfactual forecast of what would have happened on the project area and the resulting GHG emissions, in the absence of the chosen alternative (i.e., the actual project scenario). VM0012 requires a 3-step process to determine a project-specific baseline, the result of which must be consistent with the rules for additionality. BCFCOP combines the baseline and additionality analyses to also derive a project-specific scenario.

In practical terms, carbon flows among all required pools that would have occurred from activities conducted under the baseline scenario, are accounted for. This includes emissions related to harvesting and from the subsequent decay of needles, branches, stumps, and roots. As a counterbalance to emissions, the analysis includes carbon stored in wood products following harvest and sequestered through forest growth.

In the case of the MFR, a single baseline will be utilized. Termed business-as-usual (BAU), it is a continuation of the harvesting and silvicultural practices employed on the MFR over the recent past. An annual harvest target of 17,600 m^3 was determined based on an evaluation of the temporal trends in historical harvesting on the MNC forest landbase (See Section 5).

Section 4 - The Project Scenario

The project scenario describes activities that represent a deviation from the baseline and whose outcome therefore results in emission reductions and/or enhanced carbon storage. The decrease in net emissions under the project scenario versus the baseline represents the gross amount of offset credits potentially available. Under VM0012, the IFM project category permits considerable flexibility in terms of management activities Under the Logged to Protected Forest (LtPF) activity. The majority of carbon benefits, however, accrue from conserving existing carbon stocks through reduced harvest levels. Note that areas retained/conserved as per legislated requirements (buffer zones, for example) are applied in both the baseline and project scenarios and therefore net each other out. As a result, there is no net emission reduction that can be claimed by the project for these activities.

The carbon assessment below (Section 5) provides a reasonable approximation of the credit potential that could be derived from a project developed within the MNC[12]. The analysis uses a baseline scenario for the MFR derived from prior harvesting levels and forest management plans, termed business-as-usual (BAU). Application of the BAU generates harvest volume but does not generate any carbon credits. The alternative scenarios assume a reduction in the harvest levels, relative to the baseline, of 50% (1/2 BAU), 75% (1/4 BAU), and 100% (i.e., a complete cessation of harvesting). This results in greater carbon storage, from which carbon credits are calculated. Actual, revised harvest levels will be ascertained at a later date through a community consultation process, as well as the methods employed to achieve a reduction in harvest. This process will be informed by a scenario analysis conducted by the 3GreenTree-UBC team.

Section 5 - MNC Carbon Project Modeling and Financial Assessment

Project costs

Initial costs (see Table 1) are the conceptual project design, the feasibility assessment, and development of the formal Project Design Document (PDD)[13]. The PDD describes in detail, the GHG emission reduction or removal activities and the resulting GHG balances. After the PDD is completed, the next step is to obtain a 3rd-party Validation audit, the result of which confirms that the project activities are consistent with the requirements of a given methodology. This is followed by a 3rd-party Verification audit. The initial verification confirms the accuracy of any carbon credits claimed by the project from its beginning to the audit date[14]. This credit tranche

[12] This exercise is for illustrative purposes. Until the actual input values are verified, the projected carbon credit benefits should be used for general guidance only.
[13] Sometimes referred to as the Project *Description* Document.
[14] Note that for all leading carbon standards, only *ex-poste* credits are acceptable. This refers to credits that have already accrued versus credits that may accrue at some future data (termed, *ex ante*).

can now be offered for sale. Typically, validation and the first verification are conducted simultaneously, usually requiring several months to complete, but this saves both time and money. Subsequent verifications confirm the integrity of new credits generated in the period following the previous verification. Under VCS, a project must re-verify a maximum of every five years. Finally, the project is also required to implement a monitoring program that includes a series of permanent sample plots, as well as remote sensing data. Monitoring activities occur on a regular basis in order to track conditions on the project area (documenting any unplanned carbon losses from fire, illegal harvesting, leakage, for example) and estimate carbon stocks resulting from planned harvests and re-growth. Table 1 provides estimates of the initial and ongoing project costs.[15]

Table 1. Project cost estimates

Activity	Initial cost estimate	Ongoing cost estimate
Setup costs*	$150,000	$0
Project development	$30,000	$0
Validation/verification	$65,000	$25,000 (at verification)
Project management	$0	$5,000 per annum
Plot installation	$7,600	$0
Maintain, re-measure plots	$0	$1,600 (at verification)
Registration/issuance fees	$1,260	~ $1,260 per annum
Brokerage fees	$1,578	~ $1,578 per annum

* These costs are principally associated with developing the preliminary and long-term forest management plan in conjunction with the carbon project.

Carbon credit prices and harvesting returns

Determining the 'actual' price for a carbon offset is a challenge. As with all products, annual prices can vary substantially in relation to demand, but they also depend on which standard the project conforms to (the Verified Carbon Standard, for example, tends to command higher prices), its location (local projects have greater buyer appeal), and the project type (forestry and land use credits often sell for the highest price). The volume of credits purchased is another important factor; credit prices tend to be lower for higher volumes (> 25,000 tonne CO_2e). Data show that many transactions involve relatively small volumes and these are more likely to realize prices substantially higher than the 'average' for a given project type. To accommodate uncertainty in credit value, a range in prices was utilized, consisting of a starting price of $5, 10,

[15] Note, there may be some fixed and capital costs from harvesting, above and beyond the ongoing estimates used in the current analysis (see Table 1), that could be included in the financial calculations. These costs require careful consideration because they would serve to increase the carbon credit price required to break-even when compared with revenues derived from the baseline harvesting scenario. Conversely, adding financial co-benefits from a carbon project (recreational revenue, for example) would reduce the break-even credit price; co-benefits were not included in the financial analysis.

and $20 per tonne CO_2e (all prices in CAD). Prices were assumed to rise in value by 1% per annum to reflect the anticipated growth in the carbon credit market. After 30 years, the three respective credit prices had increased to $6.67, $13.35, and $26.69 per tonne CO_2e.

Harvesting returns were derived from annual financial statements generated for the Forest Advisory Committee. Estimates of annual profit were utilized in the financial analysis for the years 1987 to 2019 because this metric reflected the actual benefits returned to the community from the forestry program. Profits showed considerable variation over this 30-year period, including 7 years with negative returns. As with carbon credits, profits depend on numerous factors (operating costs, lumber quality, volumes harvested, lumber prices, etc.), most of which are difficult to predict *a priori*. Variation in profit was therefore derived by plotting annual profit against volume harvested in that year and fitting the data with a simple linear regression model (forced through the zero intercept). The resulting equation was:

Annual profit ($ CAD) = $9.36 * Volume harvested (m^3), $r^2 = 0.14$.

As with carbon credits, the $9.36 profit per m^3 was assumed to rise in value by 1% per annum. Its value after 30 years was therefore $12.49 per m^3.

Model simulations

Carbon storage and volume flow for the MNC forest landbase was modelled using a combination of stand and landscape-level models, using the following steps:

1. **Landscape stratification.** The landbase was stratified by polygon in accordance with the Vegetation Resource Inventory (VRI) provided by North Cowichan, updated to year 2019. Each forested polygon was assigned to an analysis unit using the criteria described in Table 2. A breakdown of the forest area by age class is shown in Table 3. Regional LiDAR[16] data from 2017 were used to estimate forest cover within inventory polygons and to confirm forest age.

Table 2. Stand-level analysis units used to model the forested land base.

Analysis Unit	Criteria	Area (ha)
Douglas-fir Dominated	≥ 80% Douglas-fir	3,985
Douglas-fir - Mixed conifer	< 80% Douglas-fir & ≥ 75% conifer	422
Mixedwood with conifer lead	< 80% conifer lead with deciduous component	456
Mixedwood with deciduous lead	< 80% deciduous lead with conifer component	226
Deciduous dominated	≥ 80% Deciduous	263

[16] Light Detection and Ranging (LiDAR). LiDAR is a remote sensing method that measures distance to a target by illuminating the target with laser light and measuring the reflected light with a sensor. It is often used in forestry applications to estimate tree height and forest cover.

Total		**5,352**

Table 3. Area by age class at the start of the simulation (year 2019).

Age Class	Age Criteria	Area (ha)
1	1 to 20	345
2	21 to 40	1,416
3	41 to 60	2,201
4	61 to 80	1,194
5	81 to 100	148
6	101 to 120	33
7	121 to 140	13
	Total	**5,352**

2. **Harvesting Landbase.** The harvesting landbase was identified by removing areas within riparian buffer zones and areas in which harvesting has been historically restricted.[17]

3. **Stand-level growth projections.** Forest growth in each analysis unit was modelled using the FORECAST[18] model and its output (merchantable volume and net ecosystem carbon storage) stored in a database as input to the landscape-scale model (the full output dataset is available in a separate file; see Appendix 2). Net ecosystem carbon storage includes above and below-ground tree biomass, dead and downed wood, and dead below-ground tree biomass (root litter created after harvest). Understory plant biomass, non-woody above-ground litter and soil organic matter are excluded.[19]

4. **Landscape-scale modelling.** The landscape-scale model uses the information in the stand-level database to assign volume and carbon storage information for each forested polygon. A spreadsheet-based model was then constructed in Excel to simulate the impact of harvesting activities on volume yield and landscape-level carbon storage within the MNC

[17] The Maple mountain forest preservation zone was excluded from harvesting in the baseline scenario. Required 30-m buffers were used to exclude forest areas adjacent to riparian features from harvest.

[18] FORECAST is an approved model for use under the British Columbia Forest Carbon Offset Protocol, and it was one of four models approved for government funding of model development, testing, validation and application under the BC Forest Science Program. It has been subject to a successful independent audit by three accredited firms, Rainforest Alliance, SCS and DNV. These audits sought to confirm that FORECAST is well-established in terms of its development timeline and applications, adequately described in the professional literature, appropriate for simulating the biomass dynamics of forest ecosystems (in this case, within the context of a carbon offset project), and its user-group possesses the requisite skills to apply the model correctly. In 2008, the model was one of a small number of models approved by the Canadian government for simulating carbon (i.e., biomass) dynamics.

[19] These are the pools included/excluded in forest carbon projects developed under the VCS methodology.

forest landbase. The model was designed to take account of annual volume growth and net ecosystem carbon storage within each forested inventory polygon over a 30-year time period. An annual harvest schedule was generated by identifying all eligible stands, sorting those stands by age class and, starting with oldest age-class, randomly harvesting polygons within each age class until the annual volume target was achieved. Annual variation in projected harvest volumes for the BAU scenario (see Figure 1) occurred because the volume target could not always be achieved. When a stand (inventory polygon) was harvested, its age was reset to 1 to reflect the removal of volume and biomass carbon. The total volume flow, growing stock and net ecosystem carbon storage for the landbase was summarized across all polygons for each annual timestep for the harvesting scenarios (See Figure 1).

The financial viability of the carbon project compares the three alternative project scenarios against the BAU option. A financial analysis was conducted using the simulated carbon credit flow in conjunction with the establishment and operating costs of a carbon project, and the range in credit prices and harvesting returns, as described above. Calculations include Discounted Cash Flow (DCF), and Net Present Value (NPV). DCF is a valuation method used to estimate the value of an investment based on future cash flows; the value of a company today, based on projections of how much money it will generate in the future. NPV is used to analyze the profitability of a projected investment or project; an investment with a positive NPV will be profitable, while a negative NPV will result in a net loss (see Appendix 1 for further details on these metrics). NPV then accounts for what it costs to set up the carbon project in relation to anticipated returns. These metrics were applied to compare the BAU scenario (continued harvesting at historical rates) against the three alternative carbon project scenarios.

Timber harvest and carbon credits

Under BAU, harvesting was projected to remove, on average, 17,630 m^3 of timber annually over the 30-year project period (Figure 1). This varied from a minimum of 15,155 to a maximum of 19,546 m^3. When harvesting is reduced, the flow of carbon credits is expected to increase over the first 10 years of the project and be stable thereafter (Figure 1). 'No-harvesting' generates the most credits (average = 19,138 t CO_2e per year), followed by ¼ BAU (average = 14,353 t CO_2e), then ½ BAU (average = 9.569 t CO_2e). This is a consequence of the fact that less logging reduces harvested volume, which preserves carbon stocks thereby generating more credits.

