



**Robert S. Ferguson, M.Sc. R.P.Bio.**

**MATRIX Resource Services  
2395 Highway 95 South  
Golden, B.C. V0A 1H4**

**Prepared For:**

**Darcy Grykuliak, Lead Engineer  
Kicking Horse Canyon Project  
B.C. Ministry of Transportation  
#201 – 611 10<sup>th</sup> Avenue North  
Golden, B.C. V0A 1H0**

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## **Introduction**

The following report presents the results of an inventory of breeding birds that was carried out in 2005 in Phase III of the Kicking Horse Canyon Project. The bird inventory constitutes one component of a comprehensive environmental assessment for the Trans-Canada Highway (TCH) upgrade and realignment in the Kicking Horse Canyon between Golden, British Columbia and Yoho National Park. A breeding bird inventory for Phase II of the project area was completed in 2004 (Ferguson 2004, Sharpe 2004).

The objectives of the 2005 breeding bird inventory were:

- To document the species of birds present in Phase III during the 2005 nesting season,
- To document the nesting status and broad habitat associations of species encountered during the inventory,
- To document the presence of any red-listed, blue-listed, regionally significant or endemic species, and
- To document the locations of any critical habitat features (such as raptor nest sites or the nests of other high-profile species) that may warrant special management consideration during the construction phases of the Kicking Horse Canyon Project.

## **Project Area**

Phase III of the Kicking Horse Canyon Project is divided into two areas<sup>1</sup>: Phase III West (8.7 km in length) comprises the area from the junction of the TCH and Highway 95 in Golden, east to the Yoho (5-Mile) Bridge. Phase III East (9.0 km in length) extends from the brake check stop at the Glenogle Forest Service Road, east to the boundary of Yoho National Park.

Most of the Phase III project area lies within the Southern Rocky Mountains Ecoregion of the Southern Interior Mountains Ecoprovince (Demarchi 1988). The western end of the project area (i.e., that part within the Columbia River valley) lies within the Southern Rocky Mountain Trench Ecoregion. Elevations in the project area range from 810 m in the Columbia River valley bottom to about 1,150 m at the west end of Phase III East.

Two biogeoclimatic zones are represented in the project area (Figure 1): the Interior Douglas-fir and Montane Spruce zones<sup>2</sup>.

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<sup>1</sup> [www.kickinghorsecanyon.ca](http://www.kickinghorsecanyon.ca)

<sup>2</sup> Ministry of Forests. 2003. Biogeoclimatic ecosystem classification subzone/variant map for the Columbia Forest District, Nelson Forest Region. Ministry of Forests, Forest Science Program, Victoria. <ftp.for.gov.bc.ca/hre/external/!publish/becmaps/papermaps>

The Interior Douglas-Fir “dm2” variant occurs in the westernmost part of the project area, encompassing the valley bottom and lower slopes of the Columbia River valley, and the lower slopes of the Kicking Horse Canyon as far east as Frenchman’s Ridge.

The Montane Spruce “dk” sub-zone is dominant in the project area, and occurs along the north side of the Kicking Horse River from Frenchman’s Ridge to Yoho National Park.

Between the Park and Yoho bridges (i.e., south side of the Kicking Horse River), two variants of the Interior Cedar Hemlock are represented (the “mk1” and “mw1” variants) in the Phase II area, but they do not occur within Phase III.

In recent years, pine-dominated stands on lower slopes in the Kicking Horse Canyon and in tributary drainages (e.g. Glenogle Creek, Dart Creek, Mt. Hunter Creek and Vacation Creek) have experienced widespread infestations by the mountain pine beetle. As a result, many pine stands growing on accessible sites have been recently logged.

### **Cover Types in the Project Area**

I identified seven broad cover types within the study area, as follows:

**Mature Coniferous Forest** Much of the Phase III West corridor is dominated by mature stands of Douglas-fir and lodgepole pine on steep, south-facing slopes above the Kicking Horse River (Figure 2). In Phase III East, the topography is more subdued and Mature Coniferous Forests there comprise a mixture of spruce, Douglas-fir and lodgepole pine, with scattered trembling aspen, white birch and black cottonwood (Figure 3). Understory shrubs on dry slopes include Douglas maple, soopolallie, saskatoon, Rocky Mountain juniper, common juniper, rose, snowberry, Oregon grape and birch-leaved spirea.

