Environment and Climate Change Canada
Canada Nature Fund: Community-Nominated Priority Places for Species at Risk

Kootenay Connect: Columbia Lake Focal Area 6CL SAR Restoration

March 15, 2025 Final Report

Kootenay Connect is a project facilitated by the Kootenay Conservation Program

Environment and Climate Change Canada | Environnement et Changement climatique Canada

1.0 Project Summary and Goal

Marion Creek Benchlands, Thunder Hill Ranch, Dutch Creek Hoodoos and Columbia Lake Lot 48 Conservation Areas are part of an important complex of conservation and protected lands adjacent to Columbia Lake. These lands have been conserved by the Nature Conservancy of Canda (NCC) and are stewarded for the benefit of the imperiled Interior Douglas-fir (IDF) ecosystem, focal species at risk (SAR), and the maintenance of wildlife movement corridors. The goal of this project is to build from previous restoration work, to enhance dry open forest habitats in the Columbia Lake Focal Area for the benefit of species at risk.

The focal SAR relying on the IDF ecosystem in this area include American Badger (*Taxidea taxus jeffersonii*, Endangered, COSEWIC, 2012), Bighorn Sheep (*Ovis canadensis*, Blue Listed, BC CDC, 2015), Grizzly Bear (*Ursus arctos*, Special Concern, COSEWIC, 2018), Lewis's Woodpecker (*Melanerpes lewis*, Threatened, COSEWIC, 2024), and Common Nighthawk (*Chordeiles minor*, Special Concern, COSEWIC, 2023).

As few as 100 mature badgers live in the East Kootenay region where they are vulnerable to increasing threats from roadkill. The loss of open areas to forest succession and urban development threatens badgers by contributing to ongoing habitat decline (COSEWIC, 2012).

Over 25% of Bighorn Sheep winter range in the upper Columbia area has been converted since the 1940s, effectively displacing the local herds from this land. Relying on the availability of good escape terrain, lambing sites, winter range, mineral licks, and sufficient forage, these mammals have been impacted by habitat conversion, fragmentation, and forest encroachment (BC CDC, 2015).

While generalists, Grizzly Bears are highly sensitive to human disturbance and are at high mortality risk where roads allow motorized access into their habitat. Genetic isolation is threatening southern populations where habitat fragmentation is impacting movement patterns and reproduction (COSEWIC, 2018).

In Canada, Lewis's Woodpecker breeds only in British Columbia. Its population is small, with fewer than 1000 individuals, and there is evidence of ongoing declines in parts of its Canadian range where it has been monitored over time. Threats include habitat loss and degradation from increasing urban and agriculture development, and fire suppression (COSEWIC, 2024).

Common Nighthawk has been threatened by the decline in abundance of aerial insects from pesticide use, among other anthropogenic impacts. These birds rely on relatively open, forested habitats with an abundance of insects to forage (COSEWIC, 2023).

Around Columbia Lake, changes to the natural fire regime caused by decades of wildfire suppression efforts have contributed greatly to the reduction of high-quality habitat for the focal SAR. Grassland and open range conditions are gradually transitioning into conifer forests through in-growth and encroachment processes. With this change, many habitat attributes necessary to sustain populations of at-risk species are being impaired. In the Columbia Lake Focal Area, it has become clear that one of the most effective ways to improve habitat for these species is to reduce young forest densities and promote the transition to mature open forest stands. Treatment prescriptions for restoring mature open IDF stands include reducing conifer stem density through forest thinning. In addition to forest thinning, this can be achieved through prescribed burning. Work is underway led by Ktunaxa Nation Council and ʔakisq̓nuk to carry out prescribed burning on the east side of Columbia Lake in the coming years.

This final report provides an update for work that The Nature Conservancy of Canada (NCC) has been carrying out in the Columbia Lake Focal Area in Year 6, as part of the Kootenay Connect initiative.

2.0 Results

1. SAR Restoration in Year 6

Building on the success of previous forest thinning work at Columbia Lake Lot 48, NCC entered a partnership with the Ktunaxa Nation Council (KNC) to work towards bringing prescribed fire back to the landscape on the east side of Columbia Lake. NCC and KNC staff first met on the land in April 2024 to discuss this possibility and worked with Burn Boss Colleen Ross to discuss this potential and the prep work required.