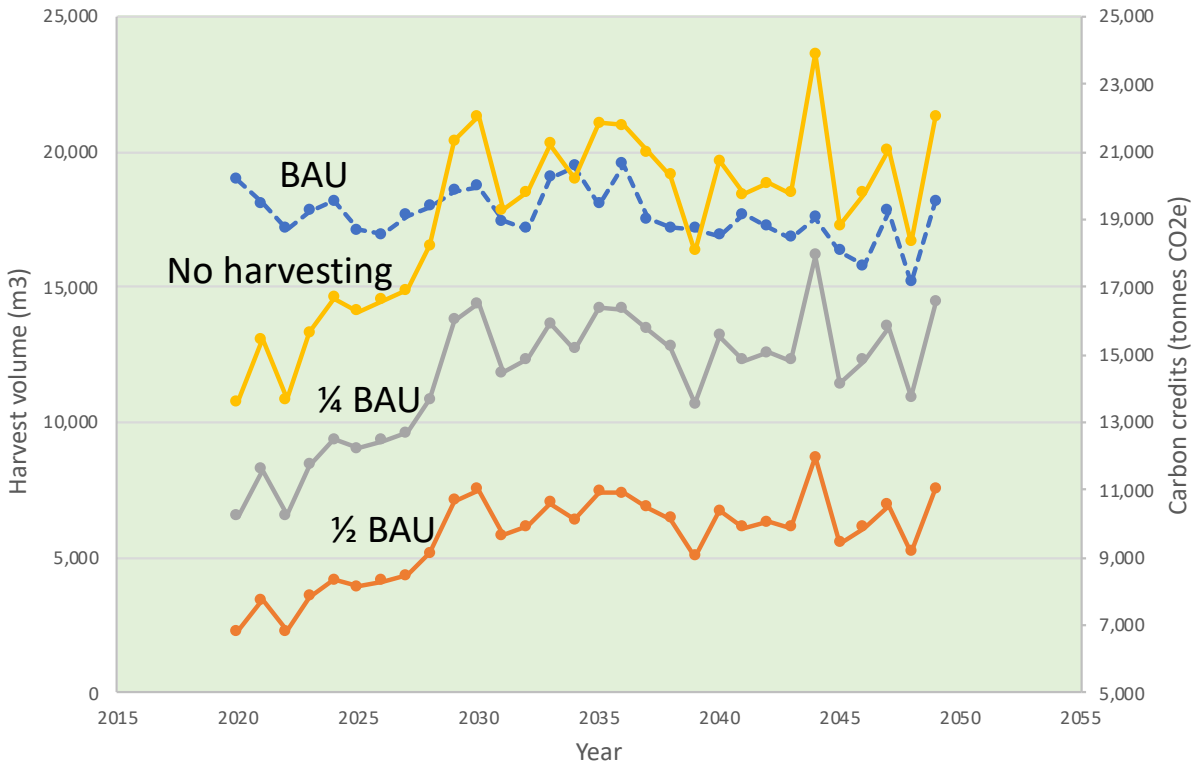
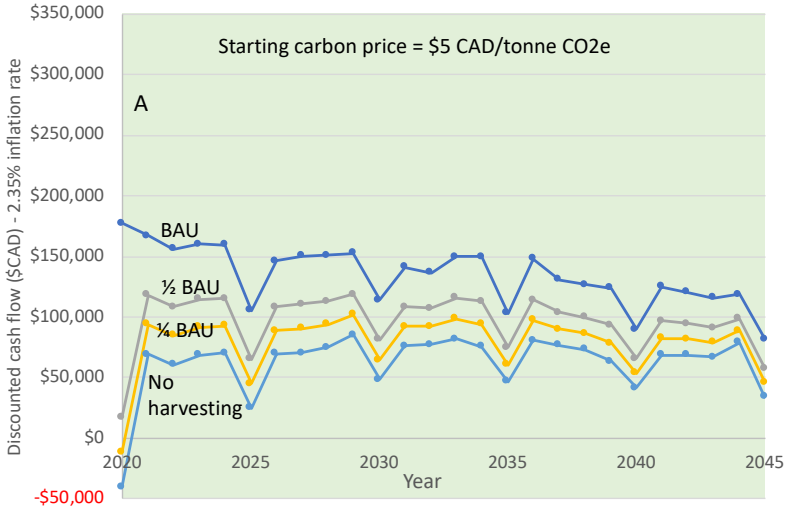


Figure 1. Annual harvest volumes (m^3; blue dashed line, left axis) and carbon credits (t CO_2e; right axis) anticipated over the next 30 years. Business-as-usual (BAU) sets the baseline and reflects harvest levels based on historical rates; BAU does not generate any carbon credits. Harvesting is reduced by 50% (½ BAU; orange line), 75% (¼ BAU; grey line), and 100% (No harvesting; yellow line), which results in a corresponding production of carbon credits.


Starting carbon price = $5 CAD/tonne CO2e
A
BAU
½ BAU
¼ BAU
No harvesting
Discounted cash flow ($CAD) - 2.35% inflation rate
$350,000
$300,000
$250,000
$200,000
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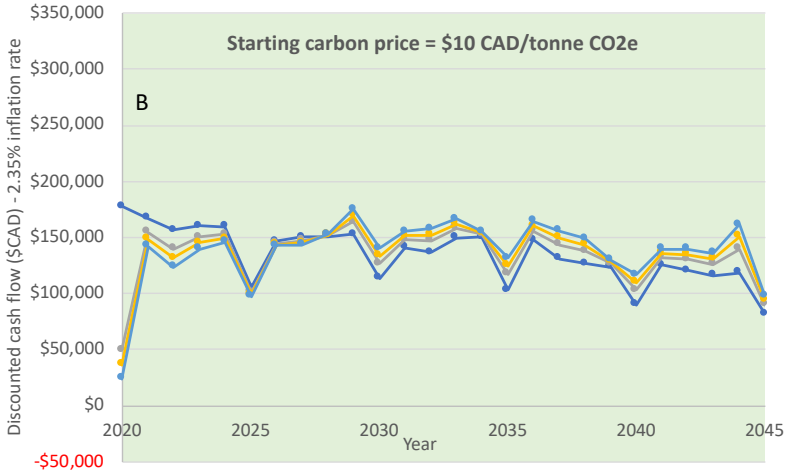
2045
Year


Starting carbon price = $10 CAD/tonne CO2e
B
Discounted cash flow ($CAD) - 2.35% inflation rate
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$300,000
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2020
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2040
2045
Year

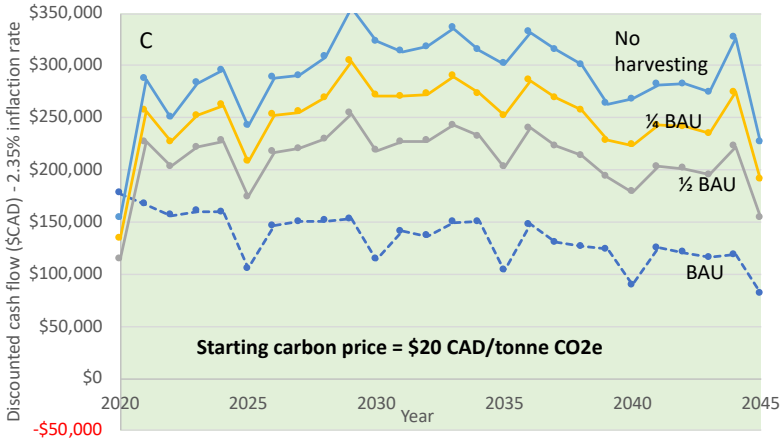
C
No harvesting
¼ BAU
½ BAU
BAU
Starting carbon price = $20 CAD/tonne CO2e
Discounted cash flow ($CAD) - 2.35% inflation rate
$350,000
$300,000
$250,000
$200,000
$150,000
$100,000
$50,000
$0
-$50,000
2020
2025
2030
2035
2040
2045
Year

Figure 2. Discounted cash flow over the next 25 years from logging, and for carbon credit prices starting at $5 (panel A), $10 (panel B), and $20 per t CO_2e (panel C). Business-as-usual (BAU) only generates logging revenue. Harvesting is reduced by 50% (½ BAU), 75% (¼ BAU), and 100% (No harvesting), which then results in a corresponding production of carbon credits.

Discounted cash flow (DCF) over the next 30 years from logging at BAU levels averaged $131,736 per annum (this calculation does not include a terminal value; TV). DCF from a carbon project is less profitable than BAU if credit prices are below $10 per t CO_2e (Figures 2A, B). At $5 per t CO_2e, for example, the no-harvesting scenario is the least favorable option with an average annual DCF = $62,138 (no TV), followed by ¼ BAU (average annual DCF = $78,653; no TV) and then ½ BAU (average annual DCF = $95,168; no TV). The order of the carbon scenarios relative to harvesting is a result of the fact that, at $5 per t CO_2e, the carbon credit price does not compensate for the loss in timber revenue. This effect is amplified when the number of carbon credits increases as harvesting is reduced. At $10 per t CO_2e, carbon credit DCFs are similar to each other and to BAU timber harvesting (Figure 2B). Hence, a carbon project can substitute for the revenue stream derived historically from logging if credit prices are around $10 per tonne CO_2e (Figure 2B). If credits are sold at $20 per t CO_2e, revenues always exceed those anticipated from harvesting (Figure 2C). At average annual revenues of $211,434 (½ BAU), $249,425 (¼ BAU), and $287,415 (no-harvesting), these returns are not trivial (52%, 79%, and 107% higher, respectively).

Terminal value calculations from BAU indicate a long-term value of harvesting (i.e., beyond the 30-year project period) of $2,750,625 (Table 4). This valuation exceeds that from carbon credits at $5 per t CO_2e (by 25 to 48%). However, TV from carbon credits is greater than harvesting TV at $10 (between 6 and 14%) and substantially more at $20 per t CO_2e (67 to 136%).

Table 4. Terminal value calculations at year 30 of the simulations for carbon credit prices starting at $5, $10, and $20 per t CO_2e. Business-as-usual (BAU) only generates logging revenue. When harvesting is reduced by 50% (½ BAU), 75% (¼ BAU), and 100% (No harvesting), this results in a corresponding production of carbon credits. Red values indicate TVs less than BAU.

Carbon price	BAU harvesting	50% less	75% less	None
$5	$2,750,625	$2,230,030	$1,969,733	$1,709,436
$10	$2,750,625	$3,112,594	$3,293,579	$3,474,564
$20	$2,750,625	$4,877,722	$5,941,271	$7,004,820

Net present values (NPV) from either BAU harvesting or a carbon project are always positive (Figure 3), indicating that projected earnings exceed anticipated costs. As with the DCF analysis, NPVs from carbon credits selling at $5 per t CO_2e are less than BAU (=$6,270,088), ranging from 25% (½ BAU) to 48% lower (no-harvesting). NPVs from a carbon project are somewhat better than BAU at $10 per t CO_2e, ranging from 6% to 14%, and by 63% to 125% more than BAU (½ BAU and no-harvesting, respectively) at $20 per t CO_2e (Figure 3).

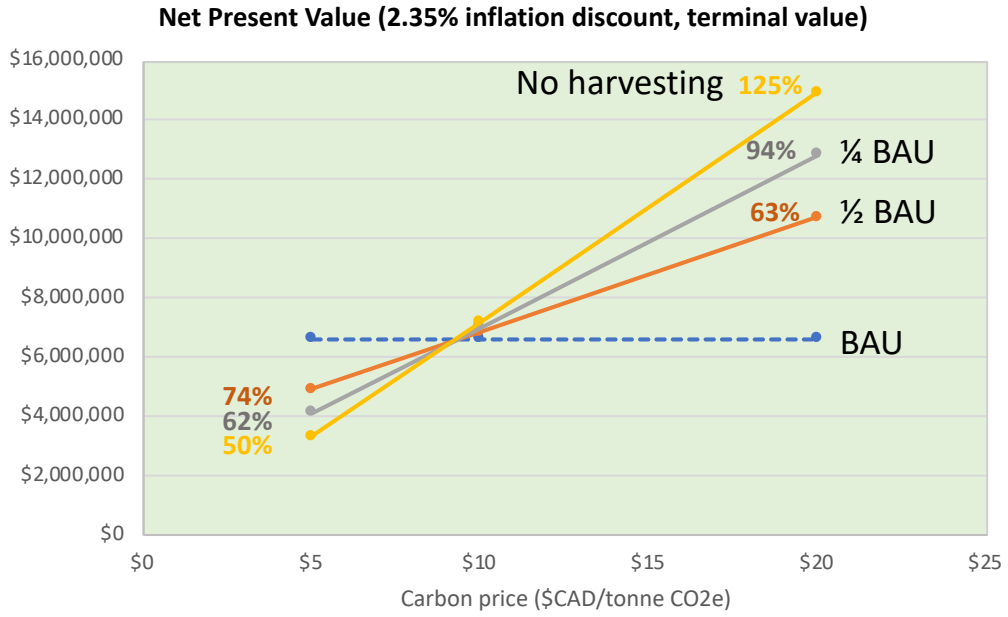

Figure 3. Net present value calculated over the next 30 years from logging, and for carbon credit prices starting at $5, $10, and $20 per t CO_2e. Business-as-usual (BAU) only generates logging revenue. Harvesting is reduced by 50% (½ BAU), 75% (¼ BAU), and 100% (No harvesting), which then results in a corresponding production of carbon credits.

Section 6 - What is the market for carbon credits?

Demand versus supply trends

As the financial analysis indicates, the relative returns from a carbon project depend heavily on the anticipated price at which credits can be sold. Market prices are, in part, a function of the forces of supply and demand. The most reliable sources for information on the voluntary market are the annual reports generated by Ecosystem Marketplace (EM; www.ecosystemmarketplace.com), an initiative of the non-profit organization, Forest Trends (www.forest-trends.org). EM has provided summary information on voluntary carbon markets every year since 2006. Their latest survey (for the year, 2018)[20] indicates that, across seven project categories, 98.4 million t CO_2e of carbon offsets were transacted for the year, with a market value of $295.7 million USD.

For some large credit producers (generating annual credits in excess of 50,000 t CO_2e), oversupply and low prices have been problematic, for a variety of reasons. As noted above, nature-based solutions (NBS) have been gaining popularity in recent years, a trend that is likely

[20] Forest Trends' Ecosystem Marketplace. Financing Emission Reductions for the Future: State of Voluntary Carbon Markets 2019. Washington DC: Forest Trends, 2019.

to continue. The Paris Climate Accord (signed in 2016) should have a positive impact on credit demand. There is a gap between the level of emissions that countries have committed to under the Accord and the emissions trajectory that climate scientists predict is necessary to keep global warming within 2°C. Closing this gap will likely require significant action by non-state actors thus providing opportunities for the voluntary market. The Government of Canada pledged to achieve 30 million tonnes of annual net GHG sequestration in the year 2030 as part of Canada's efforts towards achieving its 2030 Paris climate commitments. The federal government's Output Based Pricing System (OBPS) outlines how carbon offsets can be used for regulatory compliance with Canada's GHG emissions limits. Large industrial emitters that emit over their sector benchmark have three options: (1) purchase offset credits, (2) buy surplus credits from other regulated firms[21], or (3) pay a direct charge to government. If priced competitively, offsets could make a significant contribution to satisfying these obligations.

