Vegetation of the DejaVu and PowerWagon Bike Trails

General Description

The bike trails are found in the IDFxk biogeoclimatic zone. The IDFxk (dry, cool Interior Douglas-fir) was formerly described as the IDFun (Interior Douglas-fir undifferentiated). The IDFun occurs on the Lower slopes and valley floor from the south end of Columbia Lake at Canal Flats north to Windermere Lake near Invermere. It also occurs up side drainages off the main valleys, especially on warm aspects. Elevation ranges from 800 – 900 meters (Braumandl and Curran 1992). Zonal sites are characterized by *Pseudotsuga menziesii* var. *glauca* (Douglas-fir), *Pseudoroegneria spicata* (bluebunch wheagrass) and *Koeleria macrantha* (junegrass) (Braumandl and Curran 1992). The poorly developed shrub layer is dominated by *Juniperus scopulorum* (Rocky Mountain juniper) and low cover of *Amelanchier alnifolia* (Saskatoon), *Symphoricarpos albus* (snowberry) and rose species (*Rosa spp.*). The herb layer contains a diverse mixture of species, but is dominated by *P. spicata*, *Festuca campestris* (rough fescue) and low cover of *Solidago multiradiata* (northern goldenrod) and *Arctostaphylos uva-ursi* (kinnikinnick).

The bike trails south of Radium cross in and out of grassland, open forest and closed forest IDFxk plant communities. Plant communities are characterized by typical IDFxk plant communities. Closed, north-facing forests are dominated by *P. menziesii* with an understory of *Calamgrostis rubescens* (pinegrass) and *Eurybia conspicua* (showy aster). Closed, level forests have patches of *F. campestris* and *Achnatherum richardsonii* (spreading needlegrass). Open forests are defined by a *P. spicata – K. macrantha* and *Artemisia frigida* (pasture sage) understory. Open grasslands are found on south-facing slopes and dominated by *Hesperostipa comata* (needle-and-thread grass), junegrass and *P. spicata.*

Pockets of intact, good condition grasslands exist along the benches and on the slopes, but much of the area has been degraded by non-native increaser species such as *Medicago sativa* (Alfalfa), *Melilotus officinalis* (yellow sweet-cover) and *Melilotus alba* (white sweet-clover).

Soils are derived from lacustrine and glaciofluvial parent materials. The lacustrine soils have a high diversity and cover of scale and crust lichens.

Conservation Features

The entire area surrounding the bike trails should be considered high conservation value. The grasslands of the IDFxk are generally located on private land and a large percentage of the area has been developed.. The area provides important areas for north-south and east-west large mammal movement as well as uncommon and rare vegetation at a regional and provincial scale.

Bluebunch Wheatgrass-Junegrass Plant Community

There are areas of good quality *P. spicata-K. macrantha* open forest/open grassland plant communities. This plant community association is is blue-listed by the BC Conservation Data Centre (BC CDC 2014). Blue-listed ecological communities are of Special Concern and have characteristics that make them

particularly sensitive or vulnerable to human activities or natural events. Blue-listed ecological communities are at risk, but are not Extirpated, Endangered or Threatened (BC CDC 2014).

These grasslands were generally located in level to gently sloping areas. There understory was dominated by *P. spicata*, *K. macrantha* and *A. frigida*.

Unfortunately most of these occurrences were degraded by high cover of non-native species including alfalfa, yellow sweet-clover and white sweet-clover. Non-native species were likely introduced by horses.

Figure 1. Example of bluebunch wheatgrass-junegrass plant community

Hooker's Townsendii

There were four occurrences of the provincially-red listed *Townsendia hookeri* (Hooker's townsendii) observed along the trails (Fig. 1). Red-listed species include any indigenous species or subspecies that have, or are candidates for, Extirpated, Endangered, or Threatened status in British Columbia (BC CDC 2014).

T. hookeri is a perennial herb from a taproot. This plant is found on dry, grassy slopes and meadows in the steppe and lower montane zones. It is considered rare in northeastern and southeastern British Columbia (Douglas et al. 1998a).

Figure 2. *Townsendia hookeri* found on the DejaVu bike trail.

T. hookeri has disjunct populations in North America that are considered secure to critically imperiled. It is ranked imperiled/vulnerable in Canada and rare/secure in the United States (Fig. 3; NatureServe 2009). In British Columbia, *T. hookeri* is known only from southeastern and northeastern British Columbia.

