

Ecosystems Restoration

Early in 2008 a Cariboo Chilcotin Ecosystems Restoration Steering Committee (CCERSC) dedicated its initial efforts in the region to the Cariboo Chilcotin Grasslands Benchmark lands. These benchmark areas were identified in the Cariboo Chilcotin Land Use Plan Grasslands strategy (2001). Grasslands account for less than one percent of BC, yet have the highest diversity of plant and animal species at risk. The CCERSC defined Ecosystems Restoration as “the process of assisting with the recovery of an ecosystem that has been degraded, damaged or destroyed by re-establishing its structural characteristics, species composition and ecological processes.” The Ecosystems Restoration Steering Committee is made up of representation from: three Provincial Ministries (Forests and Range, Agriculture and Lands, and Environment); the three First Nations groups (Tsilhqot’in, Carrier Chilcotin, and Northern Shuswap); two Cattlemen’s groups (Cariboo-Chilcotin and Clinton); and three Conservation groups



Multi-agency, multi-stakeholders on a field trip to grasslands, photo ©CCERSC



Spring burn at Becher Prairie, where several cavity nesting trees were protected, photo ©CCERSC



Portable 'sloop' allows the burning of debris without damaging groundcover and scorching soil, photo ©CCERSC

(Grasslands Conservation Council of B.C., Cariboo Chilcotin Conservation Society, and the B.C. Wildlife Federation), all of whom use or promote ecosystem restoration as a land management tool. The representatives guide the Steering Committee, approve plans, seek funding sources, plan implementation, monitoring, promotion and communication. Their initial mission is to “oversee, promote and support ecosystem restoration of grasslands in the 100 Mile House, Central Cariboo and Chilcotin Forest Districts.



November, before restoration work

Grasslands restoration initial stage

Next July

above photos ©University of BC Alex Fraser Research Forest

Since the early 1900s forest encroachment has been occurring in many grasslands areas. Before this time period many more “cool” fires occurred every 7-20 years, killing off most of the small, thin-barked trees, and maintaining open forests with grassy under-stories that merged with native grassland. In the absence of fire, more and more of the grasslands have been lost to encroaching forest. With an eye to restoring historic grasslands, the CCERSC has initiated and implemented several projects.

Within the Churn Creek Protected Area and Junction Sheep Range Provincial Park, two projects were carried out in 2009 with a total of 272 hectares returned to open, Douglas-fir forest and grassland through tree removal. Additionally, prescribed burns over 380 hectares were engaged in the Churn Creek Protected Area to mimic the historic ‘cool fires’ and contribute to ecosystem processes. Encroachment by conifers was identified as the

greatest threat to these grassland ecosystems, in both the Park Management Plan and the Park Fire Management Plans for both parks. Churn Creek Protected Area is the custodian of 36,747 hectares of provincially and nationally significant grassland that are part of a swath of dry deserts and grasslands occurring from California to B.C. along the eastern sides of coastal mountain ranges. Junction Sheep Range Provincial Park consists of 4,573 hectares of rolling grasslands and deep gullies situated at the confluence of the Fraser and Chilcotin Rivers.



Northern Flicker nests in dead ‘wildlife’ tree, photo ©Kris Andrews

The park provides critical habitat for several rare and endangered species including 12 blue-listed bird, reptile and mammal species. The grasslands there are significant nationally because they have not been grazed by cattle since 1986.

The Knife Creek Block of the University of British Columbia Alex Fraser Research Forest contains just over four hectares of the Grassland Benchmark that had experienced forest in-growth for many decades. In 2008 the UBC Research Forest completed a tree removal project to return it to its former open forest condition. Biodiversity of the Knife Creek site was taken into consideration



Male and female Mountain Bluebird, photo ©Kris Andrews

during planning stages. A hectare of mature trembling aspen, valuable habitat for cavity-nesting wildlife (eg many species of birds) and a cold-air pooling site occupied by spruce, add habitat elements to the site. Widely spaced stems of old growth and “future veteran” Douglas-fir were retained, along with trunks of downed trees to provide habitat and ecosystems functions. The balance of the in-growth was cut and removed to a nearby landing. Stems large enough to be milled were sold as saw-logs to contribute to financing the project. Smaller stems and slash were collected by a variety of machinery and piled for grinding into hog-fuel for use in electricity production in Williams Lake. It was important to remove this material, as the vast quantities of it would have smothered the