Another major developing initiative is the International Civil Aviation Organization's (ICAO) CORSIA (Carbon Offsetting and Reduction Scheme for International Aviation) program, part of an international agreement to cap emissions from international passenger flights. Beginning in 2021, CORSIA will allow airlines to meet their emissions obligations by purchasing ICAO-recognized offsets. Projected demand from airlines for carbon offsets is substantial: 142–174 Mt by 2025, increasing to 443–596 Mt by 2035. Which offset types will be recognized under the program has yet to be defined.

Prices

Despite large transactional volumes and growing demand for voluntary carbon credits, the price per offset in 2019 across 7 project categories, averaged only $3.01 USD per tonne CO_2e[17]. This value can be misleading, however, because the vast bulk of transactions are at the lowest prices. A 2017 EM review[22], for example, showed that there were just as many credit sales in the highest carbon price category ($12+ USD) as the lowest category (< $1 USD), but that buyers in the former purchased offsets in much smaller quantities. It is worth noting that the highest prices were more than $50 USD per t CO_2e. The Forest and Land Use project category tends to command the highest average prices, particularly the Improved Forest Management (IFM) project type (i.e., the same type as the MFR project). In 2016, for example, IFM credits sold for an average of $9.50 USD per t CO_2e, when the overall average was just $3.00 USD per t CO_2e.

Internationally, the volume of carbon credits is oversupplied on the voluntary market but demand is strong for the highest quality units, particularly those with certified co-benefits (see Section 8). Other important considerations in marketing the MNC carbon project is that buyers

[21] Post 2020, facilities will only be able to cover 75% of their compliance obligation through offsets and surplus credits.
[22] Forest Trends' Ecosystem Marketplace, Unlocking Potential State of the Voluntary Carbon Markets 2017. Washington DC: Forest Trends, 2017.

tend to pay more for offsets that originate close to their own business operations; if a project provides benefits to nearby communities, such as training, job, tourism, and recreational opportunities; if there are ancillary benefits (biodiversity, habitat, etc.); and which particular standard the project is verified under (VCS credits, for example, are considered of high quality with better prices).

Section 7 – Conclusions

1. Ownership and management activities on MNC MFR satisfy the requirements for a carbon offset project.
2. The Verified Carbon Standard represents the standard best aligned with the goals and objectives of the MNC.
3. Of the four eligible activities under VCS, Logged to Protected Forest (LtPF) has the greatest flexibility and is likely best suited to the future management of the MFR.
4. The VM0012 methodology (Improved Forest Management in Temperate and Boreal Forests (LtPF). v1.2) is highly applicable to the MFR lands. It is well established and has formed the basis for three carbon credit projects in western North America.
5. The VM0012 methodology uses the VCS risk analysis only and which, at a minimum, is applied to the project crediting period. Other methodologies are more onerous, requiring a risk mitigation and contingency plan that extends 100 years past the last offset issuance date.
6. Initial estimates indicate that a carbon offset project on the MFR could provide an ongoing, stable revenue source to the MNC competitive with the current logging model, while ensuring that the additional ecosystem services of importance to the local community, are maintained or enhanced.
7. The future for nature-based climate solutions in terms of both voluntary and compliance carbon credits appears strong. This has led to optimism regarding the credit market with the expectation of rising prices in the near and far-term.
8. Sales conducted through established carbon credit exchanges (e.g., Markit) are likely not the best venue for MNC. These markets are highly competitive and credit prices tend to be lower than desired.
9. MNC should develop relationships among local entities (businesses, NGOs, government) interested in offsetting their carbon emissions, as purchasers of the MFR carbon credits. These over-the-counter transactions have better prospects for prices that reflect the high value of the credits generated from the project.

Section 8 - Additional considerations

Development of a grouped project.

The analysis did not include consideration of potential future property acquisitions by MNC, or provisions for allowing private landowners to participate in the project. Should this option be

exercised, the project would be defined under VCS as a 'grouped' project. Grouped projects allow for the expansion of activities beyond the 'initial project activity instance'[23].

Grouped projects provide a means by which the community-at-large can participate directly in the local government's climate change initiatives and for government to expand its forest holdings within the context of the carbon project. This project type, however, has a more complex structure than the 'standard' project described above and it must be defined before the validation stage. For example, the project area would need to be expanded to encompass potential future forested parcels that are additional to the existing MFR. Each project stratum would also need a corresponding baseline. A new property is then assigned to a given stratum based on the most plausible development scenario. Because the project area includes multiple strata, it thus contains multiple baselines, and project carbon calculations must be tracked for each baseline stratum.

For new properties to be added to the project, each must be validated as meeting the project requirements. Though the initial setup procedure is complex, it is a relatively simple process to add properties in conjunction with subsequent verification audits. There are some additional project management costs to prepare these new properties for monitoring and inclusion in the project - these costs should be minimal.

Credit stacking

One of the benefits of the forest carbon project are the multiple benefits it can provide in terms of ecosystem services. These can be broad ranging, including habitat improvements, water quality and quantity, recreation, etc. In the US, some of these co-benefits have been formally recognized as a type of environmental 'credit' and are monetized as such. Payments for ecosystem services are becoming an increasingly important part of the U.S. business and regulatory landscape. If a project receives payments for more than one of the ecosystem services that it generates, these credits are considered as "stacked"[24]. Credit stacking can, in principle, then expand the revenue potential of a project. Unfortunately, in Canada, formal markets for credits other than carbon are not as well-developed as in the US[25]. One option for MNC is to market the co-benefits of the project to interested parties (NGOs, conservation groups, etc.) informally and seek compensation for supporting project activities specific to their local interests.[26] It is worth nothing that no co-benefits from the carbon project were included in the financial analysis.

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[23] The initial activity instance is defined at the first project validation, and would be restricted to the MFR lands only. Adding more activity instances (private land, for example) would occur at a later date. With a grouped project, the project description must set out the geographic areas within which new project activity instances may be developed and the eligibility criteria for their inclusion. New instances meeting these pre-established criteria may then be added at a later date.

[24] Credit stacking is in contrast to "bundling" whereby environmental benefits a grouped within a unified credit rather than as separate, marketable credits.

[25] See: Poulton, David, Stacking of Multiple Environmental Credits: An Alberta Discussion Paper (August 28, 2014). Available at SSRN: https://ssrn.com/abstract=2560656 or http://dx.doi.org/10.2139/ssrn.2560656

[26] For example, groups who benefit from water quality improvements, enhanced recreational opportunities, etc.

Stacking does come with caveats. As with carbon credits, payments for ecosystem services must be for an environmental benefit that would not have otherwise occurred, or to prevent an environmental harm that would have occurred in the absence of the project.

Co-benefit certification

Despite the benefits of credit stacking, none of the leading voluntary standards incorporate co-benefits directly. Instead, they encourage project proponents to acquire co-benefit certification as an add-on to the project. These certification schemes provide formal mechanisms for describing and measuring any of the project co-benefits. This can lend additional (indirect) value to the carbon credits; buyers motivated by ideological, social license, or public relations concerns are often willing to pay a premium for these credit bundles to support a more robust narrative of their environmental initiatives. For the project proponent, creating a 'multi-benefit' credit incurs costs additional to generating credits purely for GHG mitigation outcomes. Typically, these costs are not prohibitive, however.

The largest of the certification schemes is the Climate, Community and Biodiversity (CCB) Standard (www.climate-standards.org). The CCB Standard provides comprehensive and objective criteria to assess and identify social and environmental risks, and to deliver significant benefits to local communities, biodiversity and the climate. The criteria ensure that projects:

- Identify all stakeholders and ensure their full and effective participation
- Recognize and respect customary and statutory rights
- Obtain free, prior and informed consent
- Assess and monitor direct and indirect costs, benefits and risks
- Identify and maintain high conservation values
- Demonstrate net positive climate, community and biodiversity benefits

Many VCS projects have obtained CCB certification.

A second potential certification scheme is Social Carbon (SC; www.socialcarbon.org). The Standard guarantees a transparent and participatory method of monitoring a project's co-benefits through a tool box of indicators that point to degrees of sustainability correlated to six resources:

- Social
- Human
- Financial
- Natural
- Biodiversity or technology
- Carbon

With a focus on local participation and engagement, as well as sustainable livelihood initiatives, this standard appears to be most applicable to developing countries.

Appendix 1. Financial metrics

Discounted cash flow (DCF) is a valuation method used to estimate the value of an investment based on future cash flows; the value of a company today, based on projections of how much money it will generate in the future. The present value of expected future cash flows is determined using a discount rate (the discount rate expresses the time value of money).

DCF is calculated as follows:

- CF = Cash Flow
- r = discount rate
- DCF is also known as the Discounted Cash Flows Model

$$DCF = \sum_{t=1}^{n} \frac{CF}{(1+r)^t}, \quad (1)$$

calculated annually for year *t* to *n* (the project forecast period). In the case of the carbon project, the forecast period is 30 years. CF refers to the net amount of cash and cash-equivalents being transferred into and out of a business. In this analysis, CF refers to earnings from timber sales (net profit) and the sale of carbon credits (net of operating expenses) but does not include any interest, taxes, depreciation, or amortization costs. DCF includes a discount factor to account for the time value of money. The average annual rate of inflation for Canada (2.35%), as derived from the Consumer Price Index calculated on a yearly basis over the previous 35 years, was used as the discount factor (*r* = 2.35%).

Application of the DCF has two components—the forecast period (as per equation 1) and a Terminal Value (TV). TV determines a company's value into perpetuity beyond the forecast period, and often comprises a large percentage of the total assessed value. There are two commonly used methods to calculate terminal value—perpetual growth and exit multiple. The perpetual growth method assumes that a business will continue to generate cash flows at a constant rate forever, while the exit multiple method assumes that a business will be sold for a multiple of some market metric. Since the MFR is government-owned, the perpetual growth method was used.

The formula to calculate terminal value (TV) is:

$$TV = \frac{FCF*(1+g)}{r-g}$$

Where:

FCF = Free (discounted) cash flow for the last forecast period
g = Terminal growth rate
r = discount rate (2.35%)

Terminal growth rate is usually in line with the long-term rate of inflation (2.35%). In this analysis, however, *g* is set conservatively at 1% per annum.

Net present value (NPV) is the difference between the present value of cash inflows and the present value of cash outflows over a period of time.

NPV=TVECF−TVIC,

Where TVECF = Today's (discounted) value of the expected cash flows, and TVIC = Today's value of invested cash. TVECF is calculated as per equation 1.

A positive net present value indicates that the projected earnings generated by a project or investment - in present dollars - exceeds the anticipated costs, also in present dollars. One of its uses is to analyze the profitability of a projected investment or project. It is assumed that an investment with a positive NPV will be profitable, and an investment with a negative NPV will result in a net loss.

In this analysis, NPV was calculated with and without a TV. The latter would be applicable if, for example, the carbon project was terminated after the 30-year period.

Appendix 2

The full output dataset is contained in an accompanying file: MNC carbon dataset output.

Report

Date	June 30, 2020	File:	
To	Council		
From	Shaun Mason, Municipal Forester	Endorsed:	
Subject	2019 Annual Forestry Report		

Purpose

To provide a general summary of the metrics and activities conducted within the Forestry Department in 2019.

Background

Each year the Municipal Forester prepares an annual report of key Municipal Forestry Reserve (MFR) metrics and activities from the previous year for Forest Advisory Committee (FAC) and Council review. The release of this report typically coincides with the release of the municipal Annual Report, providing more detailed information on the MFR specifically. The 2019 report describes MFR metrics and activities consistent with the MFR management model currently under review. Given the forestry operations review and the public engagement activities occurring in 2020/2021, it is anticipated that future annual reports will be consistent with any new or altered management models that may be supported by the FAC and/or adopted by Council.

Harvest Summary

*Total Area = 45.1ha
Average Harvest Area = 4.5ha
Total Volume = 15,255m^3
Logging cost = $668,934 = $43.85/ m^3
Gross Revenue = $1,509,856 = $99/$m^3$
Net Revenue = $804,922 = $55/$m^3$
Forestry Program Total Net Profit = $275,255 = $18.04/$m^3$

*This includes the total area identified within the identified blowdown salvage areas, not the actual area harvested.

Log Sales Summary

Domestic sales = 5,603 m^3 (37%)
Export sales = 9,652 m^3 (63%)

Planting

Costs $ 42,323 Budget $ 51,500

In spring 2019, 45.3 ha were planted with 44,790 seedlings. The total cost for each tree planted was $0.91/tree. Seedling costs were $0.51/tree and planting costs were $0.40/tree (includes fertilizer)

*seedling cost include seed cost, cold storage and shipping

Planting Summary:

Species Planted	# Planted	% of Total Planted
Douglas Fir	40,020	90%
Western White Pine	1,890	4%
Western Red Cedar	2,880	6%

Tea-bag fertilizer application at time of planting = 27,255

Plantskydd (browse deterrent) was applied to the Douglas Fir seedlings prior to planting with a cost of ~$0.01/tree.

Since 1987, the Municipality has planted 2,209,894 seedlings and harvested 1562 ha – all of which has been replanted.