Wet sites along creek bottoms (e.g., Dart Creek) support stands of spruce, western red-cedar, Douglas-fir and black cottonwood. Red-osier dogwood, false azalea and high-bush cranberry are associated with these sites.

**Young Mixed Forest** Young Mixed Forest is most prevalent in Phase III East, between the TCH and the Kicking Horse River. Mixed stands support both coniferous and deciduous species, including trembling aspen, white birch, Douglas-fir, lodgepole pine, spruce and black cottonwood. Understory shrubs on these warm, south-facing slopes include Douglas maple, saskatoon, soopolallie, common juniper, kinnikinnick, rose, Oregon grape and birch-leaved spirea.

**Young Deciduous Forest** This cover type occurs predominantly in Phase III East, on the north side of the TCH from Mt. Hunter Creek east to the Beaverfoot Forest Service Road turnoff. Trembling aspen is the leading species, with scattered white birch, Douglas-fir, lodgepole pine and black cottonwood (Figure 4). The dry, south-facing slopes support an

understory of soopolallie, snowberry, saskatoon, rose, common juniper, Douglas maple, Oregon grape, bearberry and birch-leaved spirea.

**Tall Deciduous Shrublands** – This cover type is restricted to the Columbia River valley bottom (within the Southern Rocky Mountain Trench), near the junction of the TCH and Highway 95. The shrublands are characterized by tall (2-3 m in height) thickets of willow and red-osier dogwood, with tall trembling aspen and black cottonwood along the edge of the shrublands (Figure 5). Young aspen and cottonwood also comprise part of the tall shrub layer.

**Post-Logging Early Seral** This cover type comprises early seral plant communities dominated by herbaceous and/or shrubby vegetation, with variable retention of overstory trees. Recent logging that focused on removal of lodgepole pine from mixed stands has created openings with variable retention of mature Douglas-fir and deciduous trees (Figure 6). In other areas, clear-cut silvicultural systems in pine stands have created large early-seral patches with little or no retention of overstory trees (Figure 7).

Major shrubs include snowberry, soopolallie, saskatoon, rose, common juniper, Douglas maple, willow, Oregon grape and birch-leaved spirea. Main ground cover species are typical of the Montane Spruce biogeoclimatic zone and include pinegrass, bunchberry, western meadowrue, twinflower, aster, heart-leaved arnica, rattlesnake plantain and grouseberry.

**Consolidated and Unconsolidated Bedrock** The canyon walls and road cuts in Phase III West comprise a mixture of consolidated bedrock and steep talus slopes that are generally devoid of tree cover and other vascular plants (Figure 8). Lichens comprise the dominant ground cover.

**Urban Habitats, Roadsides and Other Disturbed Areas** These areas include a diverse mixture of vegetated and non-vegetated areas associated with places of human habitation or frequent human disturbance, including residential areas, campgrounds, small businesses, highway and railway right-of-ways, highway pull-offs and forestry roads.

## **Methods**

The project area presents a number of logistical challenges regarding breeding bird inventory work. Most significantly, the high traffic volumes on the Trans-Canada Highway contribute to high background-noise levels, which interfere with auditory detections of songbirds. In forested habitats, up to 95% of songbird detections during breeding bird surveys are made by auditory detections (Petit et al. 1995), underscoring the need for low levels of background noise for sampling effectiveness.

Secondly, ground access to many parts of Phase III West is very difficult due to the steepness of slopes and the presence of near-vertical cliffs and canyon walls. Given these logistical constraints, a variety of sampling methods designed to minimize interference from background noise and to overcome access problems, was used to inventory bird populations within the Kicking Horse Canyon Project, Phase III area:

### **Point-Count Plots**

Twenty-five point count plots were established along the TCH between Golden and the eastern boundary of Yoho National Park (Table 1). Plots were numbered from west to east, beginning in Golden at the junction of the TCH and Highway 95, and were spaced at variable distances. Irregular spacing was necessary due primarily to safety considerations, as there are few safe pull-offs along the TCH in the Kicking Horse Canyon, especially in the lower canyon between Golden and the Yoho (5-Mile) Bridge where the right-of-way is very narrow.

Spacing of point-count plots in Phase III West varied from 0.5 to 1.2 km; spacing of plots in Phase III East varied from 0.5 to 1.0 km. Plots 1-10 occurred within Phase III West; Plots 11-25 occurred within Phase III East.

