Sustainable Canadian Agricultural Partnership

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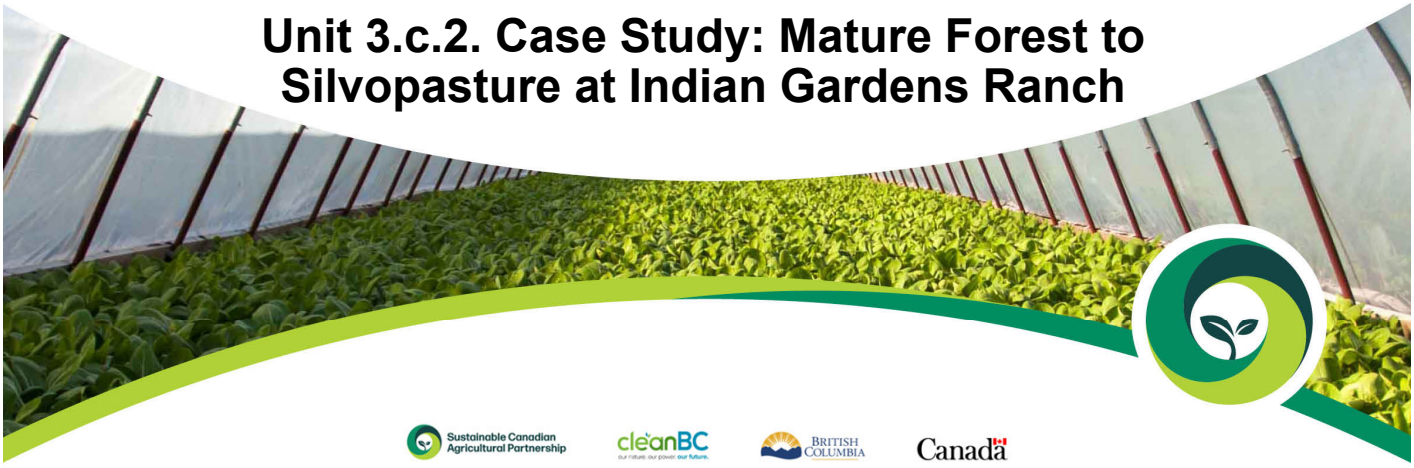
Silvopasture In British Columbia Information Series

Unit 3.c.2. Case Study: Mature Forest to Silvopasture at Indian Gardens Ranch



Acknowledgments

This work has been funded by the Governments of Canada and British Columbia under the Sustainable Canadian Agricultural Partnership, a federal-provincial-territorial initiative.

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Insert local indigenous territorial acknowledgment.

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Silvopasture in BC Information Series Content Guide

Core Units	Case Studies	Supplemental Units
0. Series Overview		
1. Introduction		1.s. History of SP in BC
2. Science Behind SP	2.c.1 Production Synergies: Kootenay Tree Farms	2.s.1. Light & Microclimate
	2.c.2 Riparian Silvopasture: Silver Hills Ranch	2.s.2. Hydrology
3.1. SP BMPs - part 1	3.c.1 Small-lot SP: Just Another Weed Patch Farm	3.s. Managing Damage
3.2. SP BMPs - part 2	**3.c.2 Mature Forest to SP: Indian Gardens Ranch**	
4. SP Planning	4.c.1 Planning on Crown Land: SP Pilot Project	
	4.c.2 Adaptive Management at Aveley Ranch	

This silvopasture case study is meant to reinforce information provided in the third unit of the Silvopasture in BC Information Series: Silvopasture beneficial management practices

Unit 4.c.2. Case Study: Indian Gardens Ranch

Goal

Gain a deeper understanding of silvopasture planning, implementation and management through British Columbia case studies.

Prerequisites

Units 3. Beneficial Management Practices.

Content

Ingrown, mature forest to silvopasture: Indian Gardens Ranch.

In this unit we'll look at an example of silvopasture use in BC to gain a better understanding of the planning, implementation and management considerations.

Prior to commencing this module, you should have completed core units 3 in this information series.

This case study will explore the development of a silvopasture from a mature, ingrown forested range area, as was done at Indian Gardens Ranch.

Forest Ingrowth on Open Range

Fire Maintained Ecosystems

- Forest ingrowth – smaller component of grass and shrub openings.
- Impacts to wildlife habitat and forage production.