Road Construction and Maintenance

Costs $56,767 Budget $89,400

- Tendered road reconstruction/rehabilitation of existing road to safely facilitate salvage harvesting – 1.9km.
- Culvert, ditch cleaning, road grading/repair and capping for various roads on Maple Mountain, Southview Terrace, Mount Prevost, Mount Sicker, Mount Tzouhalem and Mount Richards.
- Tree removal to allow safe access along forestry roads throughout the MFR as a result of the December 2018 windstorm.
- Roadside brush cutter mechanically removed encroaching brush and overhanging branches for improved safety while driving on Mount Richards, Maple Mountain and Mount Prevost – 15.5km

Site Preparation

Costs $471 Budget $ 8,000

The 2019 Hazard Abatement program consisted of 47 piles that were burnt successfully on Mount Prevost and Maple Mountain on November 23&24, 2019. The burning was completed by staff and Forestry Advisory Committee volunteer, Eric Jeklin. A professional custom forecast was used for the Mount Prevost area to meet venting requirements for burning on November 23 and the Environment Canada venting forecast allowed for burning on November 24 on Maple Mountain. Burning conditions were favorable on both days with piles successfully burnt.

Fire Protection

Costs $ 24,346 Budget $ 45,000

- No forest fires within the MFR in 2019.
- Renewed Wildfire Response Agreement for a 3 year term.
- Road improvements for emergency vehicle access in Stoney Hill and Southview Terrace.
- Community Wildfire Protection Plan started – Costs will be reimbursed through CRI grant funding in 2020.
- Additional fire fighting equipment purchased to replenish and add to the current equipment inventory.
- The Mount Prevost, Sicker and Grace Road gates were closed due to fire hazard concerns May 29 and re-opened October 13.

Silviculture

Activity	Type	Area Treated	Cost	Budget
Plantation Brushing	Manual	19.3ha	$12,541	$19,000
	Herbicide	0	0	$2,000
Invasive Species Control	Manual	*see below	$11,838	$15,000
White Pine Pruning	Manual	10.5ha (920 Trees)	$1,200	$20,000
Silviculture Surveys	Various	562ha	*Completed by Forestry Staff	

Invasive Species Control Summary:
Tansy Ragwort – Various locations on Mount Richards and Maple Mountain
Scotch Broom – various locations on Mount Richards, Maple Mountain and Stoney Hill.

- Help support the Cowichan Trails Stewardship Society with Scotch Broom removal in the Southview Terrace area

Tree Protection

Costs	$ 33,107	Budget	$ 34,000

- Removed 5611 browse protectors ($1.21/tree)
- Installed 9925 browse protectors ($2.10/tree)
- Re-Use 1260 browse protectors ($1.50/tree)
- Purchased 10,000 stakes

Community Relations and Contributions

Revenues generated from the MFR pay for the associated expenses of managing forest activities and also fund community relations and contribution activities in a variety of ways:

- Annual high school scholarship and bursary winners chosen - $2,400 total awarded.
    - ~$151,200 total awarded since 1998
- Annual high school woodworking contest winners chosen - $950 in prizes awarded. Total of 10 students entered their magazine rack projects into the contest.
    - ~$18,050 total awarded since 2001
- Annual firewood donations delivered. The 2019 recipients were Chemainus Rod and Gun Club, Maple Bay Rowing Club and Sacred Cedar Centre.
    - ~38 Loads delivered since 2000, with an estimated total value of $38,000
- 96 firewood permits sold to the public.
- Forest Legacy funded projects:
    - Cross trail rebuild, improved accessibility, signage, fencing, bridges, and safety mitigation = $100,000
    - Recreational trail mapping, signage and sign posts = $40,000

Forest Tours

Council/FAC

- Council and the FAC toured Mount Prevost, Stoney Hill and Maple Mountain in May as part of a general tour of the MFR.
- Council toured Mount Tzouhalem in November to view active salvage harvesting while in progress.

Schools/Public

- Cedar Community Secondary toured Maple Mountain in October. Approximately 45 grade 8 students visited Maple Mountain to look at the fire area that was burnt in summer of 2018.
- A Vancouver Island University second year forestry class of 17 students visited Mount Richards to view the active salvage harvesting.

Other Notable Activities

- Sensitive Ecosystem Assessments completed for Stoney Hill and Mount Prevost
- The Forestry Engagement Project was tendered and awarded to Lees and Associates who began working on the Communications and Engagement Plans for the Forestry Public Engagement project.
- On August 21, Council endorsed the UBC partnership group to lead the Forestry Review and authorized them to move forward with their proposal titled "Multi-Objective, Landscape-Scale Scenario Analysis & Forest Carbon Project Evaluation".
- Successfully completed the Association of BC Forest Professional mandatory peer review to ensure continuing competency of its members.
- Successful in receiving a grant from the CRI FireSmart Community Funding & Supports program to renew and update the outdated Community Wildfire Protection Plan.
- Municipal Forester attended the BC Community Forest Association Conference in Mission that included a tour of the Mission Municipal Community Forest.

Recommendation

That the 2019 Annual Forestry Report be received for information.

Attachment(s):

Appendix A – 2019 Harvesting Summary
Appendix B – Harvest and Profit Summary
Appendix C – 2019 Statement of Account
Appendix D – 2019 Annual Forestry Report Photos

Appendix A

2019 Harvesting Summary

Harvest Area	Area (ha)	Vol m^3/ha	Total Vol m^3	Gross Revenue	Logging Costs	Net Revenue	Net Profit $/$m^3$	Logging Cost $/$m^3$
M-402	5.4	389	2103	$224,724	$60,987	$163,737	$77.86	$29.00
M-403*	7.9	246	1943	$206,646	$68,005	$138,641	$71.35	$35.00
Maple Roadside Salvage (MRS)	n/a	n/a	376	$23,538	$8,992	$14,546	$38.69	$23.91
M-1000	12.6	180	2268	$243,912	$115,681	$128,231	$56.54	$51.01
P-119**	2.1	664	1394	$161,845	$46,002	$115,843	$83.10	$33.00
P-836	4.4	401	1778	$175,020	$56,896	$118,124	$66.44	$32.00
P-800A (salvage)	0.2	390	78	$6,242	$2,496	$3,746	$48.02	$32.00
R-1000	2.5	481	1203	$112,175	$57,539	$54,636	$45.42	$47.83
R-352A***	3.5	389	1362	$110,636	$39,489	$71,147	$52.24	$28.99
T-1000	2.3	330	760	$64,206	$61,005	$3,201	$4.21	$80.27
TZH	n/a	n/a	899	$70,700	$64,267	$6,433	$7.16	$71.49
SH-220	4.2	260	1091	$110,212	$87,575	$22,637	$20.75	$80.27
Total	***45.1***	***338***	***15,255***	***$1,509,856***	***$668,934***	***$840,922***	***$55***	***$43.85***

Average Harvest Area Size = **4.5ha** (This includes the total area identified within the blowdown salvage areas, not the actual area harvested.)

*Total harvest area includes young plantation that was part of the fire area
**Started in 2018 and completed in 2019.
***R-352A ~60% completed in 2019

Appendix B - Harvest and Profit Summary

1987 To 2019 Harvesting Summary

	Year	Ha	Volume m³	Volume/Ha	Net Revenue	Net Revenue $/m³
1	1987	63.4	13,159	208	$204,772	$15.56
2	1988	73.9	18,602	252	$354,256	$19.04
3	1989	43.2	14,798	343	$272,913	$18.44
4	1990	36.1	10,969	304	$254,831	$23.23
5	1991	32.2	12,740	396	$271,217	$21.29
6	1992	63.3	12,935	204	$289,102	$22.35
7	1993	55.2	14,907	270	$542,821	$36.42
8	1994	58.6	16,160	276	$692,414	$42.85
9	1995	78	21,556	276	$1,205,329	$55.92
10	1996	48.7	14,427	296	$639,017	$44.29
11	1997	32.3	13,371	414	$625,437	$46.78
12	1998	30.2	12,085	400	$444,933	$36.82
13	1999	41	16,428	401	$564,867	$34.38
14	2000	35.9	13,378	373	$564,778	$42.22
15	2001	39.34	15,538	395	$660,924	$42.54
16	2002	39.9	13,880	348	$580,631	$41.83
17	2003	49.2	15,841	322	$661,089	$41.73
18	2004	64.47	19,126	297	$773,940	$40.47
19	2005	54.6	16,018	293	$672,876	$42.01
20	2006	53.4	17,518	328	$792,562	$45.24
21	2007	65.6	21,153	322	$804,375	$38.03
22	2008	39.5	13,703	347	$619,866	$45.24
23	2009	46.5	14,296	307	$439,936	$30.77
24	2010	42.1	16,418	390	$451,287	$27.49
25	2011	45.5	17,775	391	$664,170	$37.37
26	2012	42.7	17,142	401	$618,045	$36.05
27	2013	60.4	24,355	403	$1,110,159	$45.58
28	2014	51.7	20,226	391	$1,063,196	$52.57
29	2015	46.7	22,271	477	$1,003,533	$45.06
30	2016	36.6	17,268	472	$1,020,010	$59.07
31	2017	21.8	10,585	486	$832,043	$78.61
32	2018	25.1	11,562	461	$977,787	$84.57
33	2019	45.1	15,255	338	$840,922	$55.12
	Total	**1562.21**	**525,445**	**336**	**$21,514,039**	**$40.94**
	Average	**47.3**	**15,923**		**$672,314**	

Forestry Program Profit

	Annual Profit	Annual Profit $/m³	Annual Forestry Profit Split As Follows: General Revenues	Forest Reserve Fund	Forest Legacy Fund	Scholarship Fund	Land Purchases	Acres
1	-$24,825	-$1.89	$0	-$24,825	$0		$0	
2	$115,885	$6.23	$0	$115,885	$0		$0	
3	$38,486	$2.60	$0	$38,486	$0		$0	
4	$48,571	$4.43	$0	$48,571	$0		$0	
5	-$12,370	-$0.97	$0	-$12,370	$0		$0	
6	$67,231	$5.20	$45,000	$22,231	$0		$0	
7	$272,276	$18.27	$240,000	$32,276	$0		$0	
8	$275,880	$17.07	$250,000	$25,880	$0		$0	
9	$755,771	$37.24	$489,230	$33,313	$92,308		$140,920	35 acres
10	$131,057	$9.08	$65,000	$51,057	$15,000		$0	
11	$24,815	$1.86	$24,815	$0	$0		$0	
12	$47,420	$3.92	$0	$37,935	$9,485		$0	
13	$97,579	$6.04	$29,274	$48,789	$19,516			26 acres*
14	$33,745	$2.52	$9,865	$17,057	$6,823		$0	
15	$111,851	$7.20	$100,666	$11,185	$0		$0	
16	$95,375	$6.87	$28,612	$47,688	$19,075		$0	
17	$94,484	$5.96	$52,162	$22,273	$18,609	$1,440	$0	
18	$121,932	$6.38	$29,183	$68,880	$19,455	$4,414	$0	
19	$29,901	$1.87	$14,951	$0	$14,950	$0	$0	
20	$30,343	$1.73	$15,171	$0	$15,172	$0	$0	
21	$65,344	$3.09	$0	$65,344	$0	$0	$0	
22	-$20,393	-$1.29	$0	-$20,393	$0	$0	$0	
23	-$119,382	-$6.24	$0	-$119,382	$0	$0	$0	
24	-$137,409	-$8.37	$0	-$137,409	$0	$0	$0	
25	-$55,879	-$3.14	$0	-$55,879	$0	$0	$0	
26	$9,602	$0.56	$0	$9,602	$0	$0	$0	
27	$435,606	$17.89	$130,682	$217,803	$87,121		$0	
28	$409,430	$20.24	$122,829	$204,715	$81,886		$0	
29	$359,381	$16.14	$239,381	*$0*	*$120,000*		$0	
30	$412,195	$23.87	$206,098	$123,659	$82,438		$0	
31	$130,165	$12.30	$39,049	$65,082	$26,033			
32	$261,077	$22.58	$78,323	$130,539	$52,215			
33	$275,255	$18.04	$82,567	$137,634	$55,054			
	$4,380,399	**$8.34**	**$2,292,858**	**$1,205,627**	**$735,140**	**$5,854**	**$140,920**	**61 Ac**
	$132,739		**$69,481**	**$36,534**	**$22,277**	**$177**	**$4,270**	

Summary 1987 to 2019 **336 M³/Ha** **$13,772 /Ha**

Net Revenue from the MFR 1987 to 2019 **$4,380,399** **$8.34 $/M³**

Profit distribution for 2019

$	137,634	to Forest Reserve Fund
$	55,054	to Forest Legacy Fund
$	82,567	to General Revenues
$	**275,255**	**Total Profit**

2019 Average
338m³ / Ha

Appendix C - 2019 Statement of Account

		2019 Budget		Year to Date Jan 1 to Dec 31, 2019
Revenue				
Log Sales	16,500m^3	1,285,000	15,255m^3	1,509,856
Other Revenue		11,000		13,169
Community Wild Fire Protection Grant		25,000		-
Rentals (Cell Towers)		86,660		86,066
		1,407,660		1,609,091
Cost of Sales				
Logging		603,025		668,943
Scaling		1,000		-
Contract Engineering		25,000		11,135
Road Construction		50,000		35,760
Road Maintenance		39,400		21,007
Road Deactivation		5,000		-
Site Preparation		8,000		471
Planting		51,500		42,323
Brushing and Weeding		19,000		12,541
Brushing and Herbicides		2,000		-
Pruning		20,000		1,200
Tree Protection		34,000		33,108
		857,925		826,488
Expenses				
Administration		382,746		365,929
Fire Protection		45,000		24,346
Security		7,000		4,072
Tours		2,200		1,321
Integrated Resource Mgmt		5,000		5,227
Municipal Forest Review		150,000		44,361
Forestry contractor		2,000		16,661
Recreation Roads Maintenance		10,000		597
Scholarships		2,400		2,400
Grants in Aid		5,500		6,526
Invasive Species Control		15,000		11,838
Vehicles		35,940		22,099
Fire Truck		4,040		1,971
		666,826		507,348
Net Income		(117,091)		275,255
Reserve Fund End of year 2019		1,653,787		1,653,787
Interest		30,000		45,000
Forestry profits 50%		(117,091)		137,634
Total		1,566,696		1,836,421

VIU Field Tour – Mount Richards – Blowdown Salvage area R-1000

Cedar Elementary Field Tour – Maple Mountain

Tree Retention – Mount Richards – Harvest Area R-352A

Tree Retention – Mount Richards – Salvage Harvest Area R-1000

Blowdown Salvage Harvesting – Maple Mountain – M-1000

Blowdown Salvage Harvesting – Mount Tzouhalem – T-1000

Blowdown Salvage Harvesting – Mount Tzouhalem – T-1000

Blowdown Salvage Harvesting – Mount Tzouhalem – T-1000

Blowdown Salvage Harvesting – Machine Trail Rehab – Maple Mountain – M-1000

Blowdown Salvage Harvesting – Machine Trail Rehab – Stoney Hill – SH-220

Tree Planting – Maple Mountain – M-1000

Tree Protector Installation – Maple Mountain – M-403

Root Rot – Mount Tzouhalem - T-1000

Root Rot – Maple Mountain - M-402

Hazard Abatement –Pile Burning – Mount Prevost – P-100A

Fire Protection – Water Access Road Improvements – Stoney Hill

High School Woodworking Contest – 2019 Award Winners – Theme = End Table

Council and Forestry Advisory Committee MFR Tour – Maple Mountain

Manual Brushing – Scotch Broom – Stoney Hill

Manual Brushing – Red Alder – Mount Prevost

Report

Date	June 30, 2020	File:	
To	Forestry Advisory Committee		
From	Shaun Mason, Municipal Forester	Endorsed:	
Subject	Foresters Report		

Purpose

To provide the Forestry Advisory Committee (FAC) members with an update on active items from past meetings and current forestry related matters.