All plot centres were located along the existing TCH right-of-way except Plots 1, 3, 4 and 25. Plot 1 was located on Station Avenue near the junction of Highways 1 and 95. Plots 3 and 4 were located along Golden View Road (which runs parallel to the TCH). Plot 25 was located on the Beaverfoot Forest Service Road about 0.8 km from the TCH. UTM co-ordinates and elevations of plot centres were acquired from a hand-held GPS instrument (Garmin GPS 12 XL).

Sampling of birds within the point-count plots was modified from the standard procedures established by the North American Breeding Bird Survey and provincial protocols (Resources Inventory Committee 1999). At each point-count plot, all individual birds detected (observed or heard) within an approximate 200-m radius from the plot centre were counted and recorded on a data form. The standard sampling period for a point-count plot (3 minutes) was extended for this project due to the high volume of traffic (and background noise) along the TCH. Sampling times used in this project varied from 7 to 10 minutes per

plot, depending on the traffic and associated noise. Sampling periods were longer for plots that had greater or more prolonged noise levels, in an attempt to increase the chances of species detection.

**Table 1. UTM co-ordinates and elevations of 25 point-count plots established along the Trans-Canada Highway between Golden and Yoho National Park.**

Plot No.	UTM Easting	UTM Northing	Elevation (m)
1	502387	5683660	812
2	502795	5683199	856
3	503744	5683369	905
4	504105	5683282	928
5	504626	5683147	912
6	505497	5683014	912
7	506740	5683322	945
8	507533	5683655	974
9	508681	5683895	1020
10	509468	5683095	958
11	516784	5680234	1125
12	517290	5680034	1127
13	517736	5679678	1115
14	518549	5679101	1094
15	519070	5678805	1095
16	519582	5678768	1115
17	520319	5678602	1108
18	520891	5678553	1105
19	521407	5678337	1090
20	521948	5678052	1105
21	522637	5677594	1090
22	523391	5677210	1090
23	523886	5676796	1090
24	524309	5676395	1095
25	524047	5676251	1052

### **Linear Transects**

In order to avoid the high background noise levels experienced along the TCH right-of-way, six linear transects were established on secondary forestry roads within 1 km of the TCH (Table 2). Each transect followed the secondary road and were travelled on foot, beginning at its junction with the TCH, and then in the reverse direction. Along each transect (from point of commencement to end), all birds detected within an estimated 200 m of the road were counted. In the reverse direction (end to point of commencement), individuals were not counted to avoid possible duplicate counts, except for new species (which were counted).

**Table 2. Locations and characteristics of six linear transects established adjacent to the Trans-Canada Highway corridor between Golden and Yoho National Park.**

<b>Transect Name</b>	<b>Location</b>	<b>Transect Length (m)</b>	<b>Elevation Range (m)</b>	<b>Dominant Cover Types along the Transect</b>
Dart Creek	Phase III West Point of commencement is at the junction of the TCH and the Dart Creek forestry road (UTM 507568, 5683748)	1,300	980 – 1,100	Mature Coniferous Forest (Douglas-fir and spruce, minor trembling aspen, white birch, lodgepole pine and western red-cedar); Second Growth Forest (pole/sapling lodgepole pine and trembling aspen/white birch).
Mt. Hunter Creek Disposal Site	Phase III East Point of commencement is at the junction of the TCH and the access road to the Mt. Hunter Creek disposal site (UTM 517587, 5679837)	1,600	1,125 – 1,260	Post-logging Early Seral (dominated by tall deciduous shrubs and regeneration, primarily trembling aspen, black cottonwood, willow, saskatoon, Douglas maple, birch-leaved spirea and soopolallie. Area mostly clear-cut; variable retention of overstory trees (Douglas-fir and aspen) in small areas.
Mt. Hunter Creek North	Phase III East Point of commencement is at the junction of the TCH and the unnamed forestry road east of the Mount Hunter Creek bridge (UTM 519289, 5678868)	1,400	1,100 – 1,230	Mature Coniferous Forest (Douglas-fir and lodgepole pine with scattered trembling aspen) along lower half of transect. Post-logging Early Seral (pine removal with variable retention of Douglas-fir and aspen overstory) along upper half of transect.