KNC led the development of the Lot 48 Burn Plan in fall 2024. KNC contracted Colleen Ross to complete this work, with input from ʔakisq̓nuk, NCC, and Ktunaxa Community Members. This type of ecosystem restoring prescribed burn should benefit focal species at risk including American Badger, Bighorn Sheep, Lewis's Woodpecker, and Common Nighthawk. This type of restoration work benefits the focal species at risk by restoring open forest and grassland habitat.

In fall 2024, Colleen Ross was contracted by NCC to develop an Ecological Restoration (ER) Prescription for Columbia Lake Lot 48. This prescription builds off the Lot 48 Burn Plan, and identifies low intensity prescribed burning as a restoration treatment appropriate for preventing the ongoing ingress/ingrowth of coniferous trees on the landscape. The ER Prescription outlines a hand thinning treatment required to prepare the stand for burning. This treatment focuses on removing regenerating conifers that will not be killed by low intensity fire and removing fuel loading which could contribute to higher intensities of fire than would be ecologically beneficial. This is particularly important where fuel loading occurs under mature trees which are a target for retention. Five treatment units were identified for completion this winter.

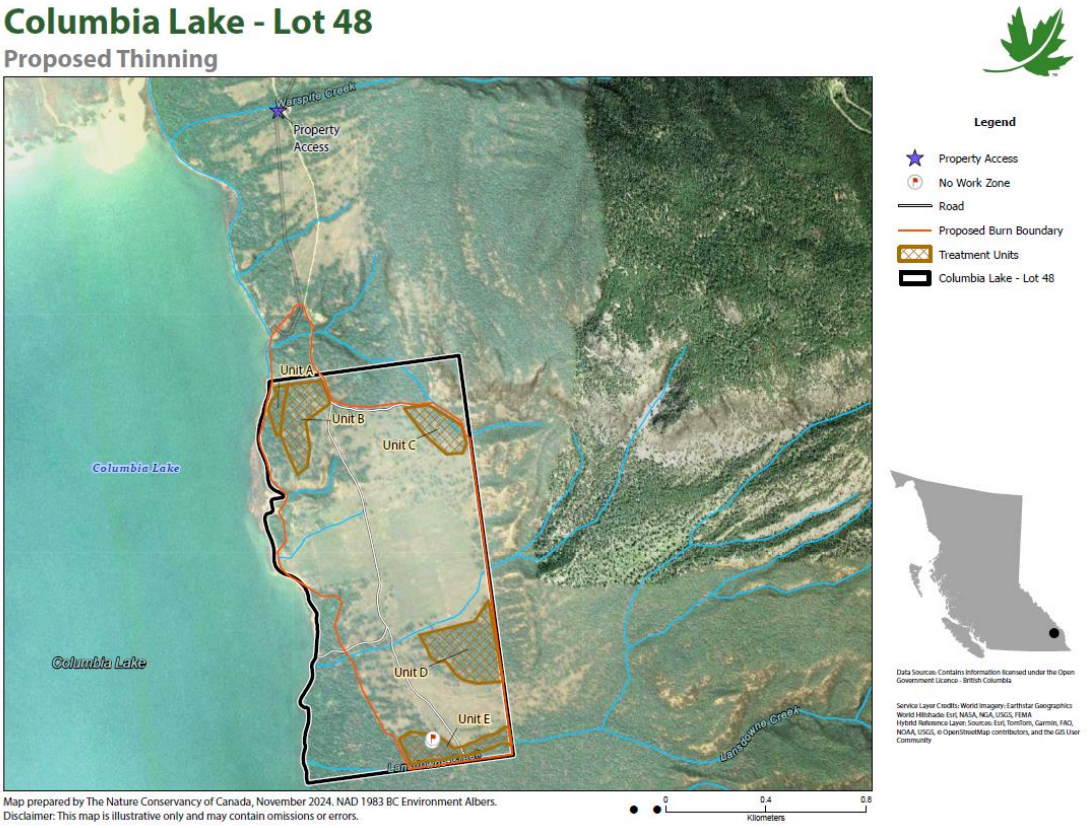

Figure 1. Map of hand thinning treatment units A-E on NCC's Columbia Lake Lot 48.