Background

There were incomplete and/or active items from past FAC meetings. This report is to provide the FAC members with a brief update on these items as well as new activities that have taken place since the last FAC meeting on June 17, 2019.

Discussion

Below is a brief update of the current and outstanding items/assessments:

Community Engagement

The purpose of the Community Engagement is to give the members of the public, chiefly in North Cowichan, the opportunity to provide feedback about future management of the Municipal Forest Reserve (MFR). This will be used in the development of the Interim and Long-Term Forest Management Plans. The Consultant's engagement plan sets out several activities that allow the public to provide input such as creating a stakeholder working group, stakeholder phone interviews, public outreach through online forums and pop-ups, online surveys and a statistically valid phone survey. The feedback collected will be summarized and published in a "What We Heard" document that will be made available to the public at the end of each round of engagement. The feedback collected will also be used by the UBC partnership group to help guide their decision-making process when reviewing potential management options and scenarios to make a recommendation to Council for both the Interim and Long-Term Forest Management Plans.

We are currently in Phase 3 of the public engagement schedule which is attached to this report as "Attach 1 – Updated Digital Engagement Schedule". To learn more information about the Forestry Engagement process which is updated regularly as new information is available, click the link below to the North Cowichan website.

https://www.northcowichan.ca/forestry

As part of engaging the community in the review of the management of the Municipal Forest Reserve, the Municipality has contacted First Nations who have traditional territories that overlap with the Municipal Forest Reserve and asked them if they have an interest in being consulted. This separate and distinct process of consultation with First Nations, will be conducted on a government-to-government basis. As with any government-to-government discussions, meetings will be closed to the public, unless both the First Nation and the Municipality decide otherwise.

Sensitive Ecosystem Assessments

Madrone Environmental Services continues to conduct sensitive ecosystem assessments (SEA) within the MFR. Since the last FAC update, Madrone has completed SEA's on Mount Prevost in November of 2019 and most recently completed Mount Richards late spring 2020. Madrone is currently working on Mount Sicker, Grace Road and Copper Canyon areas and should be completed by the end of summer. The data collected through the SEA's is being used by UBC Partnership Group as they continue their work.

Of note, North Cowichan received a $10,000 grant to help fund the SEA work being conducted on Mount Richards. This was made possible by the Coastal Douglas-fir Conservation Partnership through their partnership with the British Columbia Conservation Foundation. For more information please refer to "Attachment 2 – North Cowichan Awarded Grant"

Firearms Discharge

On December 18, 2019, staff asked Council to defer Council recommendations for public input on the Firearms Discharge Bylaw until January 2021. The original recommendation came from the FAC on March 7, 2018. The deferral request was due to the priority of staff working with the UBC Partnership group and the Community Engagement project as per Council direction. Council approved the deferral on December 18, 2019. Please see "Attachment 3 – Firearms Discharge Progress Update" for more background information.

Visual Inventory Assessment

At the last FAC meeting, it was reported that the Visual Inventory Assessment (VIA) was approximately 50% completed and was finished off in fall 2019. The report and data are with the UBC Partnership Group to be used as part of their dataset as they continue with their work.

Vegetation Resources Inventory (VRI)

At the last FAC meeting, it was reported that staff were working with a contractor to review the Provincial Vegetation Resources Inventory (VRI) with the work being completed summer 2019. The contractor determined that the Provincial data was adequate for both strategic and operational planning and did not require any further delineation or refinement. Using North Cowichan data, the contractor added VRI polygons that were missing from the Provincial dataset to reflect activities up until the end of 2018. The dataset is being used by the UBC Partnership Group as part of their analysis.

FireSmart Community Funding

In November of 2018, Council endorsed the FAC recommendation and directed staff apply for grant funding through the Community Resiliency Investment (CRI) program to update the existing Community Wildfire Protection Plan (CWPP). North Cowichan was successful in receiving the grant and work began to secure a contractor to complete the work in spring 2019. The final draft of the CWPP was completed spring 2020 and final reports, CWPP document and accompanying dataset submitted to CRI for review. The CWPP document will be considered final once CRI has completed their review which is anticipated in the fall of 2020. North Cowichan will be exploring further funding opportunities through the CRI as they are available.

North Cowichan was also successful in receiving grant funding through the CRI program to provide residents of North Cowichan with the opportunity to drop off their woody debris to help reduce the overall fuel loading within the community. The grant funding also included community education by having a trained Local FireSmart Representative on site to give out information and answer any questions members of the public may have about the FireSmart Principles/information. This activity was originally planned to be done in spring 2020 but due to COVID-19, the activity has been postponed until spring 2021. Please see the media release in "Attachment 4 – North Cowichan Awarded Funding for Chipper Days."

General Operational Updates

Planting was completed in March/April with ~48,000 trees being planted and ~9,400 of the seedlings coned.

All of the area under contract for harvesting are now completed. The contactor is currently salvaging blowdown and danger trees along the roadsides on Mount Prevost which should be completed by the end of June.

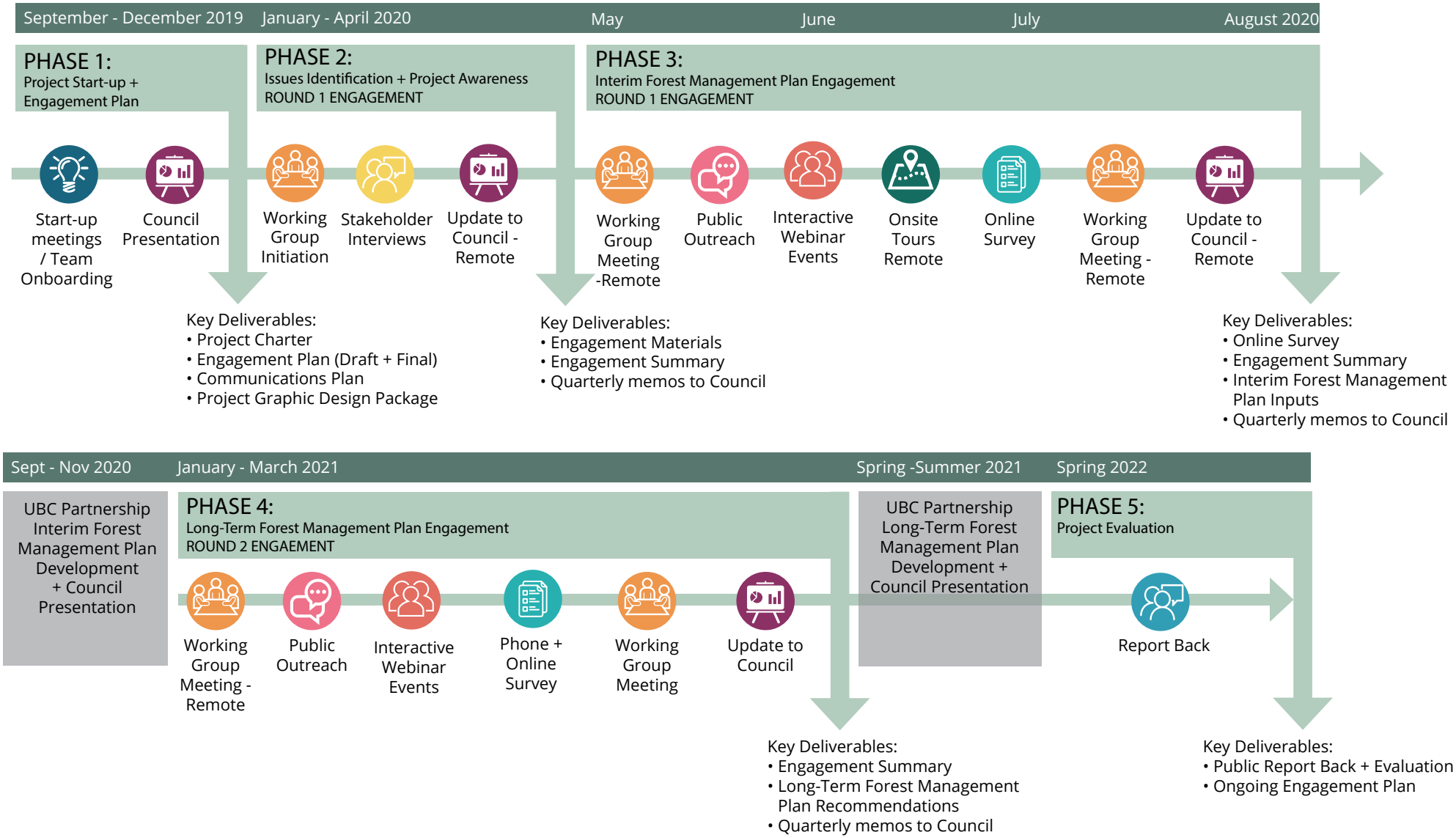
Scotch broom cutting/pulling was conducted in Stoney Hill and Maple Mountain, concentrating efforts on removing broom along the newly harvested areas to prevent any potential spread. Emerging "carpet broom" in the portions of the burn areas from August 2018 were also treated by pulling the broom and using a gas powered grass trimmer to clear the broom away from the planted seedlings. This is an experimental treatment being used as an alternative to herbicides to slow the growth of the broom to allow for the seedlings to grow free of competition.

Recommendation

That the Forestry Advisory Committee receive the Municipal Forester's report for information.

Attachment(s):
Attachment 1 – Updated Digital Engagement Schedule
Attachment 2 – North Cowichan Awarded Grant
Attachment 3 – Firearms Discharge Progress Update
Attachment 4 – North Cowichan Awarded Funding for Chipper Days

SCHEDULE


September - December 2019
January - April 2020
May
June
July
August 2020
PHASE 1:
Project Start-up + Engagement Plan
PHASE 2:
Issues Identification + Project Awareness
ROUND 1 ENGAGEMENT
PHASE 3:
Interim Forest Management Plan Engagement
ROUND 1 ENGAGEMENT
Start-up meetings / Team Onboarding
Council Presentation
Working Group Initiation
Stakeholder Interviews
Update to Council - Remote
Working Group Meeting -Remote
Public Outreach
Interactive Webinar Events
Onsite Tours Remote
Online Survey
Working Group Meeting - Remote
Update to Council - Remote
Key Deliverables:
• Project Charter
• Engagement Plan (Draft + Final)
• Communications Plan
• Project Graphic Design Package
Key Deliverables:
• Engagement Materials
• Engagement Summary
• Quarterly memos to Council
Key Deliverables:
• Online Survey
• Engagement Summary
• Interim Forest Management Plan Inputs
• Quarterly memos to Council
Sept - Nov 2020
January - March 2021
Spring -Summer 2021
Spring 2022
UBC Partnership Interim Forest Management Plan Development + Council Presentation
PHASE 4:
Long-Term Forest Management Plan Engagement
ROUND 2 ENGAEMENT
UBC Partnership Long-Term Forest Management Plan Development + Council Presentation
PHASE 5:
Project Evaluation
Working Group Meeting - Remote
Public Outreach
Interactive Webinar Events
Phone + Online Survey
Working Group Meeting
Update to Council
Report Back
Key Deliverables:
• Engagement Summary
• Long-Term Forest Management Plan Recommendations
• Quarterly memos to Council
Key Deliverables:
• Public Report Back + Evaluation
• Ongoing Engagement Plan

March 30, 2020

North Cowichan Awarded Grant to Continue Sensitive Ecosystem Work

(North Cowichan, BC) – The Municipality of North Cowichan's Forestry Department has received a $10,000 grant to help fund continued sensitive ecosystem work assessments and mapping within the Municipal Forest Reserve. This exciting opportunity is possible because of the Coastal Douglas-fir Conservation Partnership (CDFCP). Through their partners at the British Columbia Conservation Foundation, they signed an agreement with Environment and Climate Change Canada (ECCC) to implement the *Pan-Canadian Approach to Transforming Species at Risk Conservation in Canada* in Priority Places in the Southwest BC.