<b>Transect Name</b>	<b>Location</b>	<b>Transect Length (m)</b>	<b>Elevation Range (m)</b>	<b>Dominant Cover Types along the Transect</b>
Mt. Hunter Creek South	Phase III East Point of commencement is at the junction of the TCH and the unnamed river-rafting access road west of the Mount Hunter Creek bridge (UTM 518632, 5679044)	1,200	1,005 – 1,095	Mature Coniferous Forest (spruce and Douglas-fir, with minor trembling aspen, white birch and black cottonwood). Small, recently logged areas with retention of non-pine species. Second Growth Forest (pole/sapling lodgepole pine) and herb/forb openings near the river rafting facilities.
Vacation Creek East	Phase III East Point of commencement is at the junction of the TCH and the Vacation Creek Main forestry road (UTM 520990, 5678504)	1,100	1,040 – 1105	Young Mixed Forest (trembling aspen, Douglas-fir, spruce, white birch and black cottonwood; most lodgepole pine trees have been removed by logging). Post-logging Early Seral (low shrubs and herb/forb cover) near end of transect.
Vacation Creek West	Phase III East Point of commencement is at the junction of the TCH and the unnamed river-rafting access road west of Vacation Creek (UTM 520892, 5678546)	1,200	1,030 – 1105	Young Mixed Forest (trembling aspen, Douglas-fir, spruce and lodgepole pine with scattered white birch and black cottonwood). Post-logging Early Seral (small openings of pine removal with retention of Douglas-fir and aspen overstory). Herb/forb and low shrub openings associated with the river rafting facilities.



## **Reconnaissance Level Observations**

Reconnaissance level observations were used to provide coverage of areas that may have been poorly sampled by either the point-count plots or linear transects. Ground access to the steep canyon walls and talus slopes in Phase III West was generally not possible, so they were examined from remote viewpoints with the aid of binoculars and a spotting scope.

The Young Deciduous Forest cover type between Mt Hunter Creek and the Beaverfoot Forest Service Road was not sampled by the linear transect method (due to absence of secondary roads), so a walk-through of this area was carried out to determine if any species were present that had been overlooked by the other sampling methods.

All surveys were carried out by the author between 0600 and 1300 hours, Mountain Daylight Time. Bird species were identified both visually (with the aid of 8x40 binoculars and a 15-45x spotting scope) and by voice (e.g., territorial songs of singing males).

## **Results and Discussion**

### **Point-Count Plots**

The 25 point-count plots were surveyed on 5 days between 24 May and 30 June 2005. Fifty-five species (based on 1,153 individual detections) were recorded within the point-count plots during this period (Appendix 1). The plots sampled both the IDFdm2 (7 plots) and MSdk (18 plots) biogeoclimatic units.

### **Linear Transects**

Each of the six linear transects was surveyed on 3 days between 24 May and 8 July 2005. Fifty-seven species (based on 892 individual detections) were recorded along these transects during this period (Appendix 2). The transects were all within the MSdk biogeoclimatic sub-zone.

### **All Survey Methods**

Seventy-two species of birds were detected within the Kicking Horse Canyon Project, Phase III area (Appendix 3). Forty species (56%) were detected both within the point-count plots and along the transects<sup>3</sup>. These species included many that were relatively common and widely distributed in suitable habitats throughout the Phase III area, including Dark-eyed Junco, Yellow-rumped Warbler, American Robin, Warbling Vireo, Dusky Flycatcher, Chipping Sparrow, Pine Siskin, Swainson's Thrush, Red Crossbill, Common Raven, Ruby-crowned Kinglet, Orange-crowned Warbler, Cassin's Vireo, Townsend's Warbler, Western Tanager, Cedar Waxwing, Mountain and Black-capped chickadees, MacGillivray's Warbler, Golden-crowned Kinglet, Hammond's Flycatcher, Northern Rough-winged Swallow, Northern Flicker, Red-breasted Nuthatch, Pileated Woodpecker and Violet-green Swallow.

Most of these species were also detected in the Phase II project area (Ferguson 2004), as well as in other inventory projects in the Kicking Horse Canyon between 1996 and 2003 (Appendix 4). These species are also widespread and relatively common in suitable habitats throughout the upper Columbia River valley (Ferguson and Halverson 1997).