With aggressive fire suppression starting in the early 20th century, many historically fire-maintained open-forest areas across the southern interior of BC have changed from a mosaic of mostly large, mature trees with patches of grassland into dense forests. These ecosystems have been referred to by some as ‘upside down’ because of the resulting much larger component of densely packed small trees and much smaller component of grass and shrub openings.

These changes to structure have impacted the function of rangelands across the large belt of the Interior Douglas-fir zone, influencing both biodiversity and habitat for wildlife, and suppressing forage production.

Forest Ingrowth on Open Range

Fire Maintained Ecosystems

- Forest ingrowth - susceptible to catastrophic wildfires, forest disease and pest outbreaks.

Moreover, these ingrown forests can also have negative impacts on forestry with reduced timber quality, increased risks to catastrophic wildfires that can kill fire-resistant mature trees, and expansion of damaging forest disease and insect pests.

Silvopasture and Range Management

From Forest Grazing to Silvopasture

- Early use on low elevation open forests.
- Shift to mid- and high elevation plantations.
- Silvopasture is a supplementary tool to help restore grazing and natural values.

Range management in BC has always prominently included forest grazing from its earliest days to the modern era.

While also a critical range resource, grasslands represent a small proportion of the total area of BC, and historically open forests were often the only accessible forage resources until land clearing and agricultural development created pastures for an expanding livestock sector.

Until the early 1960s most of the province's interior forest base was unlogged and offered limited value for range use. Adoption of lodgepole pine as a commercial timber species at that time however, led to increased harvests of mid- to high-elevation forests. A shift to clear-cutting greatly increased the area of regenerating forestland, and also increased access along an expanding forest road network.

Into the modern era, there is increasing recognition of the value of evaluating and adopting silvopasture approaches, supplementary to conventional management, to help maintain the natural patterns of trees and grassland found in these fire-maintained open-forest ecosystems.

Silvopasture to Enhance Production

Indian Gardens Ranch

- Multi-generational family ranch in the Thompson River Valley.

Indian Gardens Ranch is multi-generational ranch, which has been in the Haywood-Farmer family since 1933. The ranch is located in the Thompson River valley, south of Savona.

Silvopasture to Enhance Production

Indian Gardens Ranch

- Seasonal grazing – moving with the natural patterns of forage availability.
- Mix of Crown grazing licences and lease with private land base.

The Ranch deploys a seasonal rotational grazing system, sometimes referred to as transhumance grazing. The herd starts in the spring on low elevation grasslands and moves up in elevation with natural development of forages through low- to mid- to high-elevation forests. It then reverses this sequence in the fall and moves down in elevation for the herd to winter on private grasslands and pastures.

Indian Gardens utilizes Crown grazing licenses and a grazing lease, in addition to range, pastures and hayland on their private land base.

Silvopasture to Enhance Production

Indian Gardens Ranch

- Woodlot licence on land adjacent to Crown range.

The ranch has also diversified its operations with timber production. Trees are managed in a woodlot license spanning an area of the private land base and Crown land in an area adjacent to their grazing licenses.

Silvopasture To Enhance Production

Diverse Forage Sources to Meet Operational Goals

- Ranch viability centres on grazing resources to maintain their herd.
- Increasing forest density restricting late spring grazing.

At Indian Gardens, as with many other BC operations, the Ranch viability centres on having enough high-quality grazing resources to maintain their herd. Purchased supplemental feed and extended winter-feeding costs can eat into profitability. Having sufficient grazing resources at each stage of the seasonal grazing movement is critical therefore to maintaining herd size and ranch viability.

In recent times the Haywood-Farmers noted that the forest cover was so dense on their Grazing Lease that it was suppressing the understory forage production. And this was restricting transitional spring grazing, between the grasslands and network of higher elevation grazing areas.

Silvopasture Development

Pre-Harvest Planning

- Increase forage without removing all tree cover.
- Professional Forester developed pre-harvest plan for Licence to Cut.
- Mosaic of trees retained, with more than half of the cover removed.

Untreated area of grazing lease

The Ranch had an overall goal of increasing the forage production on these low-elevation forests, but without removing all the tree cover. Many decades of experience had shown them that some tree cover provides production benefits from having partial shade.

Even though complete removal of the tree cover could have been permitted as a harvest strategy (with the appropriate applications and permissions), a silvopasture approach was right for Indian Garden's goals.