The objective of this program is to shift from a single-species approach to one that focuses on multiple species and ecosystems at risk. Funding is sourced from the federal government and matched at an equal rate by CDFCP members. North Cowichan was awarded this grant as a Priority Place, which is defined by the federal government as an area of high biodiversity value that is seen as a distinct place with a common ecological theme by the people who live and work there. The additional data gathered from sensitive ecosystem assessments will further expand the information that the UBC Partnership Group can draw on as they continue their work on the Municipal Forest Reserve technical review.

Through the remainder of the program, the CDFCP aims to continue accessing funds to promote and implement conservation and stewardship with a focus on local governments and private land stewardship. "We would like to thank the CDFCP and ECCC for this funding opportunity and are looking forward to continuing to work with them in the future," said Municipal Forester, Shaun Mason. "I am very excited that North Cowichan received this grant," said Mayor Al Siebring. "This funding will allow us to continue impactful sensitive eco-system work in our Municipal Forest Reserve."

-30-

For more information, please contact:

Shaun Mason, Municipal Forester
Municipality of North Cowichan
T: 250.746.3124
E: shaun.mason@northcowichan.ca

This project was undertaken with the financial support of:
Ce projet a été réalisé avec l'appui financier de :

Environment and Climate Change Canada
Environnement et Changement climatique Canada

Report

MUNICIPALITY OF NORTH Cowichan

Date	December 18, 2019	File:	
To	Council		
From	Shaun Mason, Municipal Forester	Endorsed:	
Subject	Firearms Discharge Progress Update to Council		

Purpose

To advise Council of the staff request to defer Council recommendations from the November 21, 2018 Firearms Discharge Report until January 2021.

Background

There have been safety concerns brought forward by the public about the permitted firearm discharge areas within the Municipal Forest Reserve (MFR). Due to public concern and the increased recreational uses within the MFR, proposed changes were brought forward to the FAC on March 7, 2018 for review and discussion. Conservation Officer Scott Norris was present at the meeting to discuss the Provincial Hunting Regulations and provide further insight on potential options for North Cowichan staff to consider when drafting a report for Council on potential recommended amendments to "Firearms Discharge Bylaw No. 3077, 2000".

On November 21, 2018, Council reviewed the Municipal Forester's Firearms Discharge Bylaw report and directed staff to do the following:

That Council direct staff to request public input on the following proposed amendments to "Firearms Discharge Bylaw No. 3077, 2000":

- Remove Mount Tzouhalem and Stoney Hill Forest Reserve from the allowable Firearm Discharge area; and
- Align with Provincial regulation on Mount Prevost and in Cowichan Bay to permit firearm discharge within these areas as outlined in the Provincial Hunting and Trapping Regulation Synopsis.

Discussion

After the November 21, 2018 Council meeting, the communications plan was delayed due to staff seeking legal advice on the matter. A draft communications plan was completed in January 2019 after the legal opinion was received. At that point in time, staff were focused on the emerging forestry issues and continue to follow Council's directive to conduct a technical review of forestry operations and engage the public on the highest and best use of the forest. Although, hunting will likely be a topic discussed at a high level during the public engagement and technical review, the specific changes as proposed within the November 21, 2018 staff report were not incorporated as part of the forestry engagement scope of work.

Options

1) Defer the Council direction for public input on the proposed amendments to "Firearms Discharge Bylaw No. 3077, 2000" until January 2021.
2) Include the proposed amendments to "Firearms Discharge Bylaw No. 3077, 2000" as part of the forestry public engagement and be considered as part of the forestry operations review.
3) Proceed with public input on the proposed amendments to "Firearms Discharge Bylaw No. 3077, 2000"separate from the forestry engagement process with the goal to have any changes in effect prior to the 2020 hunting season.

Implications

The 2019 primary game hunting season ends Dec 10, 2019. Unless directed by Council to make the Firearms Discharge Bylaw public input a primary focus of the Forestry Engagement process, there will not be enough time for staff to receive, process, and submit a report to Council for consideration before notice of potential amendments to "Firearms Discharge Bylaw No. 3077, 2000" would need to be communicated to the public prior to the start of the 2020 hunting season.

If Council decided to direct staff to proceed with Option 2, staff would need to work with the contractor to incorporate the firearms discharge area into the communications and engagement plan that is currently being developed. Since this topic was not part of the original scope of work, there are potential financial implications which would need to be worked out with the contractor should Council decide to go with Option 2.

If Council decided to direct staff to proceed with Option 3, a consultant would need to be hired to aid in the process as all of staff's available time and resources will be focused on the forestry engagement and technical review.

Although, no formal complaints have been received from the public from the 2019 hunting season, there is the potential for negative public feedback and/or complaints during the 2020 hunting season. To help mitigate any potential issues, a small communications campaign could be implemented prior to the 2020 hunting season informing the public of "Firearms Discharge Bylaw No. 3077, 2000" and its restrictions.

By deferring to January 2021, North Cowichan will the miss the opportunity to place an ad in the 2021 2023 Hunting and Trapping Regulations Synopsis but would be able to place an ad in future editions highlighting any amendments to "Firearms Discharge Bylaw No. 3077, 2000".

Recommendation

That Council direct staff to defer public input on the proposed amendments to "Firearms Discharge Bylaw No. 3077, 2000" as per the November 21, 2018 staff report until January 2021.

Attachment(s): Report: Firearms Discharge Bylaw 3077, November 21, 2018.

Report

MUNICIPALITY OF NORTH Cowichan

Date	August 30, 2018	File: 8870-01
To	Council	
From	Shaun Mason, Municipal Forester	Endorsed:
Subject	Firearms Discharge Bylaw 3077	

Purpose

To review the existing Firearms Discharge Bylaw, the conflicts within select areas of the Municipal Forest Reserve, municipal properties and forestry managed lands and to make draft recommended changes to allow for public input.

Background

At the December 10, 2016 meeting, the North Cowichan Forestry Advisory Committee (FAC) asked staff to review the sites where hunting is permitted in North Cowichan, and to amend the firearm discharge area maps in the Firearms Regulation Bylaw (3077).

The Parks, Forestry and Recreation Departments are currently implementing the Parks and Trails Master Plan. As part of this program, hiking and biking trails are being sanctioned on Mount Tzouhalem where the Firearms Discharge Bylaw allows hunting to occur, therefore creating a conflict between users. This conflict will expand in upcoming years as the Municipality proceeds with the mapping, sanctioning and signing of hiking, biking and equestrian trails in other portions of the managed forest lands including Mount Richards and Mount Prevost.

The Municipality has also, through the new public road to Stoney Hill, allowed access to lands which previously were accessed through private property. The Cowichan Valley Regional District has purchased lands and incorporated them into a regional park at Stoney Hill, complete with a parking lot, kiosk, and washroom, which is an additional area where hunting is permitted (surrounding the park area, not within it).

In terms of public use in these two areas, the Mount Tzouhalem area is estimated to have had 80,000 visitors in 2017, and the new CVRD Stoney Hill Regional Park will have 35,000 visitors. As North Cowichan continues to enhance our Forest Reserve lands with new signage, expanded parking, and additional amenities, the number of users will continue to increase, creating more opportunities for conflict between hunters and other recreation users.

Building and Compliance, Parks Forestry & Recreation and Corporate Services have been involved in the review. External dialogue and communication has also been carried out with Scott Norris, Conservation Officer with the South Island District and Sean Pendergast, Senior Biologist with Forests, Lands, Natural Resource Operations & Rural Development.

Discussion

Residents value the ability to be able to hunt within the Municipality. There were eight members of the public representing the hunting community at the March 7, 2018 FAC meeting.

Scott Norris attended the March 7, 2018 FAC meeting to provide comments, answer questions and provide suggestions regarding hunting within the Municipality. Mr. Norris recognizes the importance of having areas available for people to hunt in North Cowichan. However, he also recognizes that the public heavily uses Mount Tzouhalem and Stoney Hill for recreation and did not feel that hunting was an appropriate activity within these two specific areas. Currently hunting within these areas is minimal and does have safety concerns. Mr. Norris suggested that these areas should be considered for removal from the firearm discharge zone. Mr. Norris highlighted that hunting opportunities would still be available at other Municipal properties.

Mr. Norris also brought up an issue where the provincial hunting regulations do not align with the current bylaw and that causes confusion for both hunters and Conservation Officers. Most hunters tend to look at the "Hunting & Trapping Regulation Synopsis" put out by the Provincial Government that shows rifles are permitted within the Mount Prevost area but the bylaw states that a "firearm using a single projectile" are prohibited within all areas of the Municipality. He also highlighted an area of Cowichan Bay that is included in the Provincial Regulation but is not within the Municipality of North Cowichan Firearm's Discharge Area. Mr. Norris suggests changing the Municipal Bylaw to align with Provincial Regulations.

In dialogue and correspondence with Sean Pendergast, in which he highlighted concerns that imposing further hunting restrictions will result in over abundant wildlife in the relatively near future and therefore he is opposed to restricting hunting. He provided examples of other municipalities that imposed hunting restrictions which have caused issues whereby culling may now have to occur which is controversial, expensive and time consuming. His position was that hunting in high use recreational areas can occur without conflict provided safe hunting practices are being followed. He also stated that there was no desire for the Province to change the current hunting regulations to match the Municipality of North Cowichan's bylaws. Mr. Pendergast also supports the hunting in Cowichan Bay as it keeps the waterfowl numbers down which maintains the ecological conditions.

Analysis

Through consensus, staff is recommending that public input is sought to amend Firearms Discharge Bylaw (3077) to the following:

- Remove Mount Tzouhalem and Stoney Hill Forest Reserve from the allowable Firearm Discharge area
- Align with Hunting & Trapping Regulations on Mount Prevost and in Cowichan Bay to permit firearm discharge within these areas as outlined in the Provincial Hunting & Trapping Regulation Synopsis.
- Continue to exclude Maple Mountain within the permitted Firearm Discharge area.

This would leave Mount Prevost, Mount Sicker and Mount Richards remaining within the Firearm Discharge Area to provide hunting opportunities with the importance of keeping the wildlife population under control,

Based on comments through Mr. Pendergast, the contentious area of Cowichan Bay would revert back to a firearms discharge area. His belief is that hunting is a safe activity and that there is a need to keep the waterfowl population down for ecological purposes.

A communications plan based on the consensus would include website/social media updates, erecting new signage at key locations to advise the public of hunting/no hunting areas and purchasing an ad in the BC Hunting & Trapping Synopsis in the 2020 edition to advise hunters of the Municipality of North Cowichan Firearms Discharge Bylaw.

Options

Option 1 (preferred): Request public input on the following:

- Remove Mount Tzouhalem and Stoney Hill Forest Reserve from the allowable Firearm Discharge area.
- Align with Provincial regulation on Mount Prevost and in Cowichan Bay to permit firearm discharge within these areas as outlined in the Provincial Hunting & Trapping Regulation Synopsis.
- Continue to exclude Maple Mountain within the permitted Firearm Discharge area.

Option 2: Move forward with the changes in Option 1 without public consultation.

Option 3: Prohibit firearms discharge within Municipal boundaries expect for in permitted areas such as rifle ranges.

Option 4: Leave Bylaw No. 3077 as it is.

Recommendation

That Council direct staff to proceed with Option 1 which is to request public input on the following:

- Remove Mount Tzouhalem and Stoney Hill Forest Reserve from the allowable Firearm Discharge area.
- Align with Provincial regulation on Mount Prevost and in Cowichan Bay to permit firearm discharge within these areas as outlined in the Provincial Hunting & Trapping Regulation Synopsis.

Attachments: Firearms Discharge Bylaw 3077

THE CORPORATION OF THE DISTRICT OF NORTH COWICHAN

BYLAW NO. 3077

A BYLAW TO REGULATE THE DISCHARGE OF FIREARMS AND BOWS WITHIN THE MUNICIPALITY

This bylaw is consolidated under section 139 of the *Community Charter* and is printed by authority of the corporate officer.

Pursuant to section 139 (3) of the *Community Charter*, "a printed document purporting (a) to be a copy of a bylaw consolidated under this section, and (b) to be printed by authority of the corporate officer is proof, in the absence of evidence to the contrary, of the original bylaw, of all bylaws amending it and of the fact of adoption of the original and all amending bylaws."

Amendment Bylaw	Effective Date
3470	MAY 16, 2012
3548	JUL 16, 2014

WHEREAS Section 728 of the *Local Government Act* empowers the Council to regulate or prohibit the discharge of firearms and the use of bows;

NOW THEREFORE, the Municipal Council of The Corporation of the District of North Cowichan, in open meeting assembled, ENACTS as follows:

1. This bylaw may be cited as the "Firearms Regulation Bylaw 2000."

2. For the purpose of this bylaw, the following words have the following meanings:

   "bow" includes a long bow, recurve bow, composite bow, or crossbow;

   "firearm" means a device that propels a projectile by means of an explosion, compressed gas or spring, and includes a rifle, shotgun, handgun, air gun, air rifle, air pistol, or spring gun;

3. Subject to Section 5 of this bylaw, no person may discharge a firearm or a bow within The Corporation of the District of North Cowichan, except within those areas outlined and hatched in black on the map attached hereto marked Schedule "A" and made part of this bylaw.

4. Despite any provision of this bylaw, no person may discharge a firearm or a bow:

   (1) within 25 metres of the boundary of a highway;
   (2) such that a projectile travels across a highway;
   (3) within 100 metres of any school building, school yard, public park, playground, church, workshop, place of business, dwelling house, farm building, or other place where persons may be assembled or engaged in work of any kind; and
   (4) on a parcel less than five acres in size.

BL 3548 5. The Bylaw Compliance Officer may issue a permit to discharge a firearm to protect a golf course from damage by waterfowl or deer under the following conditions:

BL 3470
(1) payment of the fee prescribed in the Fees Bylaw;
(2) the permit may be issued for up to 90 days;
(3) the permit must name the persons authorized by the owner of the golf course; and
(4) the permit may be revoked if it is being used for a purpose other than protecting a golf course from damage by waterfowl or deer.