Prior to initiating any thinning work NCC worked with KNC staff to review the ER Prescription. In October 2024, NCC staff, KNC ʔa·knusti and Lands staff met on the land and walked identified units for treatment. In November 2024, NCC staff met with KNC Archeology Coordinator Jessee Thomas to walk the proposed prescribed burn perimeter and the hand treatment units to identify any archeology concerns. Feedback from these site visits were incorporated into the workplan for treatment, and into the information shared with thinning contractors.

In December 2024, NCC sent a Request for Quotation to five thinning contractors to complete nearly 16 hectares of forest thinning treatments. They completed site viewings with two contractors and received two quotes. Seven Feathers Contracting and Consulting were contracted by NCC in January 2025 to complete this work.

Unfortunately, due to higher-than-average snowfall and cold weather, as well as contractor availability work on this contract was delayed from starting until the end of March. This work is now underway and will be reported on in Year 7.

In addition to coordinating thinning work at Columbia Lake Lot 48, NCC coordinated the completion of open forest ecological restoration treatments on Thunder Hill Ranch. This work is guided by the Thunder Hill Ranch Forest Cover Management Plan (Jeff Allen, RPF, 2005). In fall 2024, NCC sent a Request for Quotation to eight thinning contractors to complete forest thinning and pile burning. Five contractors sent in quotes, and Goodwin Ventures was awarded the contract to complete forest thinning and pile burning at Thunder Hill Ranch. The target of this work was to restore the forest to an open forest structure, which directly benefits focal species at risk which rely on the habitat provided by open forests, including American Badger, Lewis's Woodpecker, and Common Nighthawk. In early winter, Goodwin Ventures completed 10.3 hectares of thinning. Following this, pile burning was completed over 135 hectares of Thunder Hill Ranch. Pile burning is an important part of open forest restoration, and also serves to make forest stands more resilient to wildfire by abating fuel loading. Following pile burning, the burn pile rings were seeded with grass seed to reduce colonization of the disturbed soil by terrestrial invasive plants.