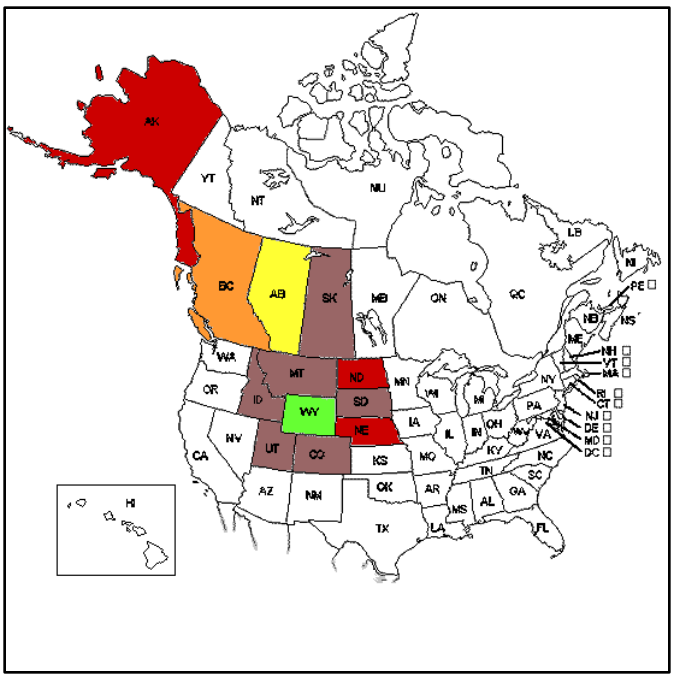

Figure 3.North American distribution of *Townsendia hookeri*. Red indicates the plant is critically imperiled (S1), orange indicates imperiled (S2), yellow indicates vulnerable (S3), light green indicates apparently secure (S4) and purple indicates the plant is not ranked or is under review (NatureServe 2009).

Population data are lacking for this species therefore at a regional level, it is not possible to determine if populations are increasing or decreasing. Analyses of regional diversity suggest a formerly broad distribution has become subsequently fragmented, possibly due to the last round of glaciations. It is possible that patterns of glaciations has played a causal role in the establishment of the observed geographic pattern in North America (Thompson and Whitton 2006)

In BC, the status of this species is more defined within the context of the Conservation Framework. The Conservation Framework is British Columbia's new approach for maintaining the biodiversity of the province. The three goals of the Framework are: to contribute to global efforts for species and ecosystem conservation, to prevent species and ecosystems from becoming at risk and to maintain the diversity of native species and ecosystems. Under the framework, *T. hookeri* is rated as priority two under the third goal of maintaining the diversity of native species and ecosystems. Conservation actions identified by the Ministry of Environment include: inventory, development of a status report and the listing of this species under the wildlife act.

Sand dropseed - needle-and-thread grass

Along the north end of the Power Wagon trails there were minor occurrences of *S. crytandrus* and *H. comata* plant communities. This is not a classified plant community in the East Kootenay Valley but is blue-listed in the Bunchgrass biogeoclimatic zone.

Brittle prickly-pear cactus – needle-and-thread grass

At the north end of the Power Wagon trail, on a steep south-facing slope, there is a large occurrence of a *Opuntia fragilis* (brittle prickly-pear cactus) – *H. comata* plant community. Although not a listed plant community, the distribution of *O. fragilis* is restricted in the East Kootenay Valley to specific microclimate conditions.