6. The discharge of a firearm using a single projectile is prohibited within all areas of The Corporation of the District of North Cowichan, except for the Chemainus Road & Gun Club rifle range.

7. Every person who violates any of the provisions of this bylaw, or who suffers or permits any act or thing to be done in contravention or violation of any of the provisions of this bylaw, or who refuses, omits or neglects to fulfill, observe, carry out or perform any duty or obligation imposed by this bylaw, is liable on summary conviction to a fine not exceeding Two Thousand Dollars ($2,000.00) or to imprisonment not exceeding six months, or to both.

8. The following are repealed:
(1) "Firearms Regulation Bylaw 1992", No. 2665;
(2) "Firearms & Bows Regulation Bylaw 1992 Amendment Bylaw 1993", No. 2682;
(3) "Firearms & Bows Regulation Bylaw 1992 Amendment Bylaw 1996", No. 2898; and
(4) Section 40, of "Fees and Charges Bylaw 1994", No. 2714.

Read a First Time on the 6th day of September, 2000
Read a Second Time on the 4th day of October, 2000
Read a Third Time on the 4th day of October, 2000
ADOPTED on the 18th day of October, 2000

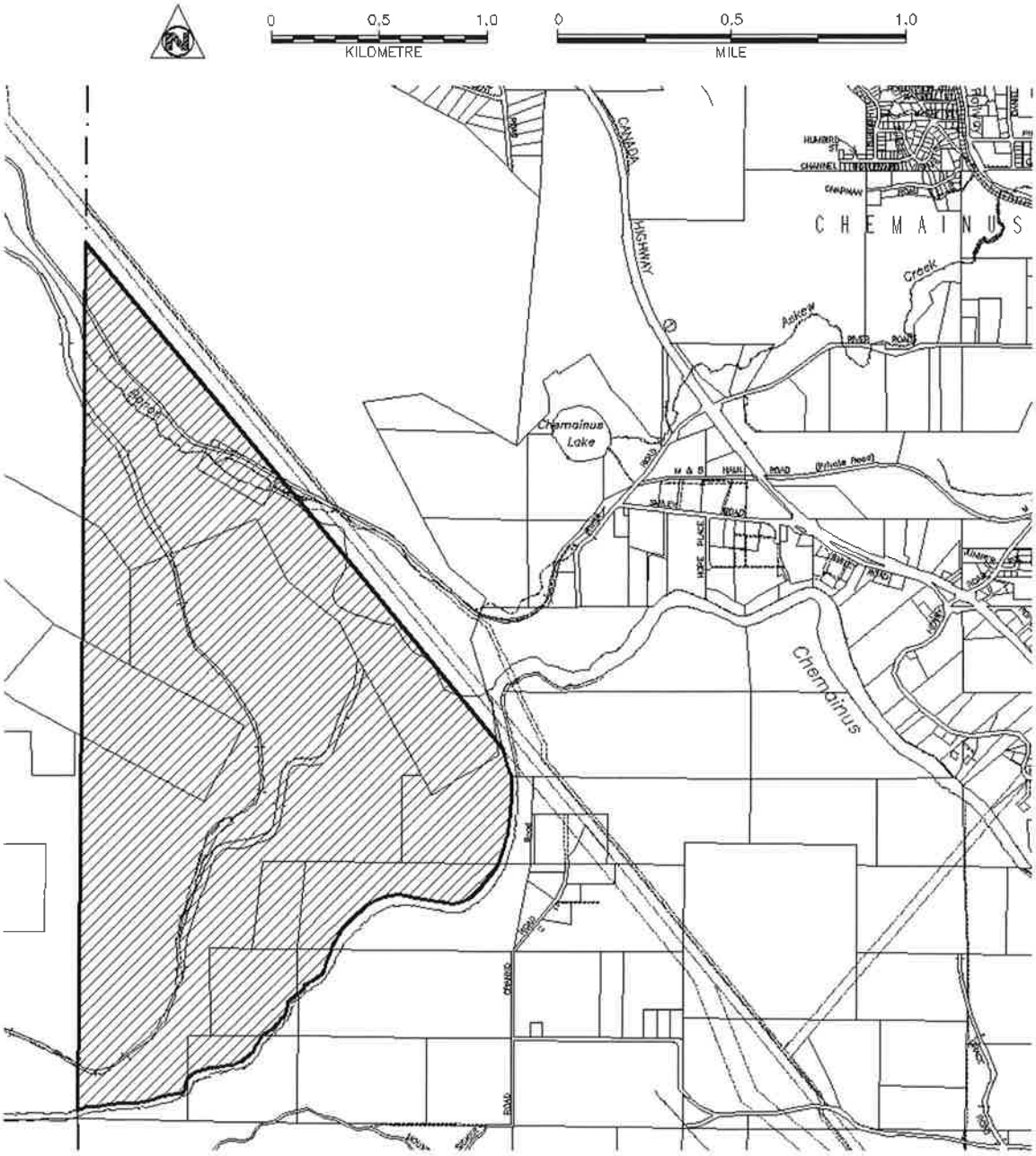
M. O. Ruttan, Municipal Clerk

H. R. Hollett, Mayor

SCHEDULE "A"
To Bylaw No. 3077

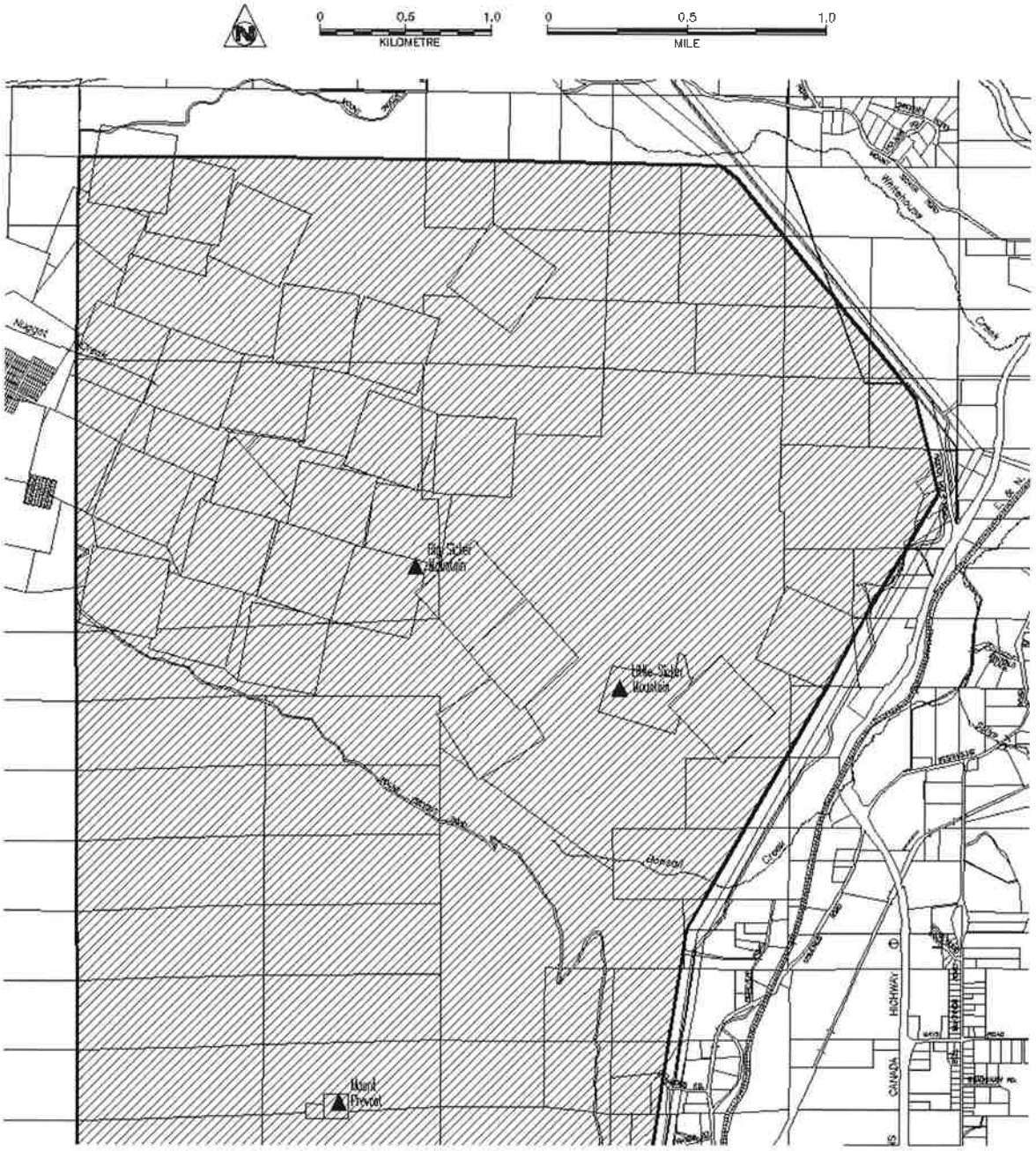
FIREARM DISCHARGE AREA

Page 1 of 5



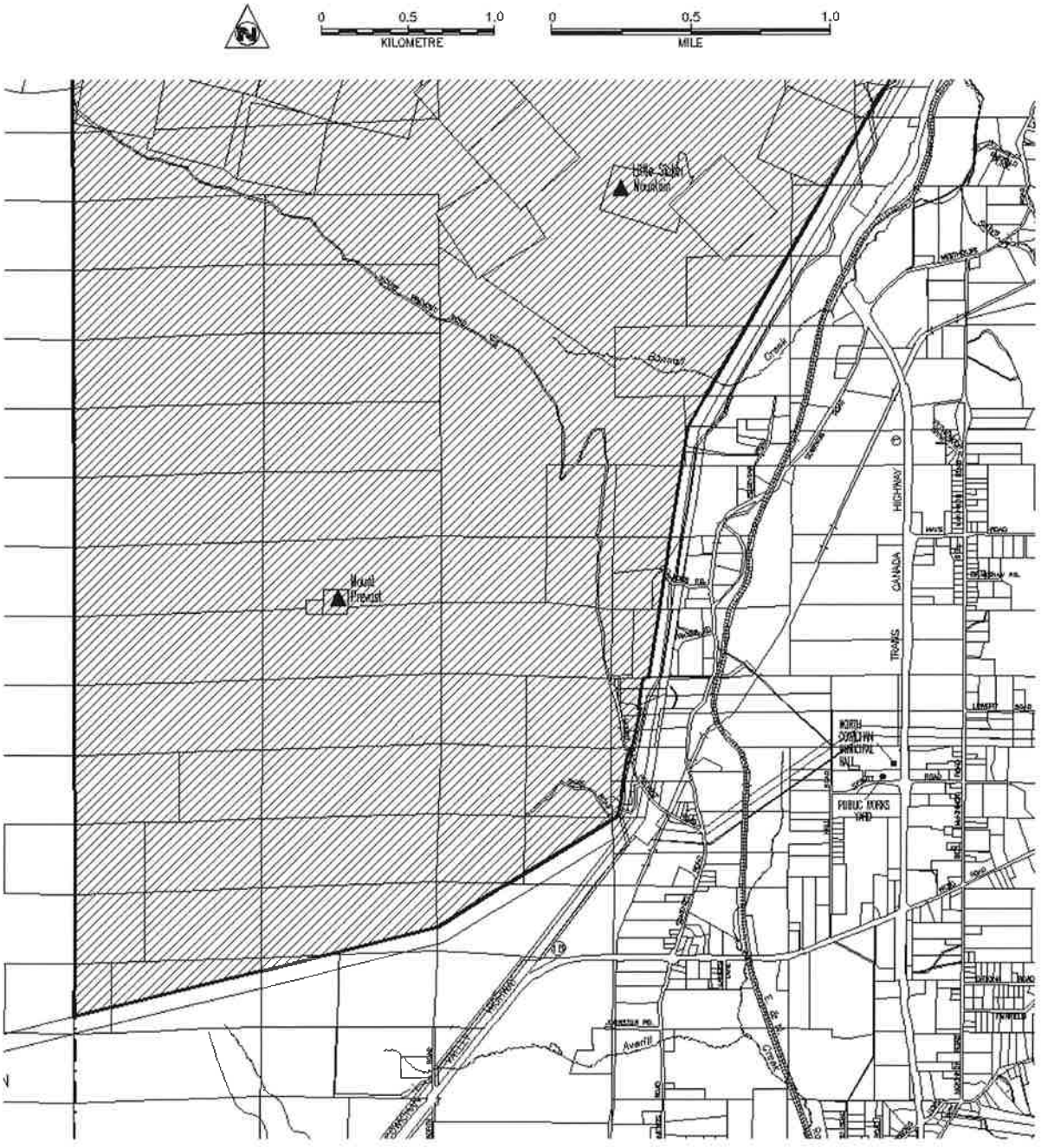
SCHEDULE "A"
To Bylaw No. 3077

FIREARM DISCHARGE AREA



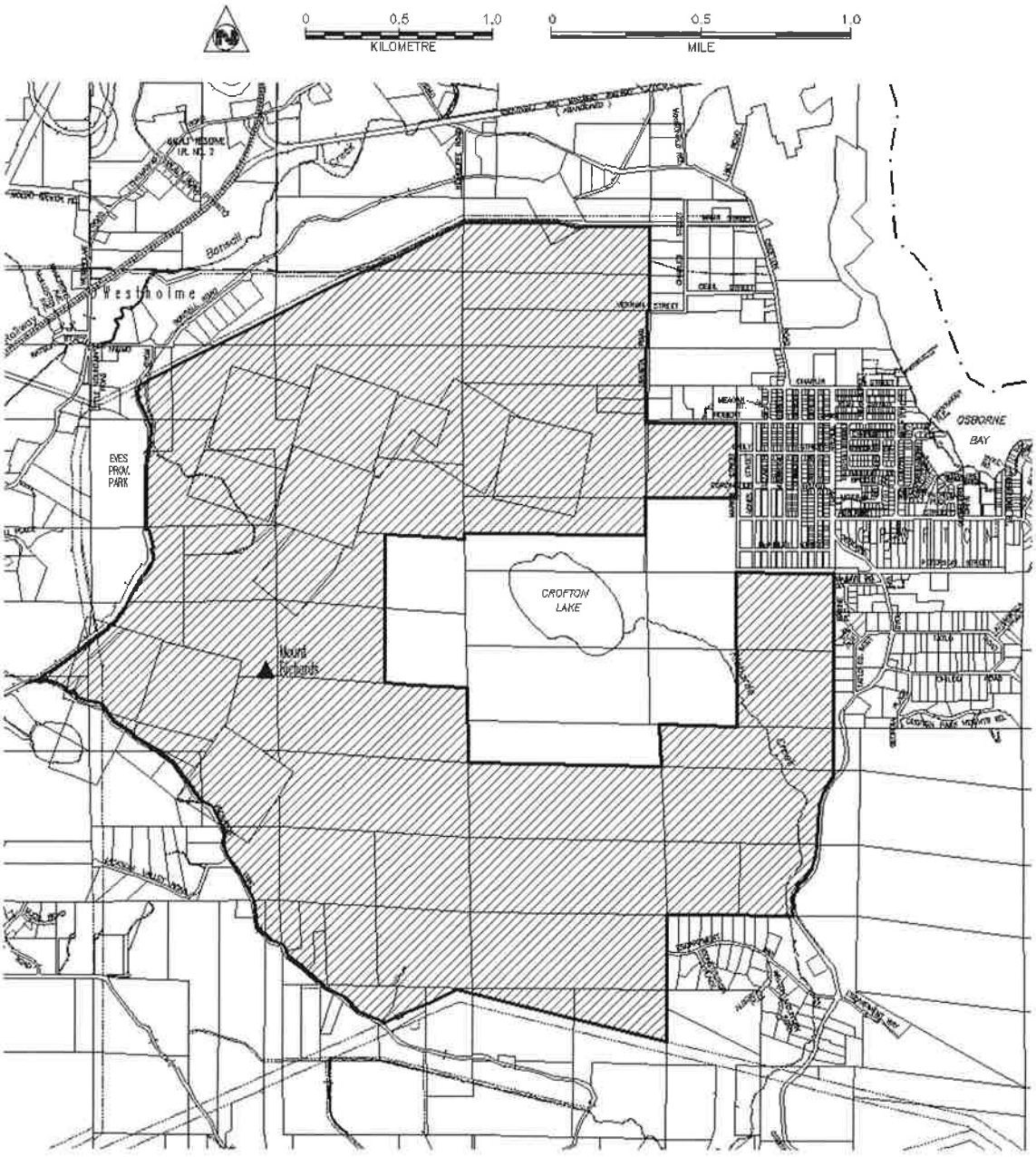
SCHEDULE "A"
To Bylaw No. 3077

FIREARM DISCHARGE AREA



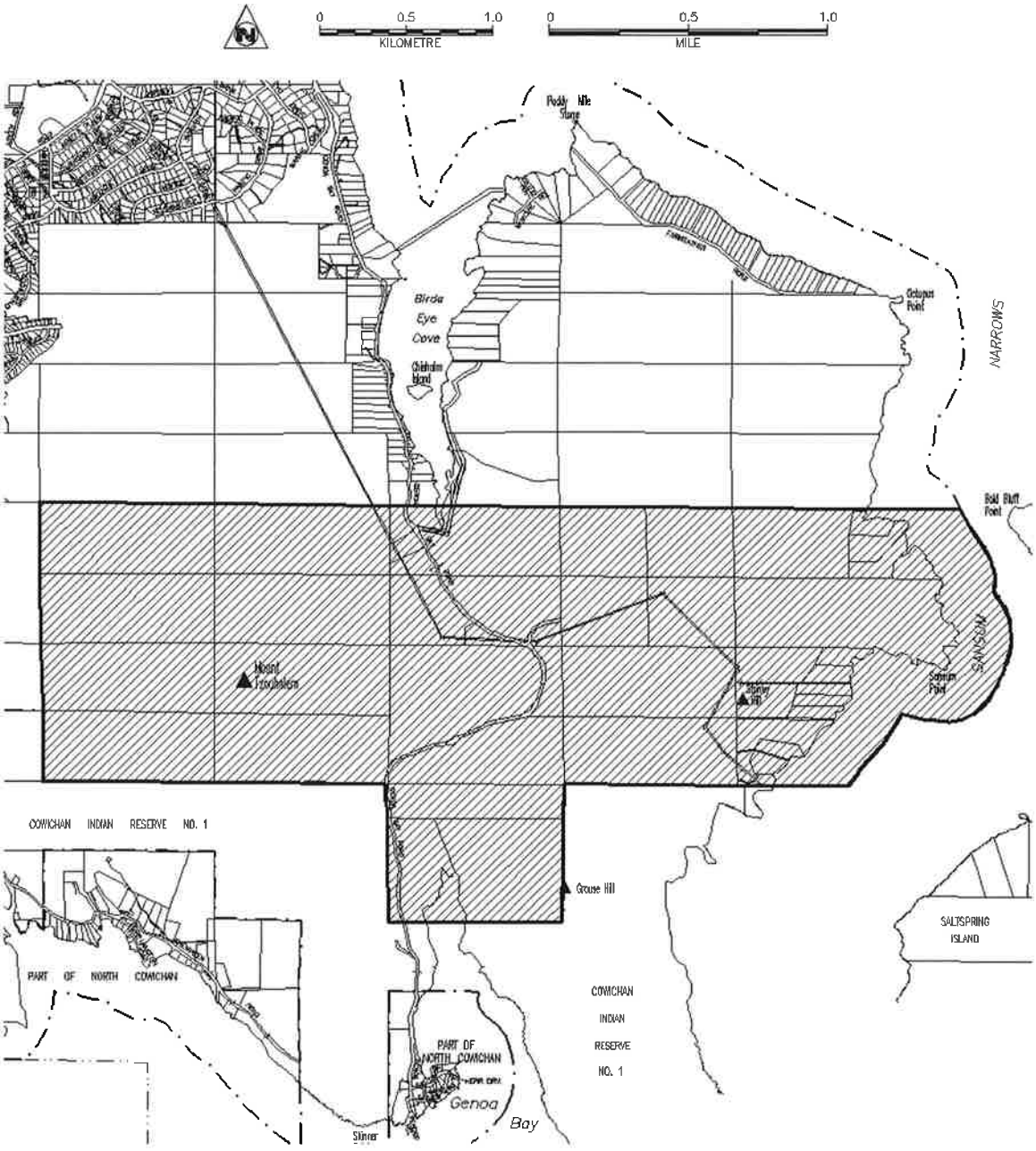
SCHEDULE "A"
To Bylaw No. 3077

FIREARM DISCHARGE AREA



SCHEDULE "A"
To Bylaw No. 3077

FIREARM DISCHARGE AREA



March 10, 2020

North Cowichan Awarded Funding for "Chipper Days" Program

(North Cowichan, BC) – North Cowichan has received a grant of $15,100 to offer its first-ever "Chipper Days," program. This will allow North Cowichan residents to dispose of woody yard debris at no cost. More details about the program will be provided once staff have confirmed the various dates and locations that Chipper Days will be offered.

This exciting grant has been awarded by the Community Resiliency Investment (CRI) and FireSmart Community Funding & Supports programs which are intended to reduce the risk and impact of wildfire to communities in BC through community funding, supports and priority fuel management. The CRI program was launched in 2018 and since its inception, more than 120 First Nations and local governments have received funding.

The Union of BC Municipalities (UBCM), First Nations' Emergency Services Society (FNESS) and the Forest Enhancement Society of BC (FESBC) are working with the Ministry of Forests, Lands, Natural Resource Operations & Rural Development (FLNRORD), represented by the BC Wildfire Service (BCWS), to administer the FireSmart Community Funding & Supports portion of the program for local government and First Nation applicants.

"I am thrilled North Cowichan has received this grant, and I want to commend our forestry department for taking the initiative to come up with this exciting program," said Mayor Al Siebring. "Our community has long been asking for better ways to dispose of yard waste, and I look forward to staff finalizing the schedule and locations for these Chipper Days."
"I also want to thank the UBCM and all the funding partners who have made this wonderful opportunity possible," Siebring concluded.

Follow us on Facebook or visit our website to learn more about Chipper Days.

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For more information, please contact:

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FORESTRY ADVISORY SELECT COMMITTEE

MANDATE

The Forestry Advisory Committee exists to:

Provide Council with advice and recommendations on matters pertaining to the North Cowichan Municipal Forest Reserve.

STATEMENT

To maintain and enhance North Cowichan's valuable municipal forest resources for all users through sustainable forestry, ecological stewardship & sound fiscal management.

SCOPE OF ROLE IN FORESTRY REVIEW

- Assist with Council's full review of forestry planning and practices including:
- Provide short-term to long-term recommendations for improvements that will enhance North Cowichan's valuable municipal forest resources.
- Consider all the diverse values of the forest.
- Consider sustainable forest practises that give priority to ecological stewardship and promoting biodiversity.
- As part of the approach, the FAC explore further learning opportunities which include welcoming diverse cultural perspectives, alternative practices, external specific expert resources and public or private agencies.
- That the committee embrace openness, collaboration, accountability, and transparency.
- The review will be expansive enough to consider overall vision and overall management framework for the forest.

ESTABLISHMENT AND AUTHORITY