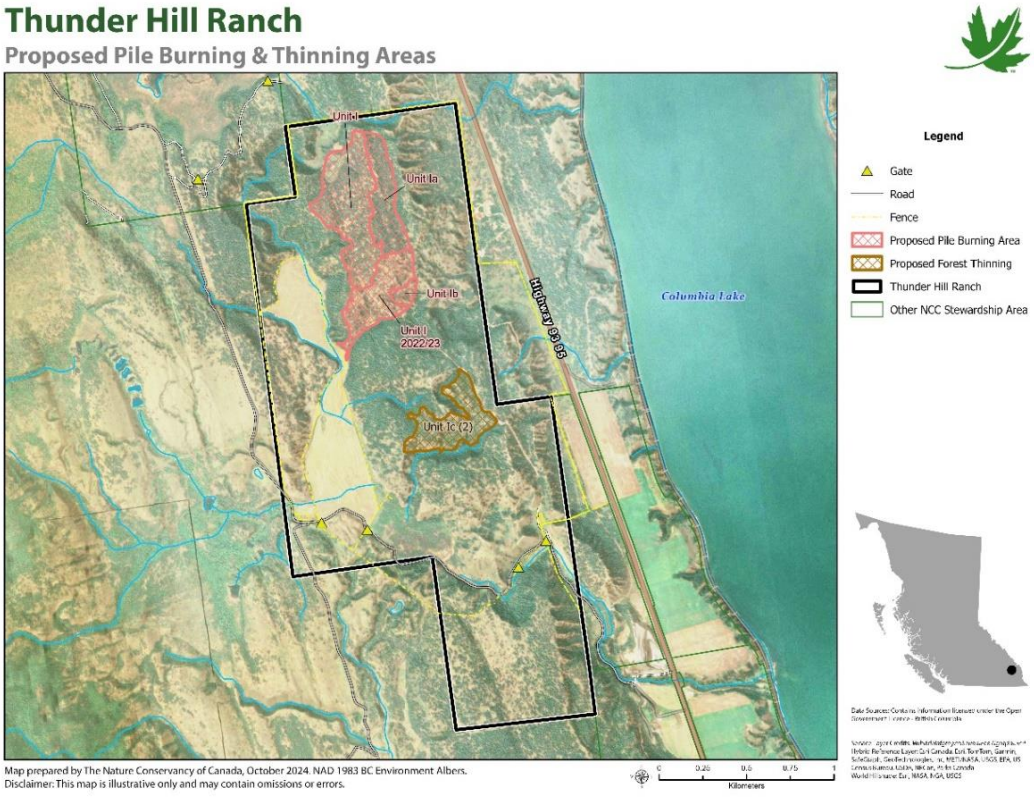

Figure 2. Map of hand thinning treatment unit and pile burning treatment units on NCC's Thunder Hill Ranch.

Photo 1: Photo of thinned unit showing improved sightlines for wildlife.

Photo 2: Photo from thinned unit shows piles ready to be burnt.

Photo 3: Before completion of Thinning Treatment Unit, showing high density of ingressing conifers.

Photo 4: After completion of Thinning Treatment Unit.

Invasive plant management is an important part of open forest restoration, as invasive plants may increase in abundance following forest thinning or prescribed burning due to an increase in sunlight and growing space. To mitigate this risk, we complete invasive plant management as a part of forest restoration activities. NCC coordinates this work with the East Kootenay Invasive Species Council on an annual basis. Forest thinning areas and access corridors were surveyed and treated with herbicide by a certified herbicide applicator in October 2024. Herbicide was applied at Columbia Lake Lot 48 to treat Diffuse knapweed (*Centaurea diffusa*) in anticipation of forest thinning work. Invasive plant treatment at Thunder Hill Ranch is coordinated and completed by the Columbia Lake Ranch managers and staff.

To further enhance the open forest habitat at both Thunder Hill Ranch and Columbia Lake Lot 48, Strategic Resource Solutions was hired to complete wildlife tree creation for the benefit of cavity nesting birds and bats, including focal species at risk. NCC contracted this work for numerous conservation areas, including Thunder Hill Ranch. Eight wildlife trees were created at Thunder Hill Ranch in September 2024. Seven of these trees were treated with a "tall stub" treatment (Photo 5) which involves topping and full girdling the tree, which intends to kill the tree, leaving a moderate height snag which will relatively quickly develop internal heart rot decay as well as natural sap rot in the outer sapwood. One tree was given a "dead top" treatment in which the top of the tree is limbed and girdled to kill the upper part of the tree. All treated trees were inoculated with native heart rot fungus. These trees are expected to provide valuable wildlife habitat to cavity reliant species in the coming years.

Wildlife tree creation at Columbia Lake Lot 48 was coordinated by Wildlife Conservation Society Canada (WCS). WCS hired Strategic Resource Solutions to create six new tree roosts at Lot 48; three of which were BrandenBark trees, and three of which were chainsaw modified wildlife trees. The wildlife trees were given the "tall stub treatment" and bat specific crevices created with chainsaws. The wildlife trees and BrandenBark trees created on Lot 48 will specifically benefit bats including species at risk such as Little Brown Myotis (*Myotis lucifugus*) by providing roosting habitat. This habitat is available for use by bats immediately.

3.0 Summary of Measurable Outcomes

The key measurable outcomes of Year 6 are as follows:

1. Developed a Forest Thinning and Prescribed Fire Preparatory Prescription for Columbia Lake Lot 48
2. Completed 10.3 hectares of open forest thinning treatments at Thunder Hill Ranch
3. Completed 135 hectares of open forest pile burning
4. Created 11 wildlife trees and 3 BrandenBark bat roosts with WCSC to benefit cavity reliant species and bats, including focal SAR

Photo 5: Image of tall stub wildlife tree being created in 2024.

3.0 References

BC CDC 2015: Conservation Status Report

COSEWIC 2012: American Badger jeffersonii subspecies (Taxidea taxus jeffersonii), Eastern population - Species search - Species at risk registry

COSEWIC 2018: Grizzly Bear (Ursus arctos), Western population - Species search - Species at risk registry

COSEWIC 2023: Common Nighthawk (Chordeiles minor) - Species search - Species at risk registry

COSEWIC 2024: Lewis's Woodpecker (Melanerpes lewis) - Species search - Species at risk registry