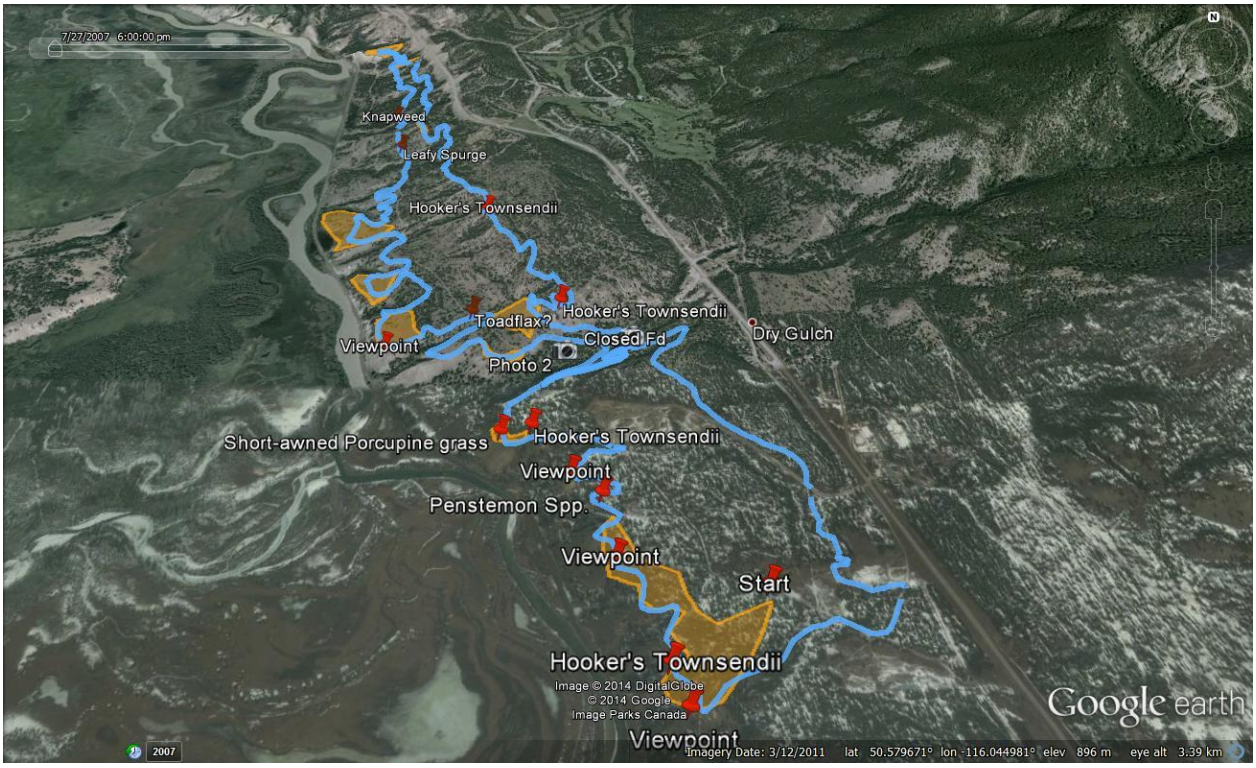

Figure 4.Bike trail overview

Threats

Invasive Species

There is significant cover of non-native species along these trails dominated by alfalfa. High cover is likely caused by horseback riding. Although, not invasive, the presence of these species degrades the conservation value of the area.

There are several different occurrences of invasive species as well, including *Cirsium arvense* (Canada thistle), *Euphorbia esula* (leafy spurge) and *Centaurea stoebe* (spotted knapweed) (Fig. 4).

If used as an active trail, all noxious weed infestations should be identified and treated. Additionally, users should ensure all equipment is cleaned prior to and after leaving the site.

Trail Building

There are several sections of both trails that are sluffing or sloping.

Closed forests along the trail tend to occur on north facing slopes with high moss cover. Trails in these areas tend to sluff and slide removing a large amount of organic material increasing the risk of erosion. Trail maintenance should be conducted along these sections to ensure the integrity of the single-track is maintained.

There are examples of sloping trails in the open grasslands as well that should be addressed (Fig. 6). In these areas, damage caused to soils can lead to erosion and an increase in non-native species cover. Additionally, vegetation recovery in these areas is a long-term process.

The other threat related to trail building relates to the development of auxillary trails off the main trails. This was commonly observed on both trails (Fig. 5).

Figure 5. Example of auxillary trail development,

Figure 6. Example of sloping trail along the DejaVu trail

Viewpoints

One of the highlights of the DejaVu trail is the view overlooks over the Columbia Wetlands. These areas are level, open grasslands with sandy soils held together by biological crusts (crytogamic crust, microbotic crust). Biological soil crusts are formed by living organisms and their by-products, creating a crust of soil particles bound together by organic materials. The crusts provide soil stability, atmospheric nitrogen-fixation and nutrient contributions to plants. Crusts are well adapted to severe growing conditions, but poorly adapted to compressional disturbances. Compressional disturbances drastically reduce the ability of the soil organisms to function, particularly in providing nitrogen and soil stability. Full recovery of crust from disturbance is a slow process and can take up to 250 years to restore full ecological function (USGS Canyonlands Research Station 2014). In almost all viewpoint areas, the crust has been trampled and the area has been invaded by *Bromus tectorum* (cheatgrass).

It is recommended that signage be installed to encourage people to stay on the trail. It is also suggested that 2 – 3 viewpoints be developed with a hardened trail or boardwalk to prevent any further damage.

Literature Cited

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