Fifteen species were detected within the point-count plots but not along the linear transects: American Crow, European Starling, Rock Dove, Willow Flycatcher, American Redstart, Brown-headed Cowbird, Least Flycatcher, Tree Swallow, Gray Catbird, Lazuli Bunting, Red-eyed Vireo, Vaux's Swift, Black Swift, Black-headed Grosbeak and Blue Jay (Appendix 3). All detections of these species (except Blue Jay) were confined to the Columbia River valley, and were associated with urban and man-altered habitats (American Crow, European Starling, Rock Dove, Brown-headed Cowbird, Tree Swallow), tall deciduous shrublands

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<sup>3</sup> No additional species was detected in the project area from the reconnaissance-level observations.

(Willow Flycatcher, American Redstart, Gray Catbird, Lazuli Bunting), tall aspen and cottonwood trees (Least Flycatcher, Red-eyed Vireo, Black-headed Grosbeak), or aerial foraging habitats above the valley bottom (Vaux's and Black swifts). The single detection of a Blue Jay occurred in Young Deciduous Forest near Vacation Creek.

Seventeen species were detected along the linear transects but not within the point-count plots: Red-naped Sapsucker, Townsend's Solitaire, Three-toed Woodpecker, Canada Goose, Gray Jay, American Kestrel, Brown Creeper, Calliope Hummingbird, Chestnut-backed Chickadee, Purple Finch, Rose-breasted Grosbeak, Spotted Sandpiper, Spruce Grouse, Steller's Jay, Western Wood-Pewee, White-crowned Sparrow, and Winter Wren.

Background noise levels (vehicular traffic) within the point-count plots along the TCH right-of-way may have interfered with detections of species that exhibited fewer detections within the plots (e.g., Golden-crowned Kinglet, Red-breasted Nuthatch, Red-naped Sapsucker, Black-capped Chickadee). Traffic volumes measured on 5 days between 30 June and 7 July varied from 386 to 642 vehicles per hour (average of 483 vehicles per hour, or 8 vehicles per minute). Such interference is likely to be greater for species that have relatively quiet, high-pitched songs (e.g., Brown Creeper, Golden-crowned Kinglet) and for species that sing or call infrequently (e.g., woodpeckers).

Two of the species detected along the transects only (Canada Goose and Spotted Sandpiper) were associated with the Kicking Horse River and shorelines, which were not effectively sampled by the point-count plot method due to their remoteness from the plot centres.

### **Rare (Localized) Species**

Twelve of the species only recorded along the transects were detected only once, and 31 species in the entire project area (all methods combined) were each detected fewer than five times (Appendix 3).

These rare (localized) species include:

- Six species that were confined to the Columbia River valley (Gray Catbird, Lazuli Bunting, Red-eyed Vireo, Vaux's Swift, Black Swift and Black-headed Grosbeak);
- Two species that are rare in the upper Columbia River valley and East Kootenay as a whole (Blue Jay and Rose-breasted Grosbeak<sup>4</sup>);
- One species that is at the south-eastern extremity of its geographic range in British Columbia (Chestnut-backed Chickadee);
- Three species that were associated with the Kicking Horse River (Canada Goose, Spotted Sandpiper and Belted Kingfisher);
- Two raptor species, that typically have low densities/large home ranges (Red-tailed Hawk and American Kestrel); and,

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<sup>4</sup> Both species appear to be increasing in the East Kootenay and may be expanding their ranges westward.

- Several species appear to have low populations and/or very localized distributions within the Kicking Horse River valley due to low, overall habitat suitability. Lincoln's Sparrow, Olive-sided Flycatcher, Clay-coloured Sparrow, Calliope Hummingbird, Purple Finch, Steller's Jay, White-crowned Sparrow and Winter Wren are more common and widespread in other biogeoclimatic units (Campbell et al. 2001) and habitat types in the upper Columbia River valley (Ferguson and Halverson 1997).

### **Evidence of Breeding**

Direct evidence of breeding was confirmed for 17 species of birds in 2005 (Table 3, Appendix 4). Evidence of breeding was obtained for 5 additional species in 2004 (Phase II of the Kicking Horse Canyon Project), bringing the total number of confirmed breeding species to 22 (Appendix 4).

I suspect that another 17 species also breed within the Kicking Horse Canyon Project, Phase III area, on the basis of the frequency and/or abundance levels that they were detected in 2005 (Appendix 4). The majority of the detections was of singing territorial males.

The primary cover-type associations of the species detected within Phase III are provided in Appendix 4.