The *Community Charter* provides that a Council may establish and appoint a select committee to consider or inquire into any matter and to report its findings and opinion to the Council. Persons who are not Council members may be appointed to a select committee but at least one member of a select committee must be a Council member.

ROLES AND FUNCTIONS

The Forestry Advisory Committee exists to provide support to Council by:

- Advising Council on forest reserve management and forestry issues;
- Audit Forestry Department operations; and
- Reviewing and making recommendations to Council regarding the Forestry Department Financial Plan.

MEMBERSHIP

The Committee shall consist of eleven (11) voting members appointed by Council as follows:

- One (1) Council representative;
- One (1) Cowichan Tribes Representative;
- One (1) Representative from the Halalt First Nations;
- One (1) Representative from the Lyakson First Nations;
- Three (3) Professional Foresters
- One (1) member at large representing the Cowichan Trails Stewards Society
- Two (2) members at large who are residents of the Municipality based on their specific knowledge or interest in forestry matters.
- One (1) One Registered Professional Biologist

All appointments, except those of Council members, will coincide with the Council term and must be appointed by Council.

Committee members serve as volunteers and receive no remuneration.

Note: The Municipal Forester serves as the staff liaison to the Committee.

DUTIES AND RESPONSIBILTITIES OF THE CHAIR

- The Chair of the Committee must be a Council member appointed to the Select Committee.
- In the absence of the Committee Chair, the members must select a member present at the meeting to chair the meeting.
- The Chair shall preserve order and decide all points of order which may arise.

ACCOUNTABILITY

Committee members are expected to adhere to the Standards of Conduct Policy.

Committee members are expected to attend meetings regularly. If a member is continuously absent from committee meetings for a period of three (3) consecutive meetings, unless the absence is because of illness, the member is deemed to have resigned from the committee and the Committee may proceed to replace that member. If a Committee member finds it necessary to resign from the Committee, a letter to that effect should be sent to the Chair of the Committee.

North Cowichan Council shall have the power to remove any member of the Committee from office at any time.

CONFLICT OF INTEREST GUIDELINES

Committee members shall absent themselves from discussions or decision-making at Committee meetings if there is a potential conflict of interest, and this shall be recorded in the Minutes of the Committee meetings.

Committee members shall not knowingly take advantage of, or benefit from, information that is obtained through their Committee duties and responsibilities and which is not generally available to the public.

As soon as potential conflict of interest arises, the member will declare it for discussion and recording, after which the member will vacate the meeting for the discussion and vote.

SUB-COMMITTEES

Sub-committees may only be formed with Council approval.

MEETINGS

The Forestry Advisory Committee shall meet bi-monthly according to the schedule of the committee meetings proposed by the Corporate Officer, or at the call of the Chair.

A quorum of the Committee consists of 50% of the voting members.

Meetings shall be conducted in accordance with the rules of procedure set out in the Council Procedure Bylaw.

The location of the meetings will be at the District of North Cowichan Municipal Hall.

CONFIDENTIALITY

Committee members may be privy to confidential material and as such are expected to sign a "Conflict of Interest/Confidentiality Form."

Should a closed meeting be held by the Committee, members must keep in confidence, any information considered in any part of said meeting until such time as the information is released to the public as lawfully authorized or required. Should the municipality suffer loss or damage due to contravention of confidentiality, the municipality may recover damages form the person(s) for the loss or damage.

AGENDAS AND MINUTES

The Legislative Services Department, in consultation with the staff Liaison and Chair will form the agenda. Minutes are taken by the Legislative Services.

COMMUNICATIONS

The Mayor is the official spokesperson for the District of North Cowichan. However, the Mayor may, at times, request the Committee Chair to speak on matters of public interest within the Committee's purview.

On technical matters, or where the status is still at the staff proposal level, the Chief Administrative Officer, or senior staff, may be the appropriate spokesperson. Where necessary and practical, the Mayor, the Committee Chair and the Chief Administrative Officer will confer to determine the most appropriate course of action.