Cathy Koot of UBC Research forest monitors birds during restoration activities, photo ©UBC Alex Fraser Research Forest



Evening Grosbeak, photo ©Kris Andrews

To minimize soil disturbance, tree removal occurred during winter when the ground was frozen and covered by snow. Contractors expertly avoided exposing any mineral soil with the aim of preventing establishment of invasive plants and encouraging recovery of existing native grasses. Reintroduction of ‘low intensity, low severity’ fire was considered in the spring. Since the combustion of moss and needles increases soil and litter pH, and grassland soils tend to be more alkaline than forest soils, it was decided to do a light burn to assist with the conversion of the plant community. An ‘antiaggregation pheromone’ for Douglas-fir beetle was attached to the residual Douglas-fir to prevent infestation by bark beetles. Future efforts in this area will

grassy groundcover and posed a significant fire hazard if left on site. If a portable burning bin or “sloop” on skids had been available at the time, another option would have been to burn the slash on site. Sloops are useful in priority areas to reduce the extent of soil scorching, caused by hot fires.

include a controlled burn to kill seedling fir and encourage native grasses to flourish. Annual monitoring for grass establishment, invasive plants and new encroachment, will follow this restoration effort.

Bird Monitoring: As a part of monitoring for changes in biodiversity after restoration activities have been undertaken in three sites in the Cariboo Chilcotin a songbird and woodpecker project was initiated in three sites in 2008. With over fifty point count stations in the three study areas, 40 species and 712 individual eligible song birds and woodpeckers were identified. The three areas included one west of Meldrum Creek Road, another at an Iron Wood Springs section west of Alexis Creek south of the confluence of the Chilcotin and Chilko Rivers and the third at Deer Creek, west of the Chilko River.



Western Meadowlark, photo ©Kris Andrews

Each site had a mix of grasslands, aspen copses, and Douglas-fir forest edges. The surveys were in the breeding season, just prior to sunrise for up to five hours and all species seen and heard calling or singing, as well as nests and flyovers were recorded.



American Robin, photo ©Jeffrey Newman



Robin's nest amongst slash, photo ©Cathy Koot

The most numerous species observed were Chipping Sparrow, Yellow-rumped Warbler, Dark-eyed Junco and American Robin. Also in abundance were Dusky Flycatcher, Vesper Sparrow, Mountain Chickadee and Brown headed Cowbird.



Hairy Woodpecker, photo ©Jeffrey Newman

Other bird species of open habitat encountered in these areas were Brewer's Blackbird, Mountain Bluebird, Western Meadowlark, Savannah Sparrow, Lincoln's Sparrow, Eastern Kingbird, Black-billed Magpie, Mourning Dove, Red tailed Hawk, Common Nighthawk, Killdeer and Long-billed Curlew. Forest

nesting birds observed included Hairy and Downy Woodpecker, Red-naped Sapsucker, Hammond's Flycatcher, Cassin's Finch, Pine Siskin, Evening Grosbeak, and White-winged Crossbill.

Unlike the Vesper Sparrow that breeds only in open areas and grasslands, the Robin, Chipping Sparrow and Dark-eyed Junco utilize a variety of habitats. Numerous Dusky Flycatchers had territories in the deciduous trees and shrubs,

while the provided homes to many cavity nesters such as Mountain Bluebird, Mountain Chickadee, Northern Flicker, Tree Swallow and Bufflehead (near wetlands). Aspen copses also were used by Hermit Thrush, Least Flycatcher, Orange-crowned Warbler, Warbling Vireo and Western Wood-pewee. Interestingly, territorial Mountain Bluebird and Vesper and Savannah Sparrows were often utilizing live and dead conifer encroachment in and adjacent to the grassland for perching and singing. Being such hotspots for biodiversity, it was recommended that prescribed fire in restoration efforts be restricted from aspen copses as they could easily be lost. The timing of cutting and burning of encroachment trees in monitoring is a vital part of ecosystems restoration and contributes to adaptive management decisions.



Eastern Kingbird, photo ©Kris Andrews

For more information on this and other projects of the UBC Research Forest, contact Cathy Koot, RPBio, at UBC Alex Fraser Research Forest, (250 392.2207) or cathy.koot@ubc.ca; Tom Hughes, BC Parks at (250 398-4931), and Harry Jennings, Ministry of Forests and Range (250.398.4398).

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