### **Species at Risk**

No species at risk, as designated by the Committee on the Status of Endangered Wildlife in Canada or the BC Conservation Data Centre (Table 4), was detected within the project area during 2005. On the basis of their habitat requirements and known breeding distributions in the East Kootenay and elsewhere in British Columbia, the probability of regular occurrences of these species within the Kicking Horse Canyon Project area is expected to be very low. Many of the species at risk in the East Kootenay are associated with wetlands or with the grasslands/open forests of the southern Rocky Mountain Trench. Neither habitat type occurs within the Kicking Horse Canyon Project area.

### **Critical Habitat Features**

I did not locate any critical habitat features (e.g., raptor nest sites) within the Phase III project area. The cliff habitats in Phase III West provide an abundance of potential nesting sites for ravens and Red-tailed Hawks, similar to the cliff nesting sites discovered in the Phase II area (Ferguson 2001, 2004). Those nest sites were not occupied in the 2005 breeding season.

**Table 3. Breeding evidence of birds in the Kicking Horse Canyon, Phase III in 2005.**

<b>Species</b>	<b>Date</b>	<b>Breeding Evidence</b>
Pileated Woodpecker	19 May	Active nest in trembling aspen, Vacation Creek West transect
Northern Flicker	19 May	Active nest in trembling aspen, Vacation Creek West transect
	7 June	Active nest in sign post, near KOA campground in Golden
	4 July	Adult with 3 fledged young, Vacation Creek West transect
American Robin	25 May	Adult carrying nesting materials, Vacation Creek East transect
	8 June	Two adults carrying food items, near Vacation Creek
Violet-green Swallow	26 May	Adults entering nest crevices in canyon wall near south end of Frenchman's Ridge
Dark-eyed Junco	8 June	New fledgling being fed by adult, near Vacation Creek
	20 June	Adult feeding fledgling, Mt Hunter Creek North transect
	6 July	New fledgling, Mt Hunter Creek South transect
Black-capped Chickadee	8 June	Two adults carrying food items, near Vacation Creek
Hairy Woodpecker	15 June	Two adults carrying food items, Mt Hunter Creek South transect
Northern Rough-winged Swallow	20 June	Adults entering nest holes in road cut, near Dart Creek
Pine Siskin	24 June	New fledglings feeding on the ground, Dart Creek transect
Common Raven	24 June	Two fledglings with adult, Dart Creek transect
Red-naped Sapsucker	24 June	Active nest in trembling aspen, Dart Creek transect; adults feeding young in cavity
	4 July	Active nest in trembling aspen, Vacation Creek West transect; adults feeding young in cavity
Ruby-crowned Kinglet	4 July	Adult feeding fledgling, Vacation Creek West transect
Mountain Chickadee	4 July	Adult feeding fledgling, Vacation Creek West transect
Golden-crowned Kinglet	4 July	Adult feeding fledglings, Vacation Creek West transect
Ruffed Grouse	4 July	Female with brood of young, Vacation Creek West transect
Chipping Sparrow	15 June	Adult carrying food items, Point-count Plot #2
	6 July	Adult carrying food items, Mt Hunter Creek South transect
Three-toed Woodpecker	6 July	Two adults with fledgling, Mt Hunter Creek South transect

Table 4. List of bird species at risk occurring (or potentially occurring) in the East Kootenay (Rocky Mountain and Columbia forest districts).

Species at Risk	Global Ranking <sup>5</sup>	National Ranking <sup>6</sup>	Provincial Ranking	Identified Wildlife <sup>7</sup> RM=Rocky Mountain Forest District CFD=Columbia Forest District
American White Pelican	G3 - Vulnerable		Red-listed	
Yellow-breasted Chat ( <i>auricollis</i> ssp.)		Endangered	Red-listed	
Western Screech-Owl ( <i>macfarlanei</i> ssp.)		Endangered	Red-listed	
Burrowing Owl		Endangered	Red-listed	RM (Irregular/incidental)
Peregrine Falcon ( <i>anatum</i> ssp.)		Threatened	Red-listed	
Long-billed Curlew		Special Concern	Blue-listed	RM
Barn Owl		Special Concern	Blue-listed	
Flammulated Owl		Special Concern	Blue-listed	RM
Short-eared Owl		Special Concern	Blue-listed	RM, CFD (Possible)
Lewis' Woodpecker		Special Concern	Blue-listed	RM, CFD (Possible)
Western Grebe			Red-listed	
Swainson's Hawk			Red-listed	
Prairie Falcon			Red-listed	
American Avocet			Red-listed	
Forster's Tern			Red-listed	
Williamson's Sapsucker ( <i>nataliae</i> ssp.)			Red-listed	
American Bittern			Blue-listed	
Great Blue Heron ( <i>berodias</i> ssp.)			Blue-listed	
Broad-winged Hawk			Blue-listed	

<sup>5</sup> Global and provincial rankings are according to the British Columbia Conservation Data Centre's up-date of 26 March 2004.