The Ranch enlisted the services of a Professional Forester to complete a timber harvesting plan, under a Crown Licence to Cut, for their Lease area. Use of a qualified professional is mandatory for planning any silvicultural activities on Crown land, and may also be desirable for developing a silvopasture on private lands, depending on your objectives.

This plan specified a partial retention strategy for the forest cover, with trees of various size and age classes, including leaving both some merchantable and some non-merchantable timber in the retention areas.

Silvopasture Development

Timber Harvest

Treated area of grazing lease

- First pass: hand fall and excavator with clam-shell attachment.
- Second pass: feller buncher, hand falling, bucking and skidder.

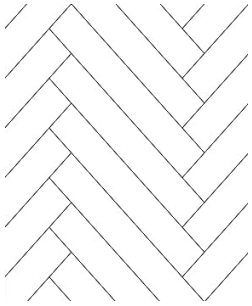
Following the harvest prescriptions, the silvopasture was developed in two phases.

- In the first pass, areas were hand-felled and the cut timber was removed with an excavator deploying a ‘clam-shell’ attachment.
- In the second pass, a feller buncher, hand falling and bucking were utilized, together with conventional skidders.

Silvopasture Development

Timber Harvest

- Herringbone skid trails.
- Labour intensive and higher cost than clear-cutting



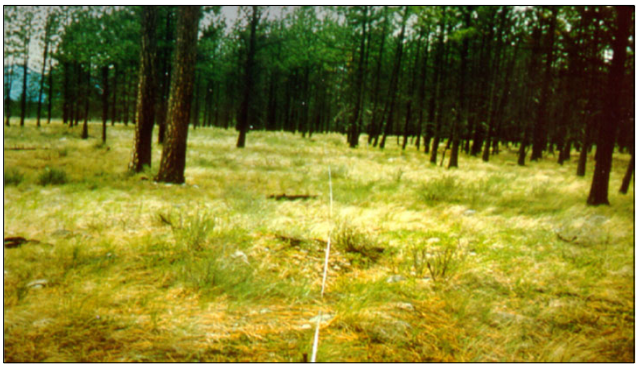
Mature trees retained in multi-row design

The skid trails were arranged in a herringbone-pattern configuration with small trails angled from the main trail (like the bones from a fish) creating a type of multi-row silvopasture design.

This type of timber harvest is considerably more labour intensive, and therefore more costly to deploy than fully mechanized clear-cutting. But it was highly effective in retaining the timber in the new silvopasture configuration without causing significant tree or soil damage during the harvest operations.

Silvopasture Development

Results



- Success: understory production is flourishing.
- Retained timber is enhanced.

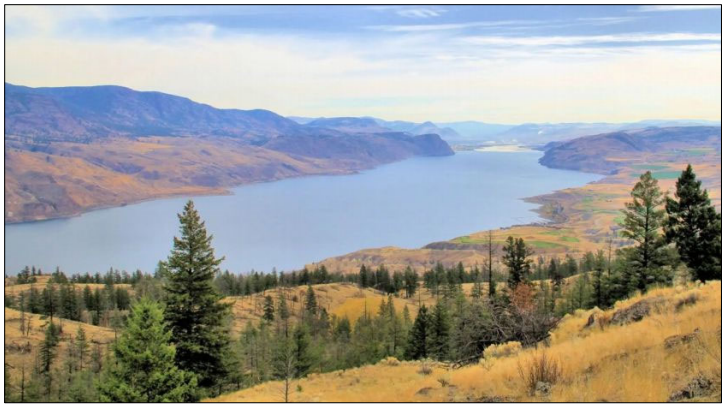
By converting these ingrown fir forests to silvopastures, the ranch believes it has been very successful in rebuilding the forage production on their grazing lease.

The volume and quality of the timber that was retained has also been enhanced by the silvopasture prescription.

Silvopasture Development

Co-benefits

- Enhanced wild ungulate habitat.
- Lower wildfire hazard.
- Enhanced carbon storage.



While the primary motivation of the Ranch for developing this silvopasture was to enhance its grazing resources, it has also generated many co-benefits, including:

- Enhanced habitat for wild ungulate populations, including critical wintering areas for deer;
- Lowered wildfire risk. The area formed part of a fire break, and escaped damage from a large wildfire that swept through the area in 2021; and,
- Enhanced carbon storage relative to completely removing tree cover to create an open pasture. Demonstrating the valuable role of ranching and silvopastures in helping to mitigate climate change.

Questions and Discussion

Questions and discussion on the case study.