<sup>6</sup> National rankings are according to COSEWIC's May 2004 listings.

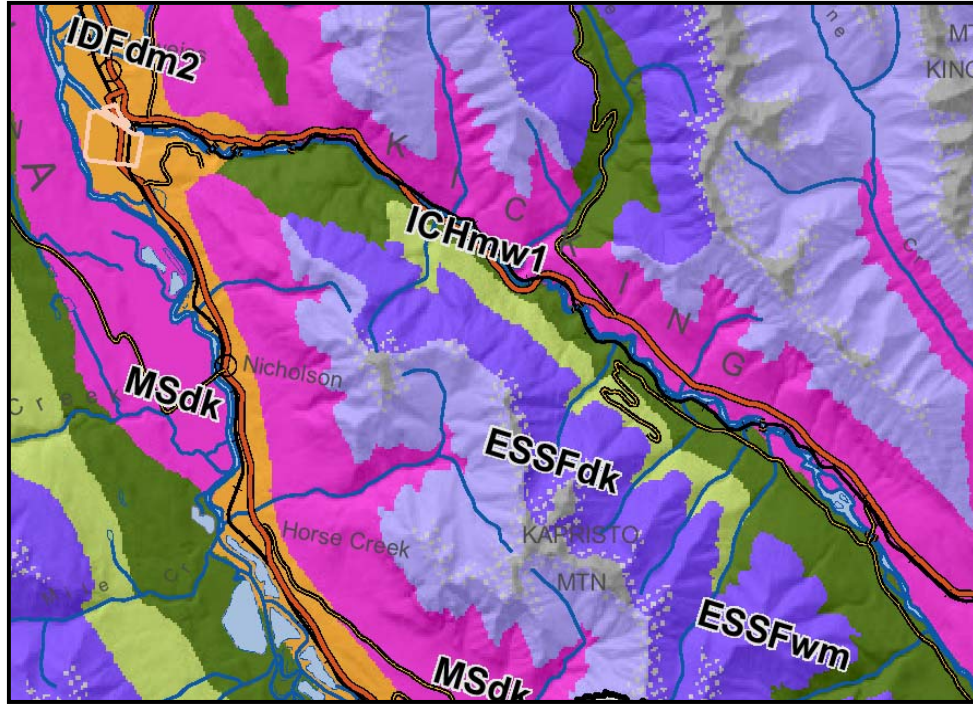
<sup>7</sup> Identified Wildlife Management Strategy, Version 2004, Appendix 11 of Accounts and Measures for Managing Identified Wildlife.

Species at Risk	Global Ranking <sup>5</sup>	National Ranking <sup>6</sup>	Provincial Ranking	Identified Wildlife <sup>7</sup> RM=Rocky Mountain Forest District CFD=Columbia Forest District
Sharp-tailed Grouse ( <i>columbianus</i> ssp.)			Blue-listed	
Sandhill Crane			Blue-listed	
California Gull			Blue-listed	
White-throated Swift			Blue-listed	
Bobolink			Blue-listed	

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**Figure 1. Biogeoclimatic classification of the Trans-Canada Highway corridor through the Kicking Horse Canyon from Golden, British Columbia to Yoho National Park.**

**Figure 2. Mature Coniferous Forest (Douglas-fir and lodgepole pine) on steep, south-facing slopes in Phase III West.**

**Figure 3. Mature Coniferous Forest (Phase III East) between the TCH and Kicking Horse River.**



**Figure 4. Young Deciduous Forest (Phase III East) near Vacation Creek.**





**Figure 5. Tall Deciduous Shrublands (Phase III West) in the Columbia River valley near the junction of the Trans-Canada Highway and Highway 95.**



**Figure 6. Post-logging Early Seral (Phase III East) with retention of some Douglas-fir and deciduous trees in the overstory.**

**Figure 7. Post-logging Early Seral (Phase III East) with no retention of mature overstory trees.**



**Figure 8. Consolidated bedrock and talus slope (Phase III West) above the Trans-Canada